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AN INVESTIGATION OF RELATIONSHIPS BETWEEN TIMBRE PREFERENCE, PERSONALITY TRAITS, GENDER, AND MUSIC INSTRUMENT SELECTION OF PUBLIC SCHOOL BAND STUDENTS

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A DISSERTATION APPROVED FOR THE
SCHOOL OF MUSIC

BY

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ABSTRACT

PAYNE, PHILLIP DAVID, Ph.D. An Investigation of Relationships Between Timbre Preference, Personality Traits, Gender, and Music Instrument Selection of Public School Band Students. (2009)
Directed by Dr. James W. Sherbon. 204 pp.

The purpose of this study was to determine if a relationship existed between specific personality traits and timbre preference among public school music students performing in secondary school instrumental music ensembles. Secondary research objectives were associated with music instrument selection by students, matching students to their timbre preference(s), and gender stereotyping with specific instruments and timbres.

Participants (*N* = 624) were band students in four school districts in a southwestern state. Data were collected by employing three testing instruments: a demographics questionnaire which produced a descriptive profile of the participants, Resource Associates' Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick, and Wilburn's (2003) *Adolescent Personal Style Inventory* (*APSI*) provided results on five personality traits (agreeableness, conscientiousness, emotional stability, extraversion, and openness), and Gordon's (1984) *Instrument Timbre Preference Test* (*ITPT*) indicated timbre preference.

Results from a battery of multiple linear regression analyses revealed that the participants' personality trait levels of extraversion and openness

were significantly related ($p < .05$) to Timbres A (flute), B (clarinet), C (saxophone and horn), E (trumpet), F (trombone, baritone, and horn), and G (tuba). In addition, analysis indicated that gender stereotyping was observable regarding both music instrument selection and timbre preference. In public school bands, gender was found to be a significant predictor of Timbre choices A, B, F, and G. Further, a majority of students were not performing on instruments congruent with their timbre preferences; however, the ratio of participants playing instruments congruent to their timbre preference was 26.3% for beginners and approximately 53% for high-school seniors.

Significant relationships were found between personality traits, timbre preference, gender, and music instrument selection in public school band students. Levels of extraversion and openness, as well as gender and instrument choice, were found to be significant predictors of timbre preference. Knowledge of these relationships may be useful to band directors when assisting undecided, beginning-band students regarding their choices of first instruments.

CHAPTER I

INTRODUCTION

Choosing a beginning band instrument has traditionally been accepted as part of the instrumental music recruiting process in schools throughout the United States. Researchers such as Abeles and Porter (1978), Cutietta and McAllister (1997), Gordon (1984), and Kemp (1981a, 1981b, 1981c) have provided a strong foundation justifying specific research focusing on the personalities of band students as well as the selection of instruments that are appropriately matched to beginning-band students. Kemp and Mills (2002) question strategies within the recruiting process and refer to the process of matching students with instruments as “far less scientific” compared to the process of recruiting students for enrollment in beginning band. Factors such as personality traits, timbre preference, gender, and parental influence have been studied to determine their effects on the results of the recruiting process. The process and practice of suggesting instruments for students starting in beginning band must be examined in greater depth in order to identify and define factors affecting students’ potential satisfaction, continuation, and success in instrumental music. Directing attention to the instrument selection process as a separate focus of the recruiting procedure may help researchers identify new student-instrument relationships as well

as control and limit influences beyond student preference considerations that may be initiated by parents, peers, or the secondary school instrumental music directors (Byo, 1991; Fortney, Boyle, & DeCarbo, 1993). Therefore, the principal objective for the current study was to determine whether a relationship existed between personality traits and timbre preference in public school music students performing in secondary school instrumental music ensembles. Defining a relationship between specific personality traits and timbre preferences will allow secondary school instrumental music teachers to make more informed decisions when guiding the instrument selection process of prospective students.

Personality

Overview

The personalities of musicians have been examined to develop characteristic profiles and how they differ from the general population (Bell & Creswell, 1984; Cutietta & McAllister, 1997; Davies, 1975; Kemp, 1981c). Kemp (1981a) found introversion, pathemia,[1] and intelligence to be significant traits of musicians while other traits were context specific and depended on the age and experience of the musician. Kemp also suggested that introversion may generally be linked to instrumental skills of musicians (Kemp, 1981c).

[1] Pathemia is a personality factor that describes an individual who is “warm, sentimental, and prone to daydreaming and living through sentimental emotions” (Kemp, 1996, p. 69).

Cutietta and McAllister (1997) and Bell and Cresswell (1984) found conflicting results regarding the personality of musicians and their instruments. Bell and Creswell (1984) found that high-school instrumentalists differed significantly in terms of personality from their peers not enrolled in band and “strongly confirmed” the notion of observable personality patterns between string, brass, and woodwind players. However, Cutietta and McAllister (1997), while observing a larger and more age-appropriate sample of middle-school band students, found instrumentalists were not significantly different in personality from a general population of middle-school students not enrolled in band. Disagreement between researchers (Bell & Cresswell, 1984; Cutietta & McAllister, 1997; Davies, 1975) suggests further research is needed in efforts to define the relationship between a musician’s personality and an individual’s selection of an instrument for both beginning and advanced students.

Definitions of Personality Terminology

Five-Factor Model – The Five-Factor Model is a descriptive framework incorporating five different variables into a conceptual model for describing human personalities (Srivastava, 2008).

Agreeableness – Agreeableness indicates the extent of human compatibility (Popkins, 1998).

Conscientiousness – Conscientiousness indicates the extent to which others are considered when making personal decisions (Popkins, 1998).

Emotional Stability – Emotional stability indicates a dimension of human personality defined by stability and low anxiety at one extreme and instability and high anxiety at the other extreme (Pervin, 1989).

Extraversion – Extraversion is "a trait characterized by a keen interest in other people and external events, and venturing forth with confidence into the unknown" (Ewen, 1998, p. 289).

Openness – Openness indicates the extent that humans are willing to make adjustments in personal thoughts and activities in accordance with new ideas or situations that may be presented (Popkins, 1998).

Timbre Preference

Gordon (1984) developed the *Instrument Timbre Preference Test (ITPT)* to assess a person's preference for timbres of instruments commonly heard in a public school band. A secondary objective was to assist band directors in making informed suggestions to prospective beginning instrumental music students regarding their selection of a music instrument. Gordon focused on the premise that students should select an instrument which is congruent with their timbre preference. Gordon (1984) continued with his premise that the *ITPT* was:

> To act as an objective aid to the teacher and the parent in helping a student choose an appropriate woodwind or brass instrument to learn to play in beginning instrumental music and band. . . . Barring serious physical limitations, if a student likes the sound of a particular instrument, he will be more successful on that music instrument than on a music instrument which has a sound that he does not like or that he dislikes. (Gordon, 1984, p. 1)

Gordon believed students would be more successful in a secondary school instrumental music ensemble when playing an instrument representing a personal timbre preference rather than selecting an instrument wherein no timbre preference exists. Gordon (1984) also found that almost 10% of the total variance regarding why a student chooses to remain enrolled in band can be attributed to an incongruence of the student's timbre preference and a student's actual choice of an instrument.

Foundations of the Current Study

Purpose Statement

The purpose of the current study was to determine if a relationship existed between specific personality traits and instrument timbre preference among public school music students performing in secondary school instrumental music ensembles. Determination of whether a relationship existed between specific personality traits and timbre preference was intended to serve secondary school instrumental music teachers in their development of the instrumental music recruiting process. Continuing to define the relationship between a student's personality and timbre preference

may support Kemp's (1981c) notion of correctly matching students to an instrument according to their temperament. Defining the relationship further would also allow researchers to examine Gordon's theory of matching a student's timbre preference with their instrument of study. Secondary objectives studied were associated with instrument selection of students, matching students to their timbre preference(s), and gender stereotyping.

Primary Research Question

1. Does a relationship exist between a student's personality traits, timbre preference, and association with specific instruments?

Secondary Research Questions

1. Is a student's preference for a specific timbre congruent with their choice of instrument?

2. Based on a cross-sectional sample across all ages involved in the study, does the ratio of students playing instruments congruent with their specific timbre preference versus students playing instruments incongruent with their specific timbre preference increase as students remain enrolled in instrumental music education?

3. Is gender stereotyping, as compared to music instrument selection observable in public school instrumental music ensembles? If so, are gender and timbre preference related? Furthermore, how does gender and instrument selection load into a regression model?

Null Hypotheses

The following null hypotheses were established for the current study.

1. There will be no significant relationship between personality traits and timbre choices of public school band students.

2. Gender stereotyping, as associated with instrument selection and timbre preference, will not be significantly observable.

3. There will be no significant relationship between gender, personality traits, instrument choice, and the timbre choices of public school band students.

The null hypotheses were tested at the $p \leq .05$ level.

Instrumentation in the Current Study

Personality Test Selection

A variety of assessment instruments have been used in research studies concerning personality and musicians. Kemp (1981c) used the *Sixteen Personality Factor Questionnaire* while Bell and Cresswell (1984) used the *High School Personality Questionnaire* for personality assessment in their studies. However, Wubbenhorst (1994) and Schmidt (1989) utilized the *Myers-Briggs Type Indicator* to develop a profile of the personality of the musicians in their respective studies. Most recently, Hudson (2004) and Chang (2007) have conducted studies regarding the personalities, timbre preference, and selection of instruments by beginning and advanced musicians. They used the *Children's Personality Questionnaire* and Saucier's

40 Mini-Marker Set, respectively.[2] The personality assessment for the current study was selected from four criteria formulated to best accommodate pragmatic and technical requirements according to the research design: age appropriateness, reliability, validity, and brevity. However, none of the aforementioned personality assessments met all four criteria; therefore, professionals in the field of psychology were consulted to identify a test that would fit all four criteria and Resource Associates' *Adolescent Personal Style Inventory (APSI)* was suggested.

Adolescent Personal Style Inventory (APSI)

Resource Associates' *APSI*, employed in the current study, provides a personality profile of adolescent students (ages 10-18) based on a *Five Factor Model* (*FFM*) that is valid, reliable, and succinct.[3] The *FFM* was formulated on the premise that personality can be defined by the extent to which a person exhibits the traits of openness, conscientiousness, extraversion, agreeableness, and emotional stability.[4] The five traits of the *FFM* were reduced from sixteen factors to five factors by the research of Norman (1963). Additional descriptions of the development of valid and reliable assessment instruments based on the *FFM* model followed in the

[2] All personality tests are cited in the bibliography.
[3] Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick, and Wilburn (2003) administered a series of eight studies to develop, increase reliability, and validate the *APSI*. Reliabilities range from $r = .80$ to $r = .85$. Construct validity, criterion-related validity, and known-group validity were also established in the series of eight studies by Lounsbury, et al. (2003).
[4] Definitions for the five factors are located at the beginning of Chapter I.

ensuing decades, notably Goldberg's (1992) 100 marker set. However, prior to the studies of Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick, and Wilburn (2003), and the construction of the *APSI*, most personality inventories predicated on the *FFM* were designed to assess an adult's personality inventory.

The *APSI* was constructed to extend adult personality trait assessment techniques to include adolescents. Therefore, using the *FFM* traits of agreeableness, conscientiousness, emotional stability, extraversion, and openness, the *APSI* is applicable to the target population of the current study. Scores on the *APSI* were derived by measuring students' responses to 45 statements utilizing a 5-point Likert-type scale (9 for each personality trait of the *FFM*), and was developed through extensive research by Lounsbury, et al. (2003). The *APSI* required no more than ten to fifteen minutes to administer under various conditions and is validated for use with subjects ages 10-18 (See Appendix G). Thus, the *APSI* fulfilled all criteria providing a viable test for the current study because of its appropriateness, reliability, validity, and brevity.

Reliability and Validity. Lounsbury et al. (2003) administered the *APSI* to 3,752 middle- and high-school students to establish internal consistency and validity for the *APSI*. Reliabilities for the *APSI* range from $r = .80$ to

r = .85, thus establishing a reliability sufficient for the current study. Validity was established in several areas. Among these areas were criterion-related validity, construct validity, and known-groups validity. As a result of this testing and analysis, Lounsbury et al. (2003) concluded that the *APSI* is both reliable and valid for use in studies involving adolescents. Therefore, the *APSI* is supported by empirical evidence showing appropriateness for use with the elementary-, middle-, and high-school students serving as subjects in the current study.

Construction, Administration, and Analysis of the APSI. In the *APSI*, each student responded to 45 developmentally appropriate and readable statements on a 5-point Likert-type scale regarding the extent to which they exhibited each personality trait (agreeableness, conscientiousness, extraversion, emotional stability, and openness). Each factor was measured nine times during the administration of the personality inventory for a grand total of 45 questions. Following administration of the *APSI*, mean scores were calculated from the 5-point Likert-type scale for each student, within each of the five traits across the nine questions within each trait. Therefore, each student could have received a minimum score of nine and a maximum score of 45 for each of the five traits. The mean scores reflected the extent to which students exhibited each specific trait. The students' final personality inventories consisted of five mean scores, or one for each factor.

Instrument Timbre Preference Test

Gordon (1984) developed the *Instrument Timbre Preference Test (ITPT)* to assess a person's preference for timbres of instruments commonly heard in a public school band and assist band directors in making informed suggestions to prospective beginning instrumental music students regarding their selection of a music instrument. Gordon created seven synthesized timbres, lettered A through G.[5] He then paired each timbre twice with the remaining six timbres producing a total of forty-two items. He concluded that students' timbre preferences are then determined by calculating the number of responses (or choices) for each timbre. According to Gordon, a person who chooses a timbre more than nine times has a preference for that timbre. Conversely, if a timbre is selected less than three times, the person is identified as having a non-preference for that specific timbre. For example, Timbre A selected more than nine times would indicate a preference for the flute; however, Timbre F, selected only two times, would indicate a non-preference for trombone, euphonium, or horn.

Attention has been drawn to the reliability and validity of Gordon's *Instrument Timbre Preference Test* in several studies (Gordon, 1992; Rideout, 1988; Schmidt & Lewis, 1988; Williams, 1996). Gordon (1991) and Rideout (1988) found the content to be valid while Schmidt and Lewis (1988),

[5] Timbres for Gordon's *Instrument Timbre Preference Test* are: A - Flute; B - Clarinet; C - Saxophone and Horn; D - Oboe, English Horn, and Bassoon; E - Trumpet and Cornet; F - Trombone, Baritone, and Horn; G-Tuba.

and Williams (1996) questioned the content of and the method by which Gordon established the reliability and validity of the *ITPT*. However, as a result of extensive research, Gordon (1984, 1991) clearly defends his original premise, strengths, reliability, and validity of the *ITPT*. In these studies, Gordon found that mean reliability estimates ranged from $r = .69$ to $r = .80$ on the basis of a sample consisting of 642 students in the Philadelphia area. Criterion and content validity were established by a test re-test method completed by Gordon using professional musicians and professional music educators to confirm the association of timbres they heard, from the test stimuli, with actual band instrument tones[6] as they deemed to be correspondingly appropriate. Gordon (1984) provided five reasons for utilizing synthesized timbres in the *ITPT*, which were inaccuracy in performance from human to human and instrument to instrument, different styles for individual timbres, the advantage of a synthesized timbre representing more than one actual instrument, the ability to provide choices of instruments to prospective band students, and other factors in instrument selection from familiarity with specific instruments to parental and family influence. Therefore, regardless of inherent limitations of synthesized timbres, such as the inability of a synthesized timbre to achieve a full spectrum of sound, Gordon opted to use synthesized timbres in the *ITPT*

[6] There currently is no known published timbre preference assessment for string or percussion instruments.

based on his premise that the tonal stimuli could represent more than one instrument, and synthesized timbres possessed an overall predictive power of being representative of high, middle, and low register instruments. Construct and predictive validity were established by comparison of the *ITPT* with the *Musical Aptitude Profile* (*MAP*) and the *Otis-Lennon Intelligence Test* (*OLSAT*).[7] Nevertheless, Gordon's *Instrument Timbre Preference Test* remains the only test of its kind (Lehman, 1994) and widely used in research (Johnson & Stewart, 2004).

Summary

After a critical comparison of the appropriateness of the two test instruments with the research objectives, the *APSI* and *ITPT* were determined to meet the criteria for data collection. A demographics questionnaire was researcher generated but modeled after a template provided by the *Survey Share Online Survey Tool*.[8] Information regarding gender, age, grade level, school, instrument, ethnicity, enrollment in private lessons, parental influence, seating rank in instrumental ensemble sections, and other relevant factors were collected from the questionnaire and used to create a profile of the students participating in the current study. Potential relationships between timbre preference(s), personality traits, gender, and instrument selection were then analyzed by applying multiple linear

[7] Both the *MAP* and *OLSAT* are cited in the bibliography.
[8] http://www.surveyshare.com/templates/asicdemographics.html

regression analysis to the current data set. The independent variable was timbre preference, as measured by the number of timbre choices, and the dependent variables were the individual scores for each personality trait as well as responses from the demographic questionnaire. An extensive description and full disclosure of validity and reliability estimates for these instruments as well as the instruments' development are presented in Chapter II.

Need for the Study

In the non-empirical literature, band directors consider increasing retention, attaining lofty enrollment numbers, achieving balanced instrumentation, and selecting an instrument as integral aspects of instrumental music recruiting (Darnall, 1986; Hunt, 1977; Mitchell, Rudolph, Whitman, & Taylor, 1982; Mixon, 2005; Prentice, 1986; Romines, 2003; Sandene, 1994; Strouse, 2003; Witt, 1986); however, selecting an instrument is a critical decision for many reasons and should be considered an integral part of the recruiting process (Kemp & Mills, 2002). While aspects of the recruiting process have been studied scientifically, the instrument selection process is less scientific and rarely informed by research (Kemp & Mills, 2002). Therefore, the latter view should be troubling to current band directors since Gordon (1984) and Cannava (1994) have found and published empirical results supporting the improvement of instrument selection by

beginning instrumental music students through measuring timbre preference or “professionally guided” instrument selection processes. The aforementioned studies clearly provide justification for examining the practice of suggesting instruments to beginning-band students as an integral part the recruiting process; therefore, the relationship between personality traits and timbre preference, as well as gender and instrument choice, were examined in the current study to enhance the current literature regarding the process of selecting a musical instrument for a beginning-band student.

Gender Stereotyping

Gender stereotyping has been an issue thoroughly investigated in areas of instrument preference (Abeles & Porter, 1978; Delzell & Leppla, 1992; Griswold & Chroback, 1981; Hallam, Rogers, and Creech, 2008). Herndon (1990) clarifies the difference between sex stereotyping and gender stereotyping when stating that sex is biological while gender is cultural among human beings (as cited in Walker, 2004). Abeles and Porter (1978) found that gender stereotyping is first observable after the third grade, which is consistent with Geringer (1977) who found that instrument preference was not significantly observable in young children.

Griswold and Chroback (1981) studied undergraduate music majors’ and non-music majors’ (N = 89) masculine or feminine association with musical instruments and occupations. They found that gender stereotyping

was associated to a greater extent with musical experience and less with the biological sex of the subject when compared to the results of Abeles and Porter (1978).

Coffman and Sehman (1989) concluded that children appear to have a fluid pattern for instrument preference that begins to solidify around the third or fourth grade and their selections do not necessarily reflect gender stereotyping, as a result of a review of the literature on instrument preference. Therefore, Coffman and Sehman's research indicates that a child's preference moves toward an adult's view by the third grade, which leads to the conclusion by Coffman and Sehman (1989) that instrument preference is subject to cultural and/or physiological influences (p. 32).

Student Preferences

Researchers have studied student instrument preferences prior to enrollment in a secondary school music ensemble (Byo, 1991; Geringer, 1977). Geringer (1977) studied the instrument preferences in children ages three to five years by video recording their operant behaviors while playing musical instruments. No significant instrument preference consensus was observed, but the novelty and preference of the instruments varied in association with the experiences of the children. Geringer also found that only 16 of the 40 children verbally supported their observed instrument preference; thus indicating that experiences alone may not reinforce a

student's preference. Therefore, band director influence, parents, and peers could possibly affect a student's instrument preference.

Byo (1991) assessed the instrument preferences of third-graders and found that the mode of instrument presentation may affect students' preferences for instruments as well as their decision to play a particular instrument. Byo (1991) also found gender stereotyping to be a significant factor among third-grade students which is consistent with the studies of Abeles and Porter (1978) and Griswold and Chroback (1981).

Recruiting Practices

Approaches, techniques, and influential factors for recruiting prospective students into a secondary school music ensemble have been a topic of both empirical and non-empirical research studies (Abeles & Porter, 1978; Bell & Cresswell, 1984; Corke, 1991; Cutietta & McAllister, 1997; Davis, 1989; Decker, 1986; Delzell & Leppla, 1992; Fortney, Boyle, & DeCarbo, 1993; Galindo, 1998; Hartley, 1996; Hudson, 2004; Katzenmoyer, 2003; Kemp & Mills, 2002; Madeja, 1990; Mitchell, et al.; Nierman & Veak, 1997; Romines, 2003; Sandene, 1994; Zdzinski, 1992). Among the approaches, techniques, and factors that have been explored in association with recruiting beginning instrumental music students are personality, timbre preference, students' preferences, and gender stereotyping. While researchers have empirically found that several of these factors significantly

affected the results of the recruiting process, researchers have not included many of these issues in the non-empirical studies (action research), thus creating inconsistencies between research and practice.

Traditionally, a principal purpose of music research in areas of music instrument selection and placement has been to discover ways to improve practices, procedures, educational strategies, and musical benefits for students experiencing instrumental music instruction for the first time. However, many empirical studies have been conducted utilizing students enrolled in college, who are serving as samples of convenience (Abeles & Porter, 1978; Dews & Williams, 1989; Dollinger, 1993; Griswold & Chroback, 1981; Kemp, 1981a; Kemp, 1981b). Therefore, generalizing results from college students to a population of beginning instrumental music as well as advanced secondary-school band students is problematic. Examining factors such as personality, timbre preference, gender, and parental influence identified during their first year of instrumental study through graduation from high school, may be valuable to band directors and students in ways that have not been studied experimentally or observationally. Mixed results found in the current literature (Abeles & Porter, 1978; Bell & Cresswell, 1984; Cutietta & McAllister, 1997; Delzell & Leppla, 1992; Fortney, Boyle, & DeCarbo, 1993), justify the need for more research to determine whether a relationship exists between personality and timbre preference as well as lend

credence to theories regarding the stability of personality and timbre preference based on age, grade, and years of experience.

Instrument Selection and Placement

Instrument choice has been examined by many researchers (Abeles & Porter, 1978; Cannava, 2004; Chen & Howard, 2004; Darnall, 1986; Decker, 1986; Delzell & Leppla, 1992; Fortney, Boyle, & DeCarbo, 1993; Grunow, 1999; Johnson & Stewart, 2004; Johnson & Stewart, 2005; Perkins, 1989; Strouse, 2003). Researchers have directed empirical attention to gender stereotyping (Abeles & Porter, 1978), outside influences (Fortney, Boyle, & DeCarbo, 1993), and physical characteristics (Johnson & Stewart, 2004). Fortney, Boyle, and DeCarbo (1993) found that the sound of music instruments, band director influence, and outside peer influence affected students when choosing an instrument, but timbre emerged as the strongest influence on students when selecting an instrument for study. The only caveat in Fortney, Boyle, and DeCarbo's study is the condition that participating students had already chosen an instrument when they were surveyed, thus the director, friends, or family may have had an inadvertent or intentional influence on students' decisions. Byo (1991) corroborated the finding that a band director has an influence on students' choice of instrument by manipulating the recruiting presentation to favor one instrument over others. He found that favoring one instrument significantly

affects the preference of a beginning band instrument for prospective students. Fortney, Boyle, and DeCarbo (1993) and Byo (1991) further confirmed the strength of persuasion a band director had on students' instrument choices. However, examining whether this influence is congruent with instrument or timbre preference, which Fortney, Boyle, and DeCarbo found to be the strongest influence on a student's choice of instrument or preference for a specific instrument, must be determined.

Success and Retention

Cannava (1994) found a significant difference in band retention rates between students who were administered a professionally guided instrument selection examination versus those who were not examined. The test was grounded in the literature and used several criteria to determine the proper instrument for a beginning-band student. The band director and other professional musicians were the administrators of the test. In non-empirical studies, authors rarely mention personality as a factor in the recruiting process, yet researchers have documented a relationship between personality and a student's choice of instrument (Bell & Cresswell, 1984; Cutietta & McAllister, 1997; Kemp & Mills, 2002). If personality and timbre preference are examples of factors being studied by researchers, a chasm between research and practice exists since these areas are not considered

areas of consequence by secondary school instrumental music teachers according to the non-empirical literature.

Kemp (1981c) and Gordon (1984) suggested that correctly fitting a student to an instrument can affect an individual's experience within the secondary school instrumental music ensemble. Kemp (1981c) suggested that a student might be more successful if "temperamentally" matched to a musical instrument based on the personality of the student. Gordon (1984) suggested that matching a student's preference for a specific timbre accounted for almost 10% of the total variance in a student's decision to remain enrolled in a secondary school instrumental music ensemble. Based on the research cited in this chapter, the aforementioned scenarios were addressed in the current study.

Delimitations

The current study was limited to elementary schools, middle schools, and high schools in a southwestern state. Schools were selected for the study as stratified on an urban or rural classification scheme in order to accurately reflect the population of a geographical location from which the current sample was selected. Subjects were chosen on the basis of their willingness to participate in the study and selected from students in music classes from fifth through twelfth grade.

The Current Study

The current study was designed to investigate the relationship of specific personality traits and instrument timbre preference as observed in the arena of public school instrumental music education. The relationship of specific personality traits and instrument timbre preference was determined by statistical comparisons of the subjects' scores on Resource Associates' *Adolescent Personal Style Inventory* (*APSI*) (Lounsbury, et al., 2003) and Gordon's (1984) *Instrument Timbre Preference Test* (*ITPT*). Data were analyzed utilizing multiple linear regression procedures to determine whether a predictive relationship exists between specific personality traits and the timbre choices of elementary, middle-school, and high-school students.

Determining whether a relationship exists between specific personality traits, instrument timbre preference, and instrument choice may produce a meaningful impact on the instrumental recruiting process by informing band directors' suggestions of appropriate music instruments for beginning-band students. Addressing specific recruiting practices may improve success and retention within band programs in the United States. Empirical results and conclusions, regarding the relationship between personality traits and timbre preference evolving from this study, are expected to provide band directors and beginning instrumental music students with an awareness of previously unknown timbre preferences, thus allowing beginning-band students to take

ownership of their decision to play an instrument on the basis of quantifiable evidence. Therefore, band directors may ultimately improve their retention rates by addressing concerns regarding recruiting practices, specifically instrument selection and placement of beginning-band students.

CHAPTER II

REVIEW OF LITERATURE

Overview

The purpose of the current study was to determine if a relationship existed between specific personality traits and instrument timbre preference among public school music students performing in secondary school instrumental music ensembles. Secondary objectives studied were associated with instrument selection of students, matching students to their timbre preference(s), and gender stereotyping. Determining whether a relationship existed between specific personality traits and timbre preference is intended to serve secondary school instrumental music teachers in their development of the instrumental music recruiting process. Thus, continuing to define the relationship between a student's personality and timbre preference might support Kemp's (1981c) notion of correctly fitting students to an instrument according to their temperament. Defining the relationship further would also allow band directors to examine Gordon's theory of matching a student's timbre preference with their instrument of study.

Kemp (1981c) and Gordon (1984) suggested that correctly matching a student to an instrument can affect an individual's experience within the secondary-school instrumental music ensemble. Kemp (1981c) suggested

that a student may be more successful in music studies if “temperamentally” matched to a musical instrument. Furthermore, Gordon (1984) suggested matching a student’s preference for a particular timbre accounted for almost 10% of the total variance regarding why a student remains enrolled in band.

Byo (1991) and Fortney, Boyle, and DeCarbo (1993) found the mode of presentation and middle-school director produced a significant effect on a student’s preference for a particular instrument. With band directors possessing a high degree of influence on the choices of beginning-band students, Cannava (1994) examined the instrument selection process and found students who were administered a professional selection test were significantly more likely to stay with their current ensemble than those who were started on instruments according to anecdotal strategies. Cannava also found gender stereotyping was better controlled by band directors through a professionally guided instrument selection test. Determining whether a relationship exists between a student’s personality, timbre preference, and instrument choice may aid directors in temperamentally matching beginning-band students with an appropriate instrument.

Personality and Aspects of Music

Researchers have worked continually to define the relationship between personality and various aspects of music (Bell & Cresswell, 1984; Bergee, 1992; Cutietta & McAllister, 1997; Fortney, Boyle, & DeCarbo, 1993;

Gibbons, 1990; Hudson, 2004; Kemp, 1981a, 1981b, 1981c; Kemp & Mills, 2002; Teachout, 2001; Wubbenhorst, 1994). Attempts to define the aforementioned relationship between musicians and their personalities were implemented to improve the discipline of music including musicians and music teaching. Any significant relationship between personality traits and band students could have meaningful implications for music teacher education, especially in the field of instrumental music education.

Personality and Musicians

The personalities of musicians and how they are different from the general non-musical population has been a topic of interest among researchers for almost three decades. Studies have been conducted to define a profile of musicians and how they differ from the general population (Bell & Cresswell, 1984; Dews & Williams, 1989; Dollinger, 1993; Kemp, 1981a; Kemp, 1981b; Kemp 1981c; Kemp, 1982a; Kemp, 1982b; Kemp, 1982c). Kemp (1981a, 1981b, 1981c, 1982a, 1982b, 1982c) conducted a series of experiments to determine the profile of musicians ranging from performers to educators. Kemp found introversion, pathemia,[1] and intelligence to be significant traits of musicians while other traits were context specific and depended on the age and experience of the musician. While traditional thought has supported the notions that specific personalities accompany

[1] Pathemia is a personality factor that describes an individual who is “warm, sentimental, and prone to daydreaming and living through sentimental emotions” (Kemp, 1996, p. 69).

certain instruments, Kemp (1981c) found that introversion may generally be linked to instrumental skills (p. 36). However, the degree of introversion is not quite as clear in Kemp's study. Some outliers whose personalities did not correlate with their choice of instrument provoked Kemp to suggest that temperamental misfitting may be responsible for some of the lack of retention of instrumental music students.[2]

Bell and Cresswell (1984) examined the relationship between personality traits of twenty-eight high-school instrumentalists and personalities of the general school population. They found high-school instrumentalists significantly differed from their non-musical peers when establishing norms for these populations. They also suggest that personality traits may identify those students who would be successful in music performance. However, they found no evidence that personality traits were directly related to the choice of instrument by the student, but they "strongly confirmed" the premise of noticeable personality patterns between string, brass, and woodwind players (p. 92). This conclusion is in direct conflict with Cutietta and McAllister (1997) who found that instrumentalists were not significantly different from their respective general populations, while supporting their conclusions with a larger normed sample than the twenty-eight high-school students with an average age of 13.3 years utilized by Bell and Cresswell (1984).

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[2] Temperamental misfitting refers to suggesting an instrument to a beginner for which the student's personality is not correctly matched to the instrument family according to Kemp (1981c).

Sample and Hotchkiss (1971) examined the relationship of personality to success within instrumental ensembles; however, the design of their study was created more as a gateway for future research. Their pilot study for defining the relationship of personality with success and retention in instrumental study yielded several hypotheses: (a) musical training could foster greater musical sensitivity, (b) academically advanced students might have a greater propensity for studying music while supporting a full academic load, (c) artistic sensitivity may be related to emotional stability, and (d) brass and percussion players lack assertiveness because, by the nature of the instruments, both brass and percussion players command attention. While item (d) may be surprising to many individuals, the authors explained that the students' lack of assertiveness may be accounted for by the attention that is demanded by merely playing a brass or percussion instrument.

A relationship between personality and musicians has been well documented by a wealth of research (Bell & Cresswell, 1984; Dews & Williams, 1989; Dollinger, 1993; Kemp, 1981a; Kemp, 1981b; Kemp 1981c; Kemp, 1982a; Kemp, 1982b; Kemp, 1982c). However, a problem continues with determining the exact definition and role of that relationship, if any, as it pertains to instrumental study. Continuing to define the relationship of musicians and their personalities could provide researchers with data that can continue to improve the instrument selection process in the secondary school instrumental ensemble.

Personality and Music Teaching

If there is a strong relationship between personality traits and musicians then it is plausible that a relationship exists between personality and music teachers. Therefore, questions emerge regarding the presence of significant personality identifiers in teachers who are successful and stay in teaching beyond five years when over half of the teaching population leaves the profession (Ingersoll, 2003). Researchers have addressed the topic of personality identifiers in an attempt to resolve the core ideals surrounding the question of teacher retention (Bergee, 1992; Donovan, 1987; Teachout, 2001; Schmidt, 1989; Wubbenhorst, 1994).

Bergee (1992) examined the relationship between music educators, both professional and pre-professional, and personality traits as defined by the *Missouri Pre-Professional Teacher Interview* (*MPTI*). The *MPTI* consolidated 54 interview questions into nine themes, Achiever, Stimulator, Developer, Realtor, Team, Responsibility, Command, Input-Drive, and Self Discipline.[3]

Bergee (1992) found that music educators and music student teachers exhibited personality traits consistent with the themes of Stimulator,

[3] Bergee (1992) defined the nine themes as: **Achiever** – This teacher is a good student, highly productive, motivates students to be high achievers as well. **Stimulator** – A teacher who has a well-developed sense of humor and drama, high level of enthusiasm. **Developer** – Someone who derives satisfaction from watching growth of a student. **Realtor** – Enjoys positive relationships with all of those involved in the teaching process. **Team**- A team person loves to help other teachers. Students often work together in a classroom taught by this teacher. **Responsibility** – People who take psychological ownership of their actions, they are also trusting and honest. **Command** – Teachers who assume control of situations. **Input-Drive** – People who just love to learn, and never want to stop learning. **Self-Discipline** – This person structures every aspect of their life.

Developer, and Command as defined in the *MPTI*. While the aforementioned themes were exhibited at a high level, the subjects were found to score comparatively low on Input-Drive. Bergee also found that the overall grade point average of his subjects was a significant predictor of the *MPTI* profile; however, he warned that since the GPA variable "borrowed" so much shared variance (p. 13), his data should be interpreted with caution. The results of Bergee's study could provide evidence regarding the presence of personality indicators that best predict successful future music educators. He concluded that music teacher educators should identify their students' strengths and weaknesses in these areas and work to build on strengths while reducing the weaknesses.

Teachout (2001) attempted to determine whether significant differences existed among personality types of music student teachers and if any personality type or construct of Holland's vocational theory[4] significantly contributed to a music educator's teaching effectiveness. Teachout found significant within-group differences among music student teachers, but no significant predictors of teaching effectiveness according to personality type or Holland's model.

[4] Holland's Vocational theory as utilized in Teachout (2001) is founded on six descriptive factors of personalities that exist in the workplace, six parallel environments, the interaction between personality and environment, and the behaviors that result because of the pairing of personality types and work environments. The descriptive factors utilized in Holland's theory are realistic, investigative, artistic, social, enterprising, and conventional. The premise of the model is that people enjoy a working environment that is consistent with their personality profile; likewise, a person will be happier and a more productive employee if the work environment and personality profile are congruent.

Wubbenhorst (1994) examined personality types and psychological androgyny of both experienced music educators and music performers and found that music educators and performers were actually more alike than different in terms of personality characteristics. Although, the researcher expresses caution that this result may be attributed to the shared experience of music performance in their lifetimes. However, Wubbenhorst differs with Kemp (1981a, 1981b, 1981c, 1982a, 1982b, 1982c) who found introversion to be a significant trait of British musicians when compared to the British, non-musical population. Wubbenhorst (1994) found that introversion was identified in only 45% of the music performers and 46% of the music educators. Neither of these findings was found to have significance. He also gathered data that contradicted the findings of Kemp (1982a) who found a greater level of extraversion in music educators.

While researchers in the previous studies have examined school music teaching, other researchers have focused their work toward performance studies in the music studio (Donovan, 1994; Schmidt, 1989). Schmidt (1989) observed forty-three graduate-assistant instructors, whose teaching load consisted of teaching private lessons, and had them complete the *Myers-Briggs Type Indicator* (*MBTI*) personality inventory. He found that studio teachers' personality variables produced a significant effect on four areas of behavior of the studio teacher. The affected behaviors were approvals, rate of reinforcement, teacher model/performance, and pace.

Donovan (1994), in a similar study, observed seven studio teachers and sixty-one performance studies students but focused less on the behaviors of the studio teachers and more on the musical achievements of the performance students. Only three significant differences were observed in Donovan's study and these were between the level of introversion or extraversion and progress in musicality and interpretation, sensing-intuition and rhythmic sense/accuracy, and rhythmic sense/accuracy and thinking-feeling.

Researchers have determined that music educators are not significantly different from their performing counterparts regarding personality (Wubbenhorst, 1994). Music educators also exhibit traits that showcase their love of watching the personal growth of students and their need to control situations (Bergee, 1992). Significant differences also are not contained in public music education, but in private instruction as well. Schmidt (1989) found reinforcement patterns differ significantly on the basis of specific personality traits. If there are traits in educators and performers that are significantly different from the general population, perhaps there are specific personality traits that differ significantly between musicians on the basis of other factors such as timbre preference and gender.

Summary

The research literature cited above reveals the existence of a relationship between personality traits and musicians when compared their non-musical counterparts. Kemp has identified introversion as a significant trait, but warns that an experienced musician's introversion is different than that of the general population. Regarding beginning instrument study, researchers should continue to examine students' personalities as important factors for determining music instrument selection for purposes of developing solid and research-supported recruiting strategies. Kemp and Mills (2002) suggest that personality should not be a primary consideration in the selection process, but merely a guide and a tool to inform decisions regarding a band director's program including a student's choice of instrument.

Instrumentation for Personality

Test Selection

When designing a study involving the measurement of personality, the initial and most challenging concern is choosing which instrument should be administered to collect the desired data. Many instruments measuring personality are designed, constructed, and critiqued each year for various reasons as well as for specific studies. The following criteria were established regarding inclusion of the testing instruments in the current study: age appropriateness, reliability, validity, and brevity.

Several personality tests were considered for inclusion in the current study. The *Myer-Briggs Type Indicator* (*MBTI*) was initially considered because of the extent in which it has been used in similar studies involving the examination of the relationship between personality and the choice of instrument (Schmidt, 1989; Wubbenhorst, 1994). Other researchers used the *High School Personality Questionnaire* (*HSPQ*) (Bell & Cresswell, 1984; Kemp, 1981a, 1981b, 1982b, 1982c), the Sixteen Personality Factor Questionnaire (*16 PF*) (Bell & Cresswell, 1984; Kemp, 1981c, 1982a), the *Children's Personality Questionnaire* (*CPQ*) (Hudson, 2004), the Junior Eysenck Personality Questionnaire (*JEPQ*) (e.g., Cutietta and McAllister, 1997), and Saucier's 40 Mini-Markers (Chang, 2004) which assessed personality according to a *Five Factor Model* (*FFM*). Since there was no definitive choice as to the instrument that yields results desired for the current study, *The Buros Mental Measurements Yearbooks* (accessed through http://libraries.ou.edu) were consulted to identify a personality test that fulfilled the criteria of normative values for age appropriateness, reliability, validity, and brevity; however, no tests that met all four criteria were found. Therefore, after a thorough search of the test literature, further consultation with specialists in psychological assessment revealed a personality trait test that fulfilled the specified criteria and, in addition, provided an instrument of contemporary design.

Foundations of the APSI

Resource Associates' *Adolescent Personal Style Inventory* (*APSI*) (Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick, & Wilburn, 2003) fulfilled the specified test criteria for the current study and provided a personality profile assessment instrument relevant for use with adolescent students (ages 10-18) based on a *Five Factor Model* (*FFM*) that is age appropriate, reliable, valid, and succinct. The foundations of the *APSI* are established on the original *Five Factor Model* (*FFM*). The *FFM* measures personality according to five areas initially established by Norman (1963) and has emerged as an accepted conceptual framework for assessing personality traits (Lounsbury, et al., 2003).[5] These areas were defined as agreeableness, conscientiousness, emotional stability, extraversion, and openness. A study by DeRaad (2000) revealed that the *FFM* has also been "verified in a wide range of cultures and languages, including American-English, Dutch, Flemish, Roman and Triestan Italian, German, Hungarian, Czech, Polis, Filipino, Japanese, and Russian" (as cited in Lounsbury, et al., 2003. p. 112). However, Lounsbury, et al. (2003) suggest that a large amount of the initial

[5] **Five-Factor Model** – The Five-Factor Model is a descriptive framework incorporating five different variables into a conceptual model for describing human personalities (Srivastava, 2008). **Agreeableness** – Agreeableness indicates the extent of human compatibility (Popkins, 1998). **Conscientiousness** – Conscientiousness indicates the extent to which others are considered when making personal decisions (Popkins, 1998). **Emotional Stability** – Emotional stability indicates a dimension of human personality defined by stability and low anxiety at one extreme and instability and high anxiety at the other extreme (Pervin, 1989). **Extraversion** – Extraversion is "a trait characterized by a keen interest in other people and external events, and venturing forth with confidence into the unknown" (Ewen, 1998, p. 289). **Openness** – Openness indicates the extent that humans are willing to make adjustments in personal thoughts and activities in accordance with new ideas or situations that may be presented (Popkins, 1998).

research for the Five Factor Model had focused on adults, but that a body of research was growing on the basis of the Five Factor Model and its applicability to adolescents both from a research and theoretical perspective.

Lounsbury, et al. (2003), through their development of the *APSI*, found research that related the *FFM* to intelligence, juvenile delinquency, school performance, stress, and peer relationships; however, prior to the development of the *APSI*, little research had been conducted to develop and validate an assessment tool from the *FFM* for use with adolescents. The need for an improved and more reliable instrument to accurately measure the traits of the *FFM* as expressed by adolescents was the catalyst for the development and validation of Resource Associates' *Adolescent Personal Style Inventory*.

Adolescent Personal Style Inventory (APSI)

Introduction. In the full version of the *APSI*, each test taker responds to 118 developmentally appropriate and readable statements, using a 5-point Likert-type scale, regarding the extent to which they display each personality trait. The personality traits assessed in the full version of the *APSI* are agreeableness, assertiveness, aggression, conscientiousness, career decidedness, emotional stability, extraversion, identity, openness, optimism, tough/tender-mindedness, work drive, psychological sense of community, Holland Realistic Theme, Holland Investigative Theme, Holland Social Theme, Holland Artistic Theme, Holland Enterprising Theme, Holland

Conventional Theme, and future plans. Due to the function the *APSI* serves, the full version of the test was not applicable to the current study. For purposes of administering a more succinct version in the current study, Resource Associates was contacted and permission was granted to administer a condensed version of the test only containing items related to the traits in the *FFM*, which were agreeableness, conscientiousness, emotional stability, extraversion, and openness, with no threat to the reliability or validity of the test.

Development. The development and validation of the full version of the *APSI* was achieved by Lounsbury, et al. (2003) by incorporating the *Five Factor Model* traits of agreeableness, conscientiousness, emotional stability, extraversion, and openness. They conducted a series of eight studies that included the administration of the *APSI* to 3,752 middle- and high-school students, thus establishing internal consistency and validity for the *APSI*.

The first study established the internal consistency and reliability of the initial full version of the *APSI*. The second study validated the APSI ratings against teacher ratings, the third study confirmed the appropriateness of a five factor structure of the *APSI*, the fourth study established criterion-related validity, the fifth study demonstrated the convergence of traits between the

APSI and the *NEO-FFI*,[6] the sixth study investigated the construct validity, the seventh study examined known-group validation, and the eighth study established descriptive statistics and reliability of the final full version of the *APSI*. Estimated reliability coefficients, as found by Lounsbury, et al. (2003), ranged from .80 to .85 and the aforementioned studies were considered by Lounsbury, et al. to sufficiently validate the *APSI* for adolescents from ages 10 to 18. Resource Associates' *APSI* was designed for adolescents, validated, is reliable, and requires no more than ten to fifteen minutes under various conditions to administer; therefore, Resource Associates' condensed version of the *APSI* fulfilled the four criteria stated above and was utilized in the current study.

As a result of their testing and analysis, Lounsbury et al. (2003) concluded that the *APSI* is both reliable and valid for assessing personality traits of adolescents. Therefore, the *APSI* is supported by empirical evidence showing appropriateness for use with both the middle-school and high-school students serving as subjects in the current study, is reliable and valid, and can be administered in a succinct manner.

Assessment and Scoring. Each factor in the current study, agreeableness, conscientiousness, extraversion, emotional stability, and openness, was assessed by asking nine questions throughout the *APSI*

[6] The NEO-FFI is an abbreviation for the Neuroticism-Extraversion-Openness Five Factor Inventory. In the first edition of the NEO-FFI, only the first three traits were measured. In subsequent editions, the opening was abbreviated to NEO and the words Five Factor Inventory were added to the end.

relating to each of the five personality traits. Participants responded to these questions using a 5-point Likert-type scale, thus producing a total of 45 questions. Following administration of the *APSI*, mean scores were calculated from the 5-point Likert-type scale for each student, within each of the five traits across the nine questions within each trait. Therefore, each student could receive a minimum score of nine and a maximum score of 45 for each of the five traits. The mean scores reflected the extent to which students exhibited each specific trait. The students' final personality trait inventories consisted of five mean scores, or one for each factor. For example, agreeableness may be assessed by questions 5, 12, 16, 20, 23, 29, 33, 38, and 42. During scoring and data entry, only the answers to those specific questions are included in the mean score for agreeableness. This process is repeated for the other four factors, and participants' final personality inventory consists of five mean scores, or one for each factor.

Instrument Preference and Choice

Personality and Instrument Choice

While traditional beliefs might infer that specific personalities are predisposed for performing on a certain instrument, researchers have attempted to determine whether the aforementioned phenomenon is observable (Cutietta & McAllister, 1997; Hudson, 2004; Kemp, 1981b; Sample & Hotchkiss, 1971; Witherow, 2003). Cutietta and McAllister (1997) studied

668 students, grades 7-12, and found that personality profiles of school instrumentalists differed very little from their non-instrumental counterparts. They also found no significant observable difference among students and their choice of a music instrument, thus concluding that there are no “string types” or “band types” among middle-school students (p. 292). However, Kemp (1981c) found that distinctive personality patterns were recognizable in brass and woodwind players. Kemp (1981c) wrote that brass players (*N* = 630) exhibited lower intelligence and lower musical sensitivity as compared to their other classmates enrolled in band. He also found that woodwind players exhibited shyness and self-sufficiency, traits closely linked with introversion (p. 35).

Hudson (2004) studied the personality traits, timbre preferences, and instrument choices of 109 beginning-band students in a southern state. He measured personality traits with Cattell’s *Children’s Personality Questionnaire* and timbre preferences with Gordon’s *Instrument Timbre Preference Test* (*ITPT*) and found three primary personality traits and one secondary personality factor were significantly related to students’ timbre preferences and instrument selections. Hudson’s results were consistent with the literature; however, according to his review of the literature, he utilized more age-appropriate subjects than the earlier literature where college students and private school students were utilized as research subjects. He also found that timbre preference was significantly related to various personality traits of the

subjects. Kemp and Mills (2002) warn that results, such as found in Hudson's 2004 study, should be interpreted with scrutiny because many exceptions can be observed among beginning-band students which can disprove conclusions supported by previous research. However, according to Kemp and Mills (2002), instrument choice and placement are often not informed by research, and findings which should provide conclusive evidence for identifying specific personality traits that might be helpful in the instrument selection process.

Instrument Selection Process

Regarding the selection process typically used in instrumental programs, Kemp and Mills (2002) state "the basis on which students are guided toward a particular instrument is frequently far less scientific, and not informed by research" (p. 10). Perhaps, informing the selection process with substantive and reputable research is an advantage toward improving retention rates of many programs discussed in non-empirical literature (Decker, 1986; Foster, 1991; Grunow, 1999; Madeja, 1990; Mixon, 2005; Perkins, 1989; Prentice, 1986; Romines, 2003; Sandene, 1994; Tracz, 1990). Researchers have produced many studies examining the process by which students are placed on an instrument or students' independent selection of a specific instrument (Byo, 1991; Cannava, 1994; Bayley, 2000; Chang, 2007).

Byo (1991) investigated the instrument preferences of 76 third-graders according to various instrument demonstrations. Byo conducted a pretest and

found agreement among the groups regarding the students' preferences for specific music instruments. Students were then divided into three groups and shown varied instrument presentations according to their placement in groups. Students in group 1 were shown a presentation that was purposefully biased toward the clarinet, students in group 2 were shown a full demonstration, equivalent to that of the clarinet for group 1, for each beginning band instrument. Students in group 3 served as a control group, thus were given no treatment. Following a posttest, Byo found no significant agreements between the groups regarding their instrument preferences when compared to the pretest suggesting that mode of presentation may affect students' choices of a first musical instrument. One implication of Byo's research in music education could include inadvertently mismatching a student to an instrument through a band director's biased (intentional or unintentional) presentation, and ultimately contribute as a factor influencing a student's decision to leave an ensemble.

Cannava (1994) tested 413 middle-school students to determine whether a "professionally guided" instrument selection process, which included the student being advised by the band director and other music professionals utilizing a set of criteria grounded from the literature, affected prospective students. Cannava found that students who were administered the "professionally guided" process in the 1992-1993 class of prospective fifth grade beginning-band students significantly differed from the control group in

terms of retention; however, there were no significant differences in retention numbers when compared to the previous year. While there was an increase in retention under the professionally guided process for the prospective fifth-grade beginning-band students from the 1992-1993 academic year, the difference was not significant. From results of his research findings, Cannava (1994) recommended that band directors should use a guided instrument selection process employing professional musicians and band directors to ensure higher retention, reduce gender stereotyping, and improve parental involvement.

Gender Stereotyping

Many studies have been conducted that associate gender stereotyping with instrument preference (Abeles & Porter, 1978; Byo, 1991; Cannava, 1994; Delzell & Leppla, 1992; Griswold & Chroback, 1981; Hallam, Rogers, and Creech, 2008; Kemp, 1982b; Sinsel, et al., 1997). Researchers have continually defined social phenomenological circumstances by measuring students' associations of musical instruments with a level of femininity or masculinity. Herndon (1990) wrote that this stereotyping is consistent with views of a culture wherein the phenomenon exists because sex is biological, and gender is culturally defined (as cited in Walker, 2004). Abeles and Porter (1978) conducted a series of four studies to determine the effect of gender stereotyping of musical instruments on prospective instrumental music

students. Abeles and Porter found that gender stereotyping of musical instruments was present at an early age and could have a significant effect on a student's preference for a particular instrument; however, they suggest that modes of presentation may reduce gender stereotyping during the instrument selection process. Studies conducted by Byo (1991) and Tarnowski (1993) corroborated the finding that mode of instrument presentation may have an effect on gender stereotyping.

While Abeles and Porter (1978) acknowledged the existence of sex stereotyping of instruments, Griswold and Chroback found that gender association was rooted in a person's experience with music and the music profession contradicting Abeles and Porter's results emphasizing the presence of gender association with musical instruments at a very early age in the general population. Several years later, Delzell and Leppla (1992) revealed that Griswold and Chroback (1981) and Abeles and Porter (1978) were consistent with their results regarding the ranking of the instruments on a masculinity scale (Spearman rank-order coefficient of .90), and found that gender stereotyping may diminish with an increase in age of the subjects.

Johnson and Stewart (2004, 2005) surveyed 84 band directors regarding gender and instrument assignment. Forty-six subjects were shown the full face of a prospective student, while thirty-eight subjects were shown only the lips and dental structures of the same prospective students. Johnson and Stewart reported that band directors commented about having insufficient

information for making an informed decision due to the lack of personal contact, which reflects the need to be present at the time of suggesting an instrument as suggested by the non-empirical literature (Decker, 1986; Foster, 1991; Grunow, 1999; Madeja, 1990; Mixon, 2005; Perkins, 1989; Prentice, 1986; Romines, 2003; Sandene, 1994; Tracz, 1990). In addition, Johnson and Stewart found that sex identification was not a significant factor in appropriately assigning an instrument to a prospective student when they compared the results of the full-face group to the dental-structures-only group.

Starting Grade Level and Social Factors

Instrument choice, instrument selection, personality, and gender stereotyping are not the only factors related to a students' preferences for an instrument. Researchers also have focused on timbre, starting grade level, and parental influence (Fortney, Boyle, & DeCarbo, 1993; Hartley, 1996; Zdzinski, 1992). Fortney, Boyle, and DeCarbo (1993) surveyed 990 middle-school students regarding why they chose their instruments. Among the most frequent responses were timbre, band director, parents, and peers. According to Fortney, Boyle, and DeCarbo, the fact that timbre was the highest rated influence supported the assertion that timbre preference is a viable consideration in instrument selection (p. 38), which is consistent with Gordon (1984).

Fortney, Boyle, and DeCarbo (1993) also warn that while interactions between social factors and the instrument selection process are difficult to measure, these elements relate in some capacity with a student's selection of an instrument. Peer influence was among the top four factors influencing a student's selection of an instrument according to Fortney, Boyle, and DeCarbo along with sound, parents, and band directors.

With philosophies of school structure varying from district to district, the grade level in which instrumental music is first introduced may be an issue with instrumental music directors. Hartley (1996) studied 121 eighth-grade students to determine whether starting grade affected performance achievement of beginning-band students. While Hartley expressed caution that the lack of a standardized measure of performance achievement was an inherent weakness, the proper selection of subjects who had the same teacher for a maximum of three consecutive years controlled for this weakness by eliminating teacher effect as a possible contaminant. Hartley found no significant differences between the students who were beginners in the fifth grade and students who started band in the sixth grade.

Summary

Instrument preference has been examined by many researchers (Abeles and Porter, 1978; Byo, 1991; Cannava, 1994; Cutietta & McAllister, 1997; Delzell & Leppla, 1992; Griswold & Chroback, 1981; Hudson, 2004;

Kemp, 1981b; Kemp, 1982; Sample & Hotchkiss, 1971; Sinsel, Wallace, Dixon, & Blades-Zeller, 1997; Witherow, 2003). The principal factors identified by these researchers as strong predictors of success in instrumental music are timbre, peer groups, parental influence, music difficulty, and band directors. While timbre preference continues to be listed as a prominent factor in instrument selection (Fortney, Boyle, & DeCarbo, 1993; Gordon, 1984), other researchers remain uncertain about the effect of timbre on students when making selection decisions (Rideout & Clinton, 1987; Rideout, 1988).

Timbre Preference

Instrument Timbre Preference Test

Gordon (1984) designed the *Instrument Timbre Preference Test* (*ITPT*) to "act as an objective aid to the teacher and the parent in helping a student choose an appropriate woodwind or brass instrument to learn to play in beginning instrumental music and band" (p. 1). Furthermore, Gordon (1984) has supplied statistical evidence supporting the practice of combining the scores of students on the *Music Aptitude Profile* (*MAP*) test (Gordon, 1965) and the *ITPT*, because the results account for over 65% of the variance attributed to student attrition in secondary-school music ensembles. Gordon assessed timbre preference by pairing seven synthesized timbres[7] twice with all other timbres obtaining a total of 42 pairings or test items. According to

[7] Timbres for Gordon's *Instrument Timbre Preference Test* are: A - Flute; B – Clarinet; C - Saxophone and Horn; D - Oboe, English Horn, and Bassoon; E - Trumpet and Cornet; F - Trombone, Baritone, and Horn; G-Tuba.

Gordon, a preference for a timbre exists if a person selects a specific timbre more than nine times. Conversely, a non-preference for a timbre exists if a person selects a timbre less than three times. For example, Timbre F selected more than nine times would indicate a preference for the trombone, euphonium, or horn; however, Timbre A, selected only two times, would indicate a non-preference for flute.

Gordon (1984) reported the reliability and validity of the *ITPT* in the test manual for the *ITPT* and supported these results with statistical analyses from several studies provided with the test kit. Reliability was established using students within three elementary schools enrolled in grades 4-6. Mean reliability estimates ranged from $r = .69$ to $r = .80$ ($N = 642$). Gordon supported the findings by reiterating his beliefs that these reliability estimates are based on a maximum of twelve selections per timbre. In addition, criterion validity and predictive validity were both addressed in the test manual. Criterion validity was assessed by playing and re-playing a recording of the seven timbres for two groups, then asking the participants to label the timbre best associated with a specific band instrument timbre. Most timbres were associated with more than one instrument; therefore, adjustments were made and timbres C (saxophone and horn), D (oboe, English horn, and bassoon), and F (trombone, baritone, and horn) were associated with multiple band instruments. Multiple instrument associations are justified by Gordon because of increased choices for the students, meaning that a timbre that represents

more than one instrument may provide more options for the beginning band student. Predictive validity of the *ITPT* was examined through a series of longitudinal studies (Gordon, 1986; Gordon, 1991).

Reliability and Validity

While the reliability and validity of the *ITPT* have been well documented by Gordon (Gordon, 1986; Gordon, 1991), other researchers have examined the reliability and validity of the *ITPT* (Rideout, 1988; Schmidt & Lewis, 1988; Weaver, 1987; Williams, 1996). Rideout (1988) studied a group of 152 sixth-grade beginning-band students to determine whether matching students to their timbre preferences had an effect on performance achievement. No significant differences were observed regarding the congruence of timbre preference and achievement or retention.

Schmidt and Lewis (1988) designed a series of studies to assess the reliability and criterion validity of Gordon's *ITPT*. Their research questions were directed toward the use of synthesized sounds and whether these were effective in determining a timbre preference as claimed by Gordon (1984). Subjects (*N* = 459) were undergraduate non-music majors, undergraduate and graduate music majors, and music faculty. Schmidt and Lewis found that criterion validity was only supported for timbres A (flute), B (clarinet, and E (trumpet), while the test-retest reliability was confirmed for timbres A (flute) and G (tuba). However, Gordon (1984) claims that the options of instrument

identification allows directors to provide flexible choices of instruments to prospective students as well as increasing the possibility that timbre preference is matched during the instrument selection process.

Studies Employing the ITPT

Although the reliability and validity of Gordon's *ITPT* has received critiques from other researchers, the *ITPT* has been employed as an assessment tool in numerous studies (Cutietta & Foustalierarki, 1990; Hudson, 2004; Rideout & Clinton, 1987; Rideout, 1988). Hudson (2004) utilized the *ITPT* to examine the timbre preferences of 109 beginning-band students to determine if there was a relationship between personality traits, as measured by Cattell's *Children's Personality Questionnaire* (*CPQ*), and timbre preferences. Hudson found significant relationships between instrument choice and the following factors as defined by Cattell: introversion/extraversion, tender-mindedness/tough-mindedness, and tough poise. Furthermore, Hudson found significant relationships between six timbres and specific personality traits, as measured by the *CPQ*. Timbre preference A (flute) was significantly related to tender-mindedness, obedience, soberness, and independence. Timbre C (saxophone and horn) was significantly related to emotional stability, vigorousness, self-assuredness, and individual's level of emotional control, and lower anxiety. Timbre D (oboe, English horn and bassoon) as significantly related to tender-

mindedness, excitability, soberness, and guardedness. Timbre E (trumpet) was significantly related to undisciplined self-conflict. Timbre F (trombone, baritone, and horn) was significantly related to dominance, enthusiasm, tough-mindedness, and tough poise. Finally, Timbre G (tuba) was significantly related to dominance enthusiasm, and tender-mindedness. Hudson also used students who had recently experienced the recruiting and instrument selection process, which is contrary to other similar studies where researchers utilized subjects who were older. However, the small number of subjects, limited variety of instruments, and regional constraints prevented Hudson from generalizing beyond the scope of his sample.

Regardless of controversy surrounding Gordon's *ITPT*, the test has maintained a prominent place in the music research arena, primarily in the area of timbre preference. When designing a study that involves measuring the timbre preference of subjects, the *ITPT* is the most widely used testing instrument because it is the only test of its kind (Lehman, 1994). Furthermore, most of the research regarding timbre preference utilizes the *ITPT* (Johnson & Stewart, 2004). While there are questions regarding the reliability and validity of the *ITPT* (Rideout, 1988; Schmidt & Lewis, 1988; Weaver, 1987; Williams, 1996), Gordon has supported the value of his test with statistical data from his longitudinal studies (Gordon, 1986; Gordon, 1991).

Summary

A review of related literature reveals that a relationship between personality and musicians or elements of music is prevalent. Kemp (1981c), Wubbenhorst (1994), and other researchers have found the personality trait of introversion to be most visibly significant among advanced and professional musicians. Furthermore, researchers have attempted to determine whether a relationship exists between personality and music instrument selection for beginning-band students. However, most researchers working in the areas of personality have focused exclusively on music students who are in college, high school, or middle school. Few studies have been designed to examine a cross-section of students ranging from beginning-band students to high-school seniors. Therefore, the current study was designed to include students from the beginning band through the twelfth grade.

Music instrument preference has been examined by researchers who have focused on the instrumental music recruiting process for beginning-band students, culminating in attempts toward achieving appropriate selection and matching of instruments as related with a variety of student profiles. Researchers have determined that secondary-school band directors can influence prospective beginning-band students' instrument selections by their physical presence as well as by the way they present and introduce instruments to students at the time when choices are being made. Personality, as associated with instrument choice, and timbre preference have

been examined by music researchers (Cutietta & McAllister, 1997; Hudson, 2004; Kemp, 1981c), but this area of study needs to be explored to a much greater extent in order to achieve a better understanding of student personality type as associated with timbre preference which may be beneficial for students' instrument selections. However, gender stereotyping and its role in the secondary music ensemble continues to be an issue in instrumental music education. While Abeles and Porter (1978) were the first known published researchers to investigate the phenomenon of gender stereotyping as associated with music instruments, researchers have attempted to identify ways to reduce the effect of gender stereotyping in the public school band (Bruce & Kemp, 1993). Societal and environmental factors such as peers, band directors, and parents continue to affect beginning-band students' selections of instruments, but the extent or manner of effects are not yet completely defined in the current research literature.

Timbre preference is a topic of interest in terms of its predictive ability on instrument selection, musical achievement, and retention in secondary-school instrumental music ensembles (Gordon, 1984). However, few researchers have attempted to correlate personality traits with timbre preference. Researchers continue to question the reliability and validity of the *ITPT*, but according to Lehman (1994), the *ITPT* is the "only one of its kind" (p. 6). Therefore, no other published test is available to accurately assess timbre preference within the context of music instrument selection. Gordon

(1984) supports his premise of providing quantifiable and observable preferences that lead to choices for students through the use of synthesized sound samples. Since Gordon does not provide test norms for the *ITPT*, the test is age appropriate for the target population of the current study, ages 10-18.

The current study was designed to address questions about the existence of a relationship between personality and instrument timbre preference, thus bridging gaps of disagreement and ambiguity currently existing in the literature. Data were collected from subjects ranging from 5th grade through high school. The broad age range of the subjects is expected to provide viable applications for examining the relationship of personality and timbre preference among students from elementary school through secondary school instrumental music ensembles. Descriptive statistics were utilized to create a profile of the students in the current study and provide foundations for subsequent analysis that covers a cross-section of gender, age, and grade level. This multi-dimensional perspective is designed to present fresh and revealing information about the function of personality and timbre preference while retaining a dimension of comparative flavor within the current literature.

CHAPTER III

PROCEDURES

Purpose

The purpose of the current study was to determine if a relationship existed between specific personality traits and instrument timbre preference among public school music students performing in secondary school instrumental music ensembles. Secondary questions were associated with matching students with their timbre preference(s), gender stereotyping, and students' instrument selections. To serve band directors in their development of the instrumental music recruiting process, the primary research objective was focused on determining if a relationship existed between specific personality traits and timbre preference. Thus, continuing to investigate possible relationships between a student's personality and timbre preference may support what Kemp (1981c) described as temperamentally matching a student to the correct instrument. Defining this relationship to a greater extent would also allow band directors to examine Gordon's theory of matching students' timbre preference with their instrument of study. Comparing results of the current study to both Kemp's and Gordon's (1984) theories could improve the accuracy by which students are guided toward instrument selection in the formative years of their instrumental music education.

Assessment Instruments

The current section contains an overview of the measurement instruments utilized in the current study. The data collection procedure of the current study contained three parts: a demographics questionnaire, Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick, and Wilburn's (2003) *Adolescent Personal Style Inventory* (*APSI*), and Gordon's (1984) *Instrument Timbre Preference Test* (*ITPT*). A thorough description and full disclosure of validity and reliability estimates for these instruments as well as the instruments' development are presented in Chapter II.

Demographics

The demographics questionnaire was researcher generated but modeled after a template provided by the *Survey Share Online Survey Tool*.[1] Information regarding gender, age, grade level, school, instrument, ethnicity, enrollment in private lessons, parental influence, seating rank in instrumental ensemble sections, and other relevant factors were collected from the questionnaire and used to create a profile of the students participating in the current study.

[1] http://www.surveyshare.com/templates/asicdemographics.html

Personality Assessment

Personality was assessed using Resource Associates' *Adolescent Personal Style Inventory* (*APSI*) (Lounsbury, et al., 2003), an assessment instrument based on the *Five Factor Model* (*FFM*)[2] and created for purposes of determining individual levels of personality trait exhibition of adolescents, ages 10-18, in five defined areas: extraversion, agreeableness, conscientiousness, emotional stability, and openness (definitions of these five traits are located in Chapter I). The *APSI* provides a personality profile that is valid, reliable, and succinct. A 5-point Likert-type scale is used in the inventory to determine the extent to which the five personality traits are exhibited by participants responding to 45 age-appropriate statements (nine for each trait) listed on the answer sheet. Reliability and validity of the *APSI* were established through a series of eight studies conducted by Lounsbury, et al. (2003). Criterion-related, construct, and known-group validities were established resulting in reliability estimates ranging from $r = .80$ to $r = .85$.

Timbre Preference

Timbre preference was assessed using Gordon's *Instrument Timbre Preference Test (ITPT)*.[3] Gordon created seven timbres to represent instruments typically present in public school bands. Each timbre was paired

[2] The *Five Factor Model* has been a landmark in psychological trait assessment for many years and recognized among psychologists and researchers as a model for similar test instruments. A full description is presented in Chapter II.
[3] Information regarding the reliability and validity of the *ITPT* is located in Chapter II.

with every other timbre twice, thus producing a total of 42 items. The frequency of responses for each timbre was tabulated and, according to Gordon, students who prefer a timbre more than nine times exhibit a preference for that specific timbre. Conversely, students who prefer a timbre less than three times have no preference for that particular timbre. For example, Timbre A selected more than nine times would indicate a preference for the flute; however, Timbre F, selected only two times, would indicate a non-preference for trombone, euphonium, or horn. [4]

While researchers have questioned Gordon's criterion validity as well as the reliability of the *ITPT*, he has conducted extensive research that supports the reliability and validity of the *ITPT* (Gordon, 1984, 1991). Mean reliability estimates reported in the test manual range from $r = .69$ to $r = .80$, derived from a sample consisting of 642 students enrolled in grades third through eighth in the Philadelphia area. Criterion validity was established by a test re-test method and by employing professional musicians and music educators who listened to the seven timbres and assigned a specific band instrument to each timbre. The *ITPT* remains the only published test of its kind (Lehman, 1996) and is widely used in research (Johnson & Stewart, 2004). The demographics questionnaire, the *APSI*, and the *ITPT* were

[4] Timbres for Gordon's *Instrument Timbre Preference Test* are: A - Flute; B - Clarinet; C - Saxophone and Horn; D - Oboe, English Horn, and Bassoon; E - Trumpet and Cornet; F - Trombone, Baritone, and Horn; G- Tuba.

administered in succession to achieve efficiency in testing time (see Appendix F, G, and H).

Population Identification and Selection of the Current Study

Participants

Participants (*N* = 624) were students in grades 5-12 enrolled in K-12 public school districts in a southwestern state.[5] Schools were selected for the study as stratified on an urban or rural classification scheme in order to accurately reflect the population of a geographical location from which the current sample was selected. Urban areas were chosen as exclusion criteria because their clearly defined boundaries were reported in the United States' 2000 census, which does not employ terms such as metropolitan or suburban. Therefore, the terms metropolitan and suburban were not utilized in the current study. According to the 2000 census (http://www.census.gov/geo/www/ua/ua_2k.html), four defined urban areas (UAs) currently exist in the southwestern state. All school districts within these UAs were considered urban while the remainder of the districts within the state was considered rural as defined by the United States Census Bureau.[6]

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[5] Fifth graders were utilized in the current study and classified as secondary-school students because they were taught by the middle-school and high-school band directors and met band five days a week for 50 minutes per day. Therefore, the fifth graders were included as participants in the current study.

[6] Based on definitions provided by the United States Census Bureau (n.d.), only urban areas were used as exclusion criteria for rural schools, because some rural school districts are located in an area that has a large enough population density to be considered an urban center. However, these urban centers may be classified as both a rural community and an urban center; therefore, for purposes of the current study, all areas not considered an urban area were classified as rural.

Total school enrollment, K-12, for the southwestern state was reported to be 633,006 students as reported by the State Department of Education of the southwestern state in August of 2008. Of the total Average Daily Attendance (ADA), the urban centers accounted for 306,942 students in 26 school districts, or approximately 48.5% of the ADA. The remaining 403 rural school districts reported a population of 326,064 students, or 51.5% of the state-wide ADA. Therefore, the prospective school districts were selected from a population respectively representing a proportion equivalent to that of urban and rural schools based on the districts' ADA as reported to the State Department of Education (http://sde.state.ok.us/Services/Data/statcard.html).

Once population considerations were reviewed, qualifying prospective school districts were examined. Inclusion assessment criteria for the current study were willingness to participate, robust enrollment, convenient access to the school and band directors, and convenient access for the researcher. Once individual schools were identified, participants were selected from students enrolled in beginning through twelfth grade bands as determined by willingness to participate in the study. Therefore, participating school districts were selected, as described above, ultimately using criteria based on four factors: locale (urban or rural), enrollment, an established secondary-school music program, and convenient access required for data collection. Thus, the population in the current study was defined as eleven schools (2 elementary,

5 middle schools, and 4 high schools) within four school districts in the southwestern state.

The current study was conducted utilizing a systematic criterion-based selection process while also expediting the testing and data collection procedures by geographically providing a sample of convenience. Furthermore, because the criteria used for selection were primarily based on urban and rural classifications as well as the fact that school districts and schools were respectively selected on the basis of previously-stated criteria, the students who were administered the tests became participants of consequence. While ethnicity has not been examined in any great detail in previous published research, the current study was designed with an attempt to control for this demographic factor. However, due to the purposive selection techniques, ethnicity was an issue that could not completely be controlled.

Band directors currently teaching at the selected schools were contacted by the researcher about their willingness to participate in the current study. Once interest was developed, superintendents of schools for the selected districts were contacted to obtain permission to conduct the study within the school district. Site principals were subsequently contacted, as appropriate, within each school district for permission to conduct the

current study in their respective schools. Letters of consent were attained and filed for Institutional Review Board (IRB) approval.

Procedures

Once permission was granted at each site by the band directors and the principals, an Institutional Review Board application and protocol were completed, filed, and approved (see Appendix A). Collection dates were then established with the appropriate personnel at each school. To ensure reliability and standardization, the researcher traveled to all school sites for purposes of test administration, which was conducted during band classes without interruption of daily class schedules. Prior to the site visits for testing, the researcher delivered informed consent forms electronically to the band directors at the participating sites for distribution to the prospective participants (see Appendix B). E-mail communications were sent to participating schools during the period between delivery of the informed consent forms and testing, reminding the directors to collect informed consent forms and to obtain approximate return numbers to ensure that the correct number of test materials were prepared and available. When arriving on the day of testing, the researcher reviewed the completed informed consent forms and returned them to the students for submission along with their assent forms ensuring that no student participated in the study without providing their assent and parental consent (see Appendix B and C).

Participants were enrolled in intact instrumental music classes. Elementary- and middle-school participants were band students currently enrolled in classes experiencing their first year of instrumental music study or an advanced instrumental ensemble. High school participants were band members currently enrolled in secondary school instrumental music ensembles. Participants were selected from instrumental music programs ranging in grade level from fifth-grade students to high school seniors, thus providing controls for recruiting practices and style of teaching across the grade levels of school music ensembles in which students typically participate. Controls for teaching style and recruiting practices were addressed by ensuring all districts provided intact music programs and employed music teachers who taught, or team-taught, band classes across all grade levels for students who participated in the current study. Therefore, a majority of the participants in the study were exposed to the same teaching styles and recruiting practices for the duration of their secondary school music ensemble experience, which ultimately provided additional controls for the study.

Testing Procedures

The testing process for the study included the administration of a demographics questionnaire, the *APSI*, and the *ITPT* to participants in the respective music ensembles and classes at each school. The approximate

time for the administration procedures was thirty-five minutes; the demographics questionnaire required approximately 4 minutes, the *APSI* 10-15 minutes, and the *ITPT* 20 minutes. The remaining class time was consumed with collecting assent forms, distributing and collecting test materials, and providing brief information about each test and administrative instructions. Test packets, including all test answer sheets, were pre-numbered to ensure anonymity of the participants. Prepared, standardized scripts of test procedures and instructions were read to the participants for the demographics questionnaire, the *APSI*, and the *ITPT*, whereby permission was granted for the test process to begin upon the completion of each script (see Appendix I). Following the completion of the testing procedure, the materials were collected and students were dismissed (Testing instruments are located in Appendixes F, G, and H).

Analysis and Reporting

SPSS 16.0 was used for all data analysis in the current study. Demographic information was recorded; however, personality traits and timbre preference scores were the primary focus of the analysis. A profile of the participants was created from the demographic information provided by the questionnaire. Relationships of specific personality traits and instrument timbre preference were determined through utilization of the participants' scores on Resource Associates' *Adolescent Personal Style Inventory* (*APSI*)

(Lounsbury, et al., 2003) and Gordon's (1984) *Instrument Timbre Preference Test* (*ITPT*). The *APSI* required a response to 45 statements on a 5-point Likert-type scale regarding the extent to which the students classified themselves within each of the five personality traits: agreeableness, conscientiousness, extraversion, emotional stability, and openness. The participants' scores for each statement were then classified according to the respective traits. The nine responses for each factor, ranging 1-5, were averaged to obtain the five mean scores for each personality trait. Therefore, each participant's personality profile consisted of five scores, one for each personality trait. In Gordon's (1984) *ITPT,* participants recorded their choice for specific timbres by indicating preferences among 42 paired timbres. The rate by which students selected each timbre was summed to determine whether a preference (or non-preference) existed. According to Gordon's theory, if a student chose a specific timbre more than nine times, a preference for that timbre existed.

Following administration of the tests, descriptive statistics were run to establish a profile for the participants in the current study, and information from the demographics questionnaire that was of direct relevance to the participants' profiles was selectively extracted. Descriptive statistics obtained from the demographics questionnaire included sex, age, grade, experience, instrument choice, reasons for choosing their current instrument, and

enjoyment of playing their current instrument. A multiple linear regression was used to analyze personality traits and timbre preferences to determine whether a predictive relationship existed between these two variables.

Because of the large number of test scores, data entry and scorer reliability were estimated by randomly selecting 26 tests (2 from each administration file or 4.2% of the participants) for comparison with the original data set.[7] Since Resource Associates was utilized to accurately machine score the *APSI* test, all results from the *APSI* were entered into a separate spreadsheet. Therefore, two reliability estimates were obtained. A scorer and data-entry reliability of $r = .99$ was achieved for the scoring and data entry of the demographics questionnaire and the *ITPT*. A data-entry reliability coefficient of $r = .99$ was achieved for the tabulation of the student responses on the *APSI*. Based on the current literature regarding the *APSI*, scorer reliability for personality traits was assumed. Results obtained from the data collection process are reported in Chapter IV. Conclusions, a discussion of results, and implications for music education are presented in Chapter V.

[7] There were 13 test administration files corresponding with the 11 sites due to two bands at one site and a large response rate from two grade levels at another site thus providing the need to randomly select files from the 13 files. Furthermore, 2 tests represented approximately 5% of total from each file thus resulting in a grand total of 26 tests or 4.2% of the participants.

CHAPTER IV

RESULTS

Foundations of the Current Study

Purpose Statement

The purpose of the current study was to determine if a relationship existed between specific personality traits and instrument timbre preference among public school music students performing in secondary school instrumental music ensembles. Secondary objectives studied were associated with instrument selection of participants, matching participants to their timbre preference(s), and gender stereotyping. Determining whether a relationship existed between specific personality traits and timbre preference is intended to serve secondary school instrumental music teachers in their ongoing improvement of the instrumental music recruiting process. Thus, continuing to define the relationship between a student's personality and timbre preference may support Kemp's (1981a) notion of correctly fitting students to an instrument according to their temperament. Defining the relationship further would also allow researchers to examine Gordon's theory of matching a student's timbre preference with their instrument of study. Therefore, the researcher collected and analyzed data on the basis of the following research questions:

Primary Research Question

1. Does a relationship exist between a student's personality traits, timbre preference, and association with specific instruments?

Secondary Research Questions

1. Is a student's preference for a specific timbre congruent with their choice of instrument?

2. Based on a cross-sectional sample across all ages involved in the study, does the ratio of participants playing instruments congruent with their specific timbre preference versus participants playing instruments incongruent with their specific timbre preference increase as participants remain enrolled in instrumental music education?

3. Is gender stereotyping, as compared to music instrument selection observable in the public school instrumental music ensemble? If so, are gender and timbre preference related? Furthermore, how does gender and instrument selection load into a regression model?

Descriptions of Testing Instruments

Data Collection Instruments

The data collection procedure of the current study contained three parts: a demographics questionnaire, the Resource Associates' *Adolescent Personal Style Inventory* (*APSI*) (Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick, and Wilburn, 2003), and Gordon's (1984) *Instrument Timbre Preference Test* (*ITPT*). The demographics questionnaire was researcher generated but modeled after a template provided by the *Survey*

Share Online Survey Tool.[1] Information regarding gender, age, grade, school, instrument, ethnicity, enrollment in private lessons, parental influence, seating rank in instrumental ensemble sections, and other relevant factors were collected from the questionnaire.

Personality was assessed using Resource Associates' *Adolescent Personal Style Inventory* (*APSI*), an assessment instrument created for purposes of determining the extent of personality trait exhibition of adolescents ages 10-18 in five defined areas: agreeableness, conscientiousness, emotional stability, extraversion, and openness (see Chapter I). The *APSI* provides a personality profile that is valid, reliable, and succinct. A 5-point Likert-type scale is used to determine the level of the five specific personality traits exhibited by the participants responding to 45 age-appropriate statements listed on the answer sheet. Lounsbury, et al. (2003) designed and conducted a series of eight studies to establish both reliability and validity of the *APSI.* Criterion-related, construct, and known-group validities were established and reliability estimates ranged from $r = .80$ to $r = .85$. The demographics questionnaire, the *APSI*, and *ITPT* were administered in succession to achieve efficiency in testing time (see Appendixes F, G and H).

[1] http://www.surveyshare.com/templates/asicdemographics.html

Timbre preference was assessed using Gordon's *Instrument Timbre Preference Test* (*ITPT*).[2] Gordon created seven timbres to represent instruments typically present in public school bands. Each timbre is paired with all other timbres twice for a total of 42 items. The frequency of responses for each timbre was tabulated and, according to Gordon, students who prefer a timbre more than nine times exhibit a preference for that specific timbre. Conversely, students who prefer a timbre less than three times have a non-preference for that particular timbre. For example, Timbre A selected more than nine times would indicate a preference for the flute; however, Timbre F, selected only two times, would indicate a non-preference for trombone, euphonium, or horn.[3]

Reliability of Test Scoring and Data Entry

Due to the number of participants in the current study a test-retest reliability analysis to ensure the accuracy of test scoring and data entry was performed before the onset of data analysis. There were eleven test sites in the current study and because of the split between bands during the spring semester as well as a large response rate at one site, a total of thirteen site visits were scheduled and tests administered. Therefore, the data-entry reliability was initiated by randomly selecting two tests from each site's

[2] Information regarding the reliability and validity of the *ITPT* is located in Chapter II.
[3] Timbres for Gordon's *Instrument Timbre Preference Test* are: A- Flute; B- Clarinet; C- Saxophone and Horn; D- Double Reeds; E- Trumpet and Cornet; F- Trombone, Baritone, and Horn; G-Tuba.

respective file, thus arriving at a grand total of twenty-six tests, or 4.2% of the participants. Each test score was hand-entered into a separate data file. Because of the nature of the test administration, demographic and timbre preference information was entered in one file and the personality scores were entered into a separate file; therefore, two reliability estimates were obtained. The analyses provided a reliability estimate for the data entry and scoring of the demographic information and *ITPT* of $r = .99$. Resource Associates' processed all analyses regarding the *APSI*; therefore, the reliability estimate for data entry of the *APSI* was $r = .99$.

The current chapter is divided into three sections. A description of the demographic distribution of the current sample is presented in the first section. Research questions are addressed in the second, and the final section presents a convergence of the research findings from the first two sections to provide a descriptive and tabular culmination of the data, analyses, and results into a predictive model.

Demographics

For purposes of covering a diverse representation of participants in the study, subject selection was comprised of urban and rural school systems. The urban school system is identified by schools 1 through 3 in Table 4.1 and the rural schools are represented by schools 4 through 11 in the same table. The sample was selected using a criterion of the Average

Daily Attendance (ADA) as reported to the State Department of Education by the respective districts for the southwestern state. The rural schools' attendance figures were slightly larger than the urban (51% for rural to 49% for urban) according to the State Department of Education's records. Districts were then selected according to reported enrollment to be congruent with this ratio as well as accounting for distance concerns and willingness of band directors to participate in the current study. Additional details of school participation are shown in Table 4.1.

Table 4.1
Distribution of Student Population: School (Number-School-Urban/Rural)

School	Frequency	Percent	Valid Percent*	Cumulative Percent
1-HS-U	91	14.6	14.6	14.6
2-MS-U	36	5.8	5.8	20.4
3-MS-U	71	11.4	11.4	31.7
4-HS-R	32	5.1	5.1	36.9
5-MS-R	59	9.5	9.5	46.3
6-ES-R	24	3.8	3.8	50.2
7-HS-R	46	7.4	7.4	57.5
8-MS-R	63	10.1	10.1	67.6
9-HS-R	50	8.0	8.0	75.6
10-MS-R	58	9.3	9.3	84.9
11-ES-R	94	15.1	15.1	100.0
Total	624	100.0	100.0	

*Valid percent accounts for missing values in tables.

The participants (*N* = 624) for the current study were students in grades 5-12 enrolled in K-12 public schools in a southwestern state. The ethnic distribution of the participants was primarily White/Caucasian (76.3%). Minorities represented in the current sample were African American, Native American, Asian American, and Hispanic. A detailed description of the ethnicities of the current sample is included in Table 4.2. Participants were 44.7% male and 54.6 % female with 0.7% of the participants not responding. The age range of participants in grades 5-12 was from 10 years of age to 18 years of age. Information regarding the distribution of the participants with respect to gender, age, and grade are included in Tables 4.2 through 4.5.

Table 4.2
Distribution of Student Population: Ethnicity

Ethnicity	Frequency	Percent	Valid Percent	Cumulative Percent
N/A	3	.5	.5	.5
African American	15	2.4	2.4	2.9
Asian American	26	4.2	4.2	7.1
American Indian	43	6.9	6.9	13.9
Hispanic	35	5.6	5.6	19.6
Caucasian	476	76.3	76.3	95.8
Other	26	4.2	4.2	100.0
Total	624	100.0	100.0	

Table 4.3
Distribution of Student Population: Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	279	44.7	44.7	44.7
Female	341	54.6	54.6	99.3
N/A	4	.6	.7	100.0
Total	624	100.0	100.0	

Table 4.4
Distribution of Student Population: Age

Age	Frequency	Percent	Valid Percent	Cumulative Percent
0	3	.5	.5	.5
10	21	3.4	3.4	3.8
11	83	13.3	13.3	17.1
12	111	17.8	17.8	34.9
13	118	18.9	18.9	53.8
14	95	15.2	15.2	69.1
15	65	10.4	10.4	79.5
16	56	9.0	9.0	88.5
17	46	7.4	7.4	95.8
18	26	4.2	4.2	100.0
Total	624	100.0	100.0	

Table 4.5
Distribution of Student Population: Grade Level

Grade	Frequency	Percent	Valid Percent	Cumulative Percent
5	68	10.9	10.9	10.9
6	105	16.8	16.8	27.7
7	135	21.6	21.6	49.4
8	97	15.5	15.5	64.9
9	73	11.7	11.7	76.6
10	49	7.9	7.9	84.5
11	45	7.2	7.2	91.7
12	52	8.3	8.3	100.0
Total	624	100.0	100.0	

Participants consisted of a small contingent representing elementary-age students and the remainder of the participants was evenly distributed between middle-school and high-school students. The small percentage of elementary participants was expected, as the fifth- and sixth-grade classes in one of the school districts were housed in an elementary setting.[4] Grade level percentages were 18.4%, 35.1%, and 46.5%, respectively. The grade levels for beginning instrumentalists ranged from fifth grade to seventh grade depending on the district; therefore, elementary participants were included in the current study because of the traditional onset of beginning instruction for instrumentalists. Beginning instrumentalists, or students in their first year of

[4] Although there were 5th graders participating in the current study, all were beginning band students participating in band every day for 50 minutes per day and taught by the band directors from the middle school and high school. Therefore, the 5th graders were considered to be appropriate participants.

band class, comprised 26.6% of the sample. A detailed distribution is contained in Tables 4.6 through 4.7.

Table 4.6
Distribution of Student Population: Middle School/High School/Elementary

School	Frequency	Percent	Valid Percent	Cumulative Percent
MS	290	46.5	46.5	46.5
HS	219	35.1	35.1	81.6
ES	115	18.4	18.4	100.0
Total	624	100.0	100.0	

Table 4.7
Distribution of Student Population: Beginning/Advanced

Level	Frequency	Percent	Valid Percent	Cumulative Percent
Beginning	166	26.6	26.6	26.6
Advanced	458	73.4	73.4	100.0
Total	624	100.0	100.0	

Woodwind players accounted for 51.6% of the participants in the current study, while 37.3% were brass players, and the remaining 10.4% were percussionists. Four participants (0.7%) failed to record an instrument on which they performed. Within the woodwinds category, a majority of the participants played flute or clarinet and a relatively small number played saxophone. Other woodwind instruments represented were oboe, bassoon, and bass clarinet. The brass family was primarily represented by trumpet or

trombone. Other brass instruments represented included horn, euphonium/baritone, and tuba. The distribution of the instrument families and individual instruments are located in Tables 4.8 and 4.9.

Table 4.8
Distribution of Student Population: Woodwinds/Brass/Percussion

Family	Frequency	Percent	Valid Percent	Cumulative Percent
Woodwind	322	51.6	51.9	51.9
Brass	233	37.3	37.6	89.5
Percussion	65	10.4	10.5	100.0
Missing Values	4	0.6		
Total	624	100.0		

Table 4.9
Distribution of Student Population: Instrument

Instrument	Frequency	Percent	Valid Percent	Cumulative Percent
No response	4	.6	.6	.6
Flute	101	16.2	16.2	16.8
Oboe	2	.3	.3	17.1
Clarinet	148	23.7	23.7	40.9
Bass Clarinet	20	3.2	3.2	44.1
Saxophone	51	8.2	8.2	52.2
Horn	30	4.8	4.8	57.1
Trumpet	88	14.1	14.1	71.2
Trombone	63	10.1	10.1	81.2
Euphonium	27	4.3	4.3	85.6
Tuba	23	3.7	3.7	89.3
Percussion	65	10.4	10.4	99.7
Bassoon	2	.3	.3	100.0
Total	624	100.0	100.0	

The social and circumstantial distribution of the participants was derived from the demographics questionnaire and classified by participant. The principal classification categories considered to be of greatest relevance were current enrollment in private instruction, parents playing an instrument, relatives playing the same instrument as the student, and whether the participants' friends were also band members. Only 10.3% of the current sample were enrolled in private lessons. The duration of private instrument lessons for the participants ranged from three months to seven years. A

majority of participants (64.1%) also reported that their parents played an instrument, with 40.1% of the participants reporting a relative playing an instrument of the same instrument family. Sixty-six percent of the participants reported that most of their friends also were enrolled in band. Specific distributions of each factor are included in Tables 4.10 through 4.13.

Table 4.10
Distribution of Student Population: Currently Taking Private Lessons

Private Lessons?	Frequency	Percent	Valid Percent	Cumulative Percent
N/A	3	.5	.5	.5
Yes	64	10.3	10.3	10.7
No	557	89.3	89.3	100.0
Total	624	100.0	100.0	

Table 4.11
Distribution of Student Population: Do Parents Play an Instrument?

Parents Play?	Frequency	Percent	Valid Percent	Cumulative Percent
N/A	3	.5	.5	.5
Yes	400	64.1	64.1	64.6
No	221	35.4	35.4	100.0
Total	624	100.0	100.0	

Table 4.12
Distribution of Student Population: Relative Playing the Same Instrument

Relatives same?	Frequency	Percent	Valid Percent	Cumulative Percent
N/A	4	.6	.6	.6
Yes	250	40.1	40.1	40.7
No	370	59.3	59.3	100.0
Total	624	100.0	100.0	

Table 4.13
Distribution of Student Population: Friends in Band

Friends in Band	Frequency	Percent	Valid Percent	Cumulative Percent
N/A	4	.6	.6	.6
Yes	413	66.2	66.2	66.8
No	207	33.2	33.2	100.0
Total	624	100.0	100.0	

Question 18 of the demographics questionnaire revealed the extent to which specific factors influenced a student's decision to play a certain instrument. Factors measured were consistent with Fortney, Boyle, and DeCarbo (1993), and were identified as sound, band director, parents, friends, or other. Additional responses ranged from ease of playing an instrument to program needs. A full list of other factors is included in Appendix J. Participants were prompted to indicate on a 5-point Likert-type scale the level to which each factor affected their decision to choose their

current instrument. Choosing “1” indicated no affect and choosing “5” indicated the greatest affect possible. Sound was reported as the most influential factor in choosing an instrument (*M* = 3.30). The other factors in order of the extent of influence on participants’ decisions were parents (*M* = 2.84), band director (*M* = 2.67), friends (*M* = 2.37), and other (*M* = 3.52). Each student’s enjoyment was then measured by using the 5-point Likert-type scale, with “1” indicating no enjoyment and “5” expressing extreme enjoyment. Participants reported an enjoyment rating slightly above a moderate level (*M* = 4.23). All descriptive statistics regarding the reporting of factors and enjoyment are shown in Table 4.14.

Table 4.14
*Statistics Regarding Reasons for Instrument Choice and Enjoyment**

	Influence - Sound	Influence - Band Director	Influence - Parents	Influence - Friends	Influence - Other	Enjoyment
N	589	589	589	589	339	608
Missing	35	35	35	35	285	16
Mean	3.30	2.67	2.84	2.37	3.52	4.23
SE Mean	.052	.057	.058	.055	.085	.035
Median	3.00	3.00	3.00	2.00	4.00	4.00
Mode	4	1	1	1	5	5
SD	1.256	1.377	1.403	1.342	1.566	.852

*Missing Values were removed from the table above

Primary Research Question Results

Question 1: Relationship Between Personality Traits and Timbre Preference

Question 1 was stated: Does a relationship exist between specific personality traits and timbre preference? Data were analyzed via a multiple regression model to determine the predictive ability and relationship of personality traits and timbre preference as defined by seven timbres labeled A (flute), B (clarinet), C (saxophone and horn), D (oboe, English horn, and bassoon), E (trumpet), F (trombone, baritone, and horn), G (tuba). Significant relationships ($p < .05$) were found regarding specific personality traits and timbres. The amount of variance in the number of choices for timbres accounted for by the personality traits examined (R^2) ranged from 2.5% to 4.6% and significant predictive factors for the number of choices for specific timbres were consistently the traits of openness and extraversion as expressed in Table 4.15. Additional data regarding timbre preference and personality traits can be found in Tables 4.16.1 through 4.23.3.

Table 4.15
Summary of Significant Predictors of Timbre Choice

Timbre[a]	R^2	Regression Significance	Significant Predictors
A	.025	.007	Openness (+)
B	.031	.002	Extraversion (-), Openness (+)
C	.044	.000	Extraversion (-), Openness (+)
D	NS	NS	NS
E	.046	.000	Extraversion (+), Openness (-)
F	.020	.029	Extraversion (+), Openness (-)
G	.025	.008	Extraversion (-), Openness (-)

[a] Timbres for Gordon's *Instrument Timbre Preference Test* are: A - Flute; B – Clarinet; C - Saxophone and Horn; D - Oboe, English Horn, and Bassoon; E - Trumpet and Cornet; F - Trombone, Baritone, and Horn; G-Tuba.

A multiple linear regression was calculated to predict participants' timbre preferences based on personality traits. All traits measured with the *APSI* were examined, which included levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (5, 481) = 2.516, $p < .05$), with an R^2 of .025, where the trait openness, or one's ability to adjust to new ideas, was determined to be a significant predictor of timbre preference. Additional descriptive statistics are presented in Tables 4.16.1 through 4.16.3.

Table 4.16.1
Regression Analysis: Personality Traits and Timbre Preference (R^2)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.160[a]	.025	.015	2.121

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability

Table 4.16.2
Regression Analysis: Personality Traits and Timbre Preference (ANOVA)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	56.587	5	11.317	2.516	.029[ab]
Residual	2163.458	481	4.498		
Total	2220.045	486			

a. Predictors: (Constant), openness, agreeableness, extraversion, conscientiousness, emotional stability
b. Dependent Variable: Timbre Preference

Table 4.16.3
Regression Analysis: Personality Traits and Timbre Preference (Coefficients)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	4.690	1.001		4.686	.000
Agreeableness	.264	.230	.056	1.147	.252
Conscientiousness	.069	.172	.019	.399	.690
Emotional stability	-.222	.166	-.064	-1.338	.182
Extraversion	.057	.163	.017	.352	.725
Openness	-.521	.173	-.145	-3.011	.003[b]

a. Dependent Variable: Timbre Preference 1
b. Significant (p <. 05)

A multiple linear regression was calculated to predict participants' selections of timbre A (flute) based on personality traits. All personality traits measured in the *APSI* were examined, which included levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (5, 618) = 3.228, p < .05), with an R^2 of .025, where the trait openness, or one's ability to adjust to new ideas, was determined to be a significant predictor of Timbre A. Additional descriptive statistics are presented in Tables 4.17.1 through 4.17.3.

Table 4.17.1
Regression Analysis: Personality Traits and Timbre Preference (R^2 Timbre A)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.160[a]	.025	.018	3.313

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability

Table 4.17.2
Regression Analysis: Personality Traits and Timbre Preference (ANOVA Timbre A)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	177.125	5	35.425	3.228	.007[ab]
Residual	6781.849	618	10.974		
Total	6958.974	623			

a. Predictors: (Constant), Openness, Agreeableness, Extraversion, Conscientiousness, Emotional stability

b. Dependent Variable: Number of Preferences for Timbre A

Table 4.17.3
Regression Analysis: Personality Traits and Timbre Preference (Coefficients Timbre A)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	1.950	1.345		1.450	.148
Agreeableness	-.290	.314	-.040	-.926	.355
Conscientiousness	.046	.239	.008	.192	.848
Emotional stability	.292	.226	.055	1.289	.198
Extraversion	.344	.227	.064	1.516	.130
Openness	.681	.244	.121	2.797	.005[b]

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability
b. Significant ($p < .05$)

A multiple linear regression was calculated to predict participants' selections of timbre B (clarinet), based on personality traits. All traits measured with the *APSI* were examined, which included levels of

agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (5, 618) = 3.902, p <.05), with an R^2 of .031, where the traits openness and extraversion were determined to be significant predictors of Timbre B. While the *Beta* loading was positive for the trait of openness, the personality trait of extraversion was found to have a negative loading *Beta* factor. Additional descriptive statistics are presented in Tables 4.18.1 through 4.18.3. [5]

Table 4.18.1
Regression Analysis: Personality Traits and Timbre Preference (R^2 Timbre B)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.175[a]	.031	.023	2.376

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability

Table 4.18.2
Regression Analysis: Personality Traits and Timbre Preference (ANOVA Timbre B)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	110.151	5	22.030	3.902	.002[ab]
Residual	3488.988	618	5.646		
Total	3599.139	623			

a. Dependent Variable: Number of Preferences for Timbre B
b. Significant (p < .05)

[5] The *Beta* coefficient provides the direction of the variable. In the current study, the *Beta* coefficient provides the extent to which a student's choice is altered based on the significant predictors.

Table 4.18.3
Regression Analysis: Personality Traits and Timbre Preference (Coefficients Timbre B)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	8.130	.965		8.427	.000
Agreeableness	-.182	.225	-.035	-.808	.419
Conscientiousness	.125	.171	.031	.727	.468
Emotional stability	.119	.162	.031	.732	.464
Extraversion	-.588	.163	-.151	-3.611	.000[b]
Openness	.380	.175	.093	2.175	.030[b]

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability
b. Significant ($p < .05$)

A multiple linear regression was calculated to predict participants' selections of timbre C (saxophone and horn) based on personality traits. All traits measured with the *APSI* were examined, which included levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (5, 618) = 5.703, p <.05), with an R^2 of .036, where the traits openness and extraversion, or an infatuation with external events, were determined to be significant predictors of Timbre C. While the *Beta* loading was positive for the trait of openness, the personality trait of extraversion was found to have a negative loading *Beta* factor. Additional descriptive statistics are presented in Tables 4.19.1 through 4.19.3.

Table 4.19.1
Regression Analysis: Personality Traits and Timbre Preference (R^2 Timbre C)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.210[a]	.044	.036	2.667

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability

Table 4.19.2
Regression Analysis: Personality Traits and Timbre Preference (ANOVA Timbre C)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	202.812	5	40.562	5.703	.000[ab]
Residual	4395.880	618	7.113		
Total	4598.692	623			

a. Dependent Variable: Number of Preferences for Timbre C
b. Significant ($p < .05$)

Table 4.19.3
Regression Analysis: Personality Traits and Timbre Preference (Coefficients Timbre C)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	9.074	1.083		8.379	.000
Agreeableness	-.055	.252	-.009	-.220	.826
Conscientiousness	-.117	.192	-.025	-.606	.545
Emotional stability	-.041	.182	-.009	-.225	.822
Extraversion	-.855	.183	-.195	-4.679	.000[b]
Openness	.585	.196	.127	2.982	.003[b]

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability
b. Significant beyond the .05 level ($p < .05$)

A multiple linear regression was calculated to predict participants' selections of timbre D (oboe, English horn, and bassoon) based on personality traits. All traits measured with the *APSI* were examined, which included levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. Timbres were labeled A through G and associated with flutes, clarinets, saxophones and horns, double reed instruments, trumpets, trombones/baritones, and tubas, respectively. No significant regression equation was found regarding timbre D. When testing the ability of the five traits to predict a preference for Timbre D, the analysis produced a regression equation that was not significant.

Table 4.20.1
Regression Analysis: Personality Traits and Timbre Preference (R^2 Timbre D)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.099[a]	.010	.002	3.117

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability

Table 4.20.2
Regression Analysis: Personality Traits and Timbre Preference (ANOVA Timbre D)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	59.223	5	11.845	1.219	.299[ab]
Residual	6006.002	618	9.718		
Total	6065.224	623			

a. Predictors: (Constant), Openness, Agreeableness, Extraversion, Conscientiousness, Emotional stability
b. Dependent Variable: Number of Preferences for Tone D

Table 4.20.3
Regression Analysis: Personality Traits and Timbre Preference (Coefficients Timbre D)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	4.315	1.266		3.409	.001
Agreeableness	.005	.295	.001	.017	.987
Conscientiousness	-.185	.225	-.035	-.823	.411
Emotional stability	.213	.213	.043	1.001	.317
Extraversion	.366	.214	.073	1.714	.087
Openness	-.259	.229	-.049	-1.132	.258

a. Predictors: (Constant), Openness, Agreeableness, Extraversion, Conscientiousness, Emotional stability

A multiple linear regression was calculated to predict participants' selections of timbre E (trumpet) based on personality traits. All traits measured with the *APSI* were examined, which included levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (5, 618) = 5.893, p <.05), with an R^2 of .046, where the traits openness and extraversion were determined to be significant predictors of Timbre E. While the *Beta* loading was positive for the trait of extraversion, the personality trait of openness was found to have a negative loading *Beta* factor. Further descriptive statistics are presented in Tables 4.21.1 through 4.21.3.

Table 4.21.1
Regression Analysis: Personality Traits and Timbre Preference (R^2 Timbre E)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.213[a]	.046	.038	2.611

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability

Table 4.21.2
Regression Analysis: Personality Traits and Timbre Preference (ANOVA Timbre E)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	200.832	5	40.166	5.893	.000[ab]
Residual	4212.399	618	6.816		
Total	4413.231	623			

a. Dependent Variable: Number of Preferences for Timbre E
b. Significant ($p < .05$)

Table 4.21.3
Regression Analysis: Personality Traits and Timbre Preference (Coefficients Timbre E)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	2.783	1.060		2.626	.009
Agreeableness	.007	.247	.001	.028	.977
Conscientiousness	.147	.188	.033	.780	.436
Emotional stability	-.136	.178	-.032	-.763	.446
Extraversion	.892	.179	.207	4.982	.000[b]
Openness	-.429	.192	-.095	-2.235	.026[b]

a. Dependent Variable: Number of Preferences for Timbre E
b. Significant beyond the .05 level ($p < .05$)

A multiple linear regression was calculated to predict participants' selections of timbre F (trombone, baritone, and horn) based on personality traits. All traits measured with the *APSI* were examined, which included levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (5, 618) = 2.505, p <.05), with an R^2 of .020, where openness and extraversion were determined to be significant predictors of Timbre F. While the *Beta* loading was positive for the trait of extraversion, the personality trait of openness was found to have a negative loading *Beta* factor. Additional descriptive statistics are presented in Tables 4.22.1 through 4.22.3.

Table 4.22.1
Regression Analysis: Personality Traits and Timbre Preference (R^2 Timbre F)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.141[a]	.020	.012	2.338

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability

Table 4.22.2
Regression Analysis: Personality Traits and Timbre Preference (ANOVA Timbre F)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	68.457	5	13.691	2.505	.029[ab]
Residual	3378.041	618	5.466		
Total	3446.498	623			

a. Dependent Variable: Number of Preferences for Timbre E
b. Significant ($p < .05$)

Table 4.22.3
Regression Analysis: Personality Traits and Timbre Preference (Coefficients Timbre F)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	6.388	.949		6.729	.000
Agreeableness	-.094	.221	-.018	-.424	.672
Conscientiousness	.163	.169	.041	.966	.335
Emotional stability	-.149	.160	-.039	-.930	.353
Extraversion	.354	.160	.093	2.211	.027[b]
Openness	-.461	.172	-.116	-2.679	.008[b]

a. Dependent Variable: Number of Preferences for Timbre E
b. Significant beyond the .05 level ($p < .05$).

A multiple linear regression was calculated to predict participants' selections of timbre G (tuba) based on personality traits. All traits measured with the *APSI* were examined, which included levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (5, 618) = 3.179, p <.05), with an R^2 of .025, where openness, and extraversion were determined to be significant predictors of Timbre G. The *Beta* loadings for both extraversion and openness were negative when predicting the choice of Timbre G. Additional descriptive statistics are presented in Tables 4.23.1 through 4.23.3.

Table 4.23.1
Regression Analysis: Personality Traits and Timbre Preference (R^2 Timbre G)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.158[a]	.025	.017	3.406

a. Predictors: (Constant), openness, agreeableness, conscientiousness, extraversion, emotional stability

Table 4.23.2
Regression Analysis: Personality Traits and Timbre Preference (ANOVA Timbre G)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	184.379	5	36.876	3.179	.008[ab]
Residual	7168.845	618	11.600		
Total	7353.224	623			

a. Dependent Variable: Number of Preferences for Timbre G
b. Significant ($p < .05$)

Table 4.23.3
Regression Analysis: Personality Traits and Timbre Preference (Coefficients Timbre G)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	9.359	1.383		6.768	.000
Agreeableness	.609	.322	.082	1.891	.059
Conscientiousness	-.179	.246	-.031	-.727	.468
Emotional stability	-.298	.233	-.054	-1.282	.200
Extraversion	-.513	.233	-.092	-2.197	.028[b]
Openness	-.497	.250	-.086	-1.985	.048[b]

a. Dependent Variable: Number of Preferences for Timbre G
b. Significant beyond the .05 level ($p < .05$)

Results of Secondary Research Questions

Question 1: The matching of participants' timbre preferences to their choice of instrument.

Question 1 was stated: Is a student's preference for a specific timbre congruent with their choice of instrument? When comparing timbre preferences with participants' actual choices of instruments, student responses from the *ITPT* reveal a majority (65.9%) of the participants were not matched to their timbre preferences or most frequent timbre choices. Participants were separated into four categories: those whose timbre preferences matched their instrument choices, those whose timbre preference did not match their instrument choices, those who exhibited no preference but whose most frequent choice was congruent with their choice

of instrument, and those who exhibited no preference but whose most frequent choice did not match their choice of instrument. Distributions are presented in Table 4.24.

Table 4.24
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	166	26.6	26.8	26.8
No Match	325	52.1	52.4	79.2
No preference, most frequent choice match	43	6.9	6.9	86.1
No preference/no match	86	13.8	13.9	100.0
Missing Values	4	.6		
Total	624	100.0		

Question 2: Ratio of matched to unmatched participants across all grade levels (5-12).

Question 2 was stated: Based on a cross-sectional sample across all ages involved in the study, does the ratio of participants playing instruments congruent with their specific timbre preference versus participants playing instruments incongruent with their specific timbre preference increase as participants continue in instrumental music education? The findings from the study show that elementary band participants (*N* = 115) were placed on instruments matching either their timbre preference or most frequent timbre score in beginning band at a frequency rate of 33.9%. Middle-school participants (*N* = 290) were playing instruments matching their timbre

preferences or most frequent timbre scores at a lower rate of 25.9%. However, the high-school participants (*N* = 219) were playing instruments congruent with their timbre preference, indicated by the most frequent timbre scores were matched between preference scores and instruments they were playing. These participants showed the highest match between timbre choices and the instrument currently playing of any group at 43.4%. The middle school numbers were skewed based on the fact that each district participating in the study starts band at a different grade level. Regardless of the grade level a student begins band instruction, the ratio of participants playing instruments wherein they have a timbre preference or high timbre score appears to increase as matching participants with their timbre preferences is examined across the sample. Additional descriptive statistics are presented in Tables 4.25 through 4.27.

Table 4.25
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: Elementary

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	24	20.9	21.4	21.4
No Match	58	50.4	51.8	73.2
No preference, most frequent choice match	15	13.0	13.4	86.6
No preference/no match	15	13.0	13.4	100.0
Missing Values	3	2.6		
Total	115	100.0		

Table 4.26
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: Middle School

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	55	19.0	19.0	19.0
No Match	160	55.2	55.4	74.4
No preference, most frequent choice match	20	6.9	6.9	81.3
No preference/no match	54	18.6	18.7	100.0
Missing Values	1	.3		
Total	290	100.0		

Table 4.27
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: High School

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	87	39.7	39.7	39.7
No Match	107	48.9	48.9	88.6
No preference, most frequent choice match	8	3.7	3.7	92.2
No preference/no match	17	7.8	7.8	100.0
Missing Values	0	0		
Total	219	100.0		

Following the examination of high-school, middle-school, and elementary-school band students, participants were then categorized as beginning or advanced players. The frequency distribution and ratio of the participants who were matched to their preference or most frequent choice as compared to participants who were not matched to their preference or most frequent choice was examined regarding grade level and experience.

The ratio of participants who played instruments congruent to their timbre preference showed a tendency to increase with respect to age, grade level, and experience from 23.3% to 53.9% from beginning band through graduation from high school. However, due to the cross-sectional nature of the current investigation, generalizability is severely limited. Additional presentation of the ratios of grade level and experience is located in Tables 4.28 through 4.37.

Table 4.28
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 5th Grade Beginners

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	14	20.6	20.6	20.6
No Match	39	57.4	57.4	77.9
No Preference, Most frequent choice match	10	14.7	14.7	92.6
No Preference No match	5	7.4	7.4	100.0
Total	68	100.0	100.0	

Table 4.29
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 6th Grade Beginners

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	3	10.0	10.0	10.0
No Match	12	40.0	40.0	50.0
No Preference, Most frequent choice match	4	13.3	13.3	63.3
No Preference No match	11	36.7	36.7	100.0
Total	30	100.0	100.0	

Table 4.30
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 6th Grade Advanced

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	13	17.3	18.1	18.1
No Match	33	44.0	45.8	63.9
No Preference, Most frequent choice match	10	13.3	13.9	77.8
No Preference No match	16	21.3	22.2	100.0
Total	72	96.0	100.0	
Missing Values	3	4.0		
Total	75	100.0		

Table 4.31
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 7th Grade Beginners

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	12	17.6	17.6	17.6
No Match	43	63.2	63.2	80.9
No Preference, Most frequent choice match	2	2.9	2.9	83.8
No Preference No match	11	16.2	16.2	100.0
Total	68	100.0	100.0	

Table 4.32
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 7th Grade Advanced

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	14	20.9	20.9	20.9
No Match	36	53.7	53.7	74.6
No Preference, Most frequent choice match	2	3.0	3.0	77.6
No Preference No match	15	22.4	22.4	100.0
Total	67	100.0	100.0	

Table 4.33
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 8th Grade Advanced

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	23	23.7	24.0	24.0
No Match	55	56.7	57.3	81.2
No Preference, Most frequent choice match	7	7.2	7.3	88.5
No Preference No match	11	11.3	11.5	100.0
Total	96	99.0	100.0	
Missing Values	1	1.0		
Total	97	100.0		

Table 4.34
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 9th Grade Advanced

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	24	32.9	32.9	32.9
No Match	36	49.3	49.3	82.2
No Preference, Most frequent choice match	3	4.1	4.1	86.3
No Preference, No match	10	13.7	13.7	100.0
Total	73	100.0	100.0	

Table 4.35
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 10th Grade Advanced

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	21	42.9	42.9	42.9
No Match	25	51.0	51.0	93.9
No Preference, No match	3	6.1	6.1	100.0
Total	49	100.0	100.0	

Table 4.36
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 11th Grade Advanced

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	17	37.8	37.8	37.8
No Match	24	53.3	53.3	91.1
No Preference, Most frequent choice match	2	4.4	4.4	95.6
No Preference No match	2	4.4	4.4	100.0
Total	45	100.0	100.0	

Table 4.37
Ratio of Participants Matched with Their Preference to Those Who Were Unmatched: 12th Grade Advanced

	Frequency	Percent	Valid Percent	Cumulative Percent
Match	25	48.1	48.1	48.1
No Match	22	42.3	42.3	90.4
No Preference, Most frequent choice match	3	5.8	5.8	96.2
No Preference No match	2	3.8	3.8	100.0
Total	52	100.0	100.0	

Question 3: Gender Stereotyping, Parts 1 and 2

Question 3 was stated: Is gender stereotyping, as compared to music instrument selection and timbre preference, observable in the public school instrumental music ensemble? If observable, how does gender load into the regression model? Following the application of a chi-square analysis of the current data set regarding gender stereotyping significant results were found indicating that gender and instrument choice as well as gender and timbre preference were not independent factors in the instrument selection process. Tables 4.38 and 4.40 present the results supporting this finding. Therefore, additional multiple linear regression analyses were applied to the current data set to determine whether a relationship also existed between gender and timbre preferences. Significant relationships were found between gender and timbres A, B, F, and G, where seven timbres were defined and labeled as A (flute), B (clarinet), C (saxophone and horn), D (oboe, English horn, and bassoon), E (trumpet), F (trombone, baritone, and horn), G (tuba). Specific information regarding the distribution of instrumentation and the relationship of gender and timbre preference is presented in Tables 4.38 through 4.48.3.

Table 4.38
Distribution of Gender Among Instrumentation

	N/A	Male	Female	Total
N/A	3	1	0	4
Flute	0	9	92	101
Oboe	0	1	1	2
Clarinet	1	35	112	148
Bass Clarinet	0	9	11	20
Saxophone	0	25	26	51
Horn	0	15	15	30
Trumpet	0	59	29	88
Trombone	0	45	18	63
Euphonium/Baritone	0	24	3	27
Tuba	0	20	3	23
Percussion	0	36	29	65
Bassoon	0	0	2	2
Total	4	279	341	624

Table 4.39
Chi-Square Analysis of Gender Distribution: Instrument Choice

	Value	*df*	Asymptomatic Sig. (2-sided)
Pearson Chi-Square	5.08[a]	24	.000[b]
Likelihood Ratio	207.60	24	.000[b]
Linear-by-Linear Association	84.10	1	.000[b]
N of Valid Cases	624.00		

a. 19 cells (48.7%) have expected count less than 5. The minimum expected count is .01.
b. Significant beyond the .05 level ($p < .05$)

Table 4.40
Distribution of Gender Among Timbre Preferences

	Timbre Preference 1								
	0	1	2	3	4	5	6	7	Total
Gender M	59	21	54	39	19	10	16	61	279
F	77	74	95	30	16	12	14	23	341
Total	136	95	149	69	35	22	30	84	620

Table 4.41
Chi-Square Analysis of Gender Distribution: Timbre Preference

	Value	df	Asymptomatic Sig. (2-sided)
Pearson Chi-Square	56.535[a]	7	.000
Likelihood Ratio	58.522	7	.000
Linear-by-Linear Association	33.092	1	.000
Number of Valid Cases	620		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.90.

A linear regression was calculated to predict participants' choices of Timbre A (flute) based on gender. A significant regression equation was found (F (1, 622) = 53.496, p <.05), with an R^2 of .099, where gender was determined to be a significant predictor of choosing Timbre A. Additional descriptive statistics are presented in Tables 4.42.1 through 4.42.3.

Table 4.42.1
Regression Analysis: Gender and Timbre Preference (R^2 Timbre A)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.296[a]	.088	.086	3.195

a. Predictors: (Constant), Gender

Table 4.42.2
Regression Analysis: Gender and Timbre Preference (ANOVA Timbre A)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	610.335	1	610.335	59.797	.000[ab]
Residual	6348.639	622	10.207		
Total	6958.974	623			

a. Dependent Variable: Number of preferences for tone A
b. Significant (p < .05)

Table 4.42.3
Regression Analysis: Gender and Timbre Preference (Coefficients Timbre A)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	2.763	.406		6.806	.000
Gender	1.935	.250	.296	7.733	.000[b]

a. Dependent Variable: Number of preferences for tone A
b. Significant (p < .05)

A linear regression was calculated to predict participants' choices of Timbre B (clarinet) based on gender. A significant regression equation was

found (F (1, 622) = 6.333, p <.05), with an R^2 of .013, where gender was determined to be a significant predictor of choosing Timbre B. Additional descriptive statistics are presented in Tables 4.43.1 through 4.43.3.

Table 4.43.1
Regression Analysis: Gender and Timbre Preference (R^2 Timbre B)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.124[a]	.015	.014	2.387

a. Predictors: (Constant), Gender

Table 4.43.2
Regression Analysis: Gender and Timbre Preference (ANOVA Timbre B)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	55.543	1	55.543	9.749	.002[ab]
Residual	3543.597	622	5.697		
Total	3599.139	623			

a. Dependent Variable: Number of preferences for tone B
b. Significant (p < .05)

Table 4.43.3
Regression Analysis: Gender and Timbre Preference (Coefficients Timbre B)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	6.875	.303		22.663	.000
Gender	.584	.187	.124	3.122	.002[b]

a. Dependent Variable: Number of preferences for tone B
b. Significant ($p < .05$)

A linear regression was calculated to predict participants' choices of Timbre C (saxophone and horn) based on gender. When testing the ability of gender to predict participants' choices of Timbre C, the analysis produced a regression equation that was not significant. Additional descriptive statistics are presented in Tables 4.44.1 through 4.44.3.

Table 4.44.1
Regression Analysis: Gender and Timbre Preference (R^2 Timbre C)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.049[a]	.002	.001	2.716

a. Predictors: (Constant), Gender

Table 4.44.2
Regression Analysis: Gender and Timbre Preference (ANOVA Timbre C)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	10.892	1	10.892	1.477	.225[ab]
Residual	4587.801	622	7.376		
Total	4598.692	623			

a. Predictors: (Constant), Gender
b. Dependent Variable: Number of preferences for tone C

Table 4.44.3
Regression Analysis: Gender and Timbre Preference (Coefficients Timbre C)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	7.237	.345		20.965	.000
Gender	.258	.213	.049	1.215	.225

a. Dependent Variable: Number of preferences for tone C

A linear regression was calculated to predict participants' choices of Timbre D (oboe, English horn, and bassoon) based on gender. When testing the ability of gender to predict participants' choices of Timbre D, the analysis produced a regression equation that was not significant. Additional descriptive statistics are presented in Tables 4.45.1 through 4.45.3.

Table 4.45.1
Regression Analysis: Gender and Timbre Preference (R^2 Timbre D)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.029[a]	.001	.000	3.121

a. Predictors: (Constant), Gender

Table 4.45.2
Regression Analysis: Gender and Timbre Preference (ANOVA Timbre D)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	4.971	1	4.971	.510	.475[ab]
Residual	6060.254	622	9.743		
Total	6065.224	623			

a. Predictors: (Constant), Gender
b. Dependent Variable: Number of preferences for tone D

Table 4.45.3
Regression Analysis: Gender and Timbre Preference (Coefficients Timbre D)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	4.888	.397		12.320	.000
Gender	-.175	.244	-.029	-.714	.475

a. Dependent Variable: Number of preferences for tone D

A linear regression was calculated to predict participants' choices of Timbre E (trumpet) based on gender. When testing the ability of gender to

predict participants' choices of Timbre E, the analysis produced a regression equation that was not significant. Additional descriptive statistics are presented in Tables 4.46.1 through 4.46.3.

Table 4.46.1
Regression Analysis: Gender and Timbre Preference (R^2 Timbre E)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.002[a]	.000	-.002	2.664

a. Predictors: (Constant), Gender

Table 4.46.2
Regression Analysis: Gender and Timbre Preference (ANOVA Timbre E)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	.017	1	.017	.002	.961[ab]
Residual	4413.214	622	7.095		
Total	4413.231	623			

a. Predictors: (Constant), Gender
b. Dependent Variable: Number of preferences for tone E

Table 4.46.3
Regression Analysis: Gender and Timbre Preference (Coefficients Timbre E)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	4.362	.339		12.884	.000
Gender	-.010	.209	-.002	-.049	.961

a. Dependent Variable: Number of preferences for tone E

A linear regression was calculated to predict participants' choices of Timbre F based on gender. A significant regression equation was found (F (1, 622) = 5.544, p <.05), with an R^2 of .011, where gender was determined to be a significant predictor of choosing Timbre F. Unlike the *Beta* loadings of gender for Timbres A and B, the *Beta* loading of Timbre F is negative. Further descriptive statistics are presented in Tables 4.47.1 through 4.47.3.

Table 4.47.1
Regression Analysis: Gender and Timbre Preference (R^2 Timbre F)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.098[a]	.010	.008	2.343

a. Predictors: (Constant), Gender

Table 4.47.2
Regression Analysis: Gender and Timbre Preference (ANOVA Timbre F)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	32.954	1	32.954	6.005	.015[ab]
Residual	3413.544	622	5.488		
Total	3446.498	623			

a. Dependent Variable: Number of preferences for tone F
b. Significant ($p < .05$)

Table 4.47.3
Regression Analysis: Gender and Timbre Preference (Coefficients Timbre F)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	6.444	.298		21.643	.000
Gender	-.450	.183	-.098	-2.450	.015[b]

a. Dependent Variable: Number of preferences for tone F
b. Significant ($p < .05$)

A linear regression was calculated to predict participants' choices of Timbre G (tuba) based on gender. A significant regression equation was found (F (1, 622) = 66.682, p <.05), with an R^2 of .121, where gender was determined to be a significant predictor of choosing Timbre G. Unlike the *Beta* loadings of gender for Timbres A and B, the *Beta* loading of Timbre G is negative. Further descriptive statistics are presented in Tables 4.48.1 through 4.48.3.

Table 4.48.1
Regression Analysis: Gender and Timbre Preference (R^2 Timbre G)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.319[a]	.102	.100	3.259

a. Predictors: (Constant), Gender

Table 4.48.2
Regression Analysis: Gender and Timbre Preference (ANOVA Timbre G)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	748.475	1	748.475	70.487	.000[ab]
Residual	6604.750	622	10.619		
Total	7353.224	623			

a. Dependent Variable: Number of preferences for tone G
b. Significant beyond the .05 level ($p < .05$).

Table 4.48.3
Regression Analysis: Gender and Timbre Preference (Coefficients Timbre G)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	9.432	.414		22.773	.000
Gender	-2.143	.255	-.319	-8.396	.000[b]

a. Dependent Variable: Number of preferences for tone G
b. Significant beyond the .05 level ($p < .05$).

Question 3: Gender Stereotyping, Part 3

Finally, the current data set was examined to determine if gender stereotyping was observable. After detailed analysis, the findings revealed that a significant relationship exists between gender and timbre preference. The instruments of choice by participants were also examined to determine the level to which these instruments were related to specific personality traits as stated in the primary question. Therefore, gender and choice of instrument were loaded into the current model along with specific personality traits to determine the extent of the relationship between the former factors with timbre preferences as defined by seven timbres labeled A (flute), B (clarinet), C (saxophone and horn), D (oboe, English horn, and bassoon), E (trumpet), F (trombone, baritone, and horn), G (tuba).

A multiple linear regression was calculated to predict participants' choices of Timbre A (flute) based on specific personality traits, gender, and music instrument selection. All traits measured with the *APSI* were examined, which indicated levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (7, 616) = 13.084, p <.05), with an R^2 of .129, where gender, openness, and music instrument selection were determined to be significant predictors of choosing Timbre A, and instrument selection was

the only factor to have a negative *Beta* loading. Additional descriptive statistics are presented in Tables 4.49.1 through 4.49.3.

Table 4.49.1
Regression Analysis: Personality Traits, Gender, and Instrument (R^2 Timbre A)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.360[a]	.129	.120	3.136

a. Predictors: (Constant), agreeableness, conscientiousness, extraversion, emotional stability, openness, gender, instrument

Table 4.49.2
Regression Analysis: Personality Traits, Gender, and Instrument (ANOVA Timbre A)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	900.719	7	128.674	13.084	.000[ac]
Residual	6058.255	616	9.835		
Total	6958.974	623			

a. Predictors: (Constant), Instrument, Agreeableness, Conscientiousness, Extraversion, Emotional stability, Openness, Gender
b. Dependent Variable: Number of preferences for timbre A
c. Significant ($p < .05$)

Table 4.49.3
Regression Analysis: Personality Traits, Gender, and Instrument (Coefficients Timbre A)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)	2.656	1.347		1.972	.049
Gender	1.413	.275	.216	5.144	.000[b]
Agreeableness	.086	.301	.012	.285	.775
Conscientiousness	-.113	.227	-.020	-.495	.620
Emotional stability	.015	.217	.003	.069	.945
Extraversion	-.064	.221	-.012	-.290	.772
Openness	.624	.231	.110	2.698	.007[b]
Instrument	-.191	.041	-.191	-4.702	.000[b]

a. Dependent Variable: Number of preferences for timbre A
b. Significant ($p < .05$)

A multiple linear regression was calculated to predict participants' choices of Timbre B (clarinet) based on specific personality traits, gender, and music instrument selection. All traits measured with the *APSI* were examined, which indicated levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (7, 616) = 4.746, p <.05), with an R^2 of .051, where gender, openness, and extraversion were determined to be significant predictors of choosing Timbre B. Extraversion was the only factor with a negative *Beta* loading. Additional descriptive statistics are presented in Tables 4.50.1 through 4.50.3.

Table 4.50.1
Regression Analysis: Personality Traits, Gender, and Instrument (R^2 Timbre B)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.226[a]	.051	.040	2.355

a. Predictors: (Constant), agreeableness, conscientiousness, extraversion, emotional stability, openness, gender, instrument

Table 4.50.2
Regression Analysis: Personality Traits, Gender, and Instrument (ANOVA Timbre B)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	184.169	7	26.310	4.746	.000[ab]
Residual	3414.970	616	5.544		
Total	3599.139	623			

a. Dependent Variable: Number of preferences for timbre B
b. Significant ($p < .05$)

Table 4.50.3
Regression Analysis: Personality Traits, Gender, and Instrument (Coefficients Timbre B)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	7.638	1.011		7.553	.000
Gender	.716	.206	.152	3.471	.001[b]
Agreeableness	-.046	.226	-.009	-.204	.839
Conscientiousness	.072	.171	.018	.423	.673
Emotional stability	.034	.163	.009	.206	.837
Extraversion	-.725	.166	-.187	-4.369	.000[b]
Openness	.343	.174	.084	1.975	.049[b]
Instrument	.003	.031	.005	.110	.913

a. Dependent Variable: Number of preferences for timbre B
b. Significant ($p < .05$)

A multiple linear regression was calculated to predict participants' choices of Timbre C (saxophone and horn) based on gender, specific personality traits, and music instrument selection. All traits measured with the *APSI* were examined, which indicated levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (7, 616) = 5.148, p <.05), with an R^2 of .055, where gender, openness, and extraversion were determined to be significant predictors of choosing Timbre Preference C. In addition, extraversion was the only factor with a negative *Beta* loading. Additional descriptive statistics are presented in Tables 4.51.1 through 4.51.3.

Table 4.51.1
Regression Analysis: Personality Traits, Gender, and Instrument (R^2 Timbre C)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.235[a]	.055	.045	2.656

a. Predictors: (Constant), agreeableness, conscientiousness, extraversion, emotional stability, openness, gender, instrument

Table 4.51.2
Regression Analysis: Personality Traits, Gender, and Instrument (ANOVA Timbre C)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	254.148	7	36.307	5.148	.000[ab]
Residual	4344.545	616	7.053		
Total	4598.692	623			

a. Dependent Variable: Number of preferences for timbre C
b. Significant ($p < .05$)

Table 4.51.3
Regression Analysis: Personality Traits, Gender, and Instrument (Coefficients Timbre C)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)	8.192	1.141		7.182	.000
Gender	.593	.233	.112	2.547	.011[b]
Agreeableness	.026	.255	.004	.103	.918
Conscientiousness	-.145	.192	-.031	-.751	.453
Emotional stability	-.081	.184	-.019	-.441	.659
Extraversion	-.930	.187	-.212	-4.967	.000[b]
Openness	.549	.196	.120	2.806	.005[b]
Instrument	.059	.034	.072	1.703	.089

a. Dependent Variable: Number of preferences for timbre C
b. Significant ($p < .05$)

A multiple linear regression was calculated to predict participants' choices of Timbre D (oboe, English horn, and bassoon) based on gender, specific personality traits, and music instrument selection. All traits measured with the *APSI* were examined, which indicated levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. When testing the ability of gender, specific personality traits, and music instrument selection to predict participants' choices of Timbre D, the analysis produced a regression equation that was not significant. Additional descriptive statistics are presented in Tables 4.52.1 through 4.52.3.

Table 4.52.1
Regression Analysis: Personality Traits, Gender, and Instrument (R^2 Timbre D)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.126[a]	.016	.005	3.113

a. Predictors: (Constant), agreeableness, conscientiousness, extraversion, emotional stability, openness, gender, instrument

Table 4.52.2
Regression Analysis: Personality Traits, Gender, and Instrument (ANOVA Timbre D)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	96.154	7	13.736	1.418	.195[a]
Residual	5969.071	616	9.690		
Total	6065.224	623			

a. Dependent Variable: Number of preferences for timbre D

Table 4.52.3
Regression Analysis: Personality Traits, Gender, and Instrument (Coefficients Timbre D)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	5.155	1.337		3.856	.000
Gender	-.416	.273	-.068	-1.527	.127
Agreeableness	-.038	.299	-.006	-.128	.898
Conscientiousness	-.173	.225	-.033	-.766	.444
Emotional stability	.227	.215	.045	1.055	.292
Extraversion	.400	.219	.079	1.824	.069
Openness	-.232	.229	-.044	-1.013	.312
Instrument	-.067	.040	-.072	-1.664	.097

a. Dependent Variable: Number of preferences for timbre D

A multiple linear regression was calculated to predict participants' choices of Timbre E (trumpet) based on gender, specific personality traits, and music instrument selection. All traits measured with the *APSI* were examined, which indicated levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (7, 616) = 6.025, p <.05), with an R^2 of .064, where gender, openness, extraversion, and music instrument selection were determined to be significant predictors of choosing Timbre E. Gender, openness, and music instrument selection were negatively loading *Beta*

factors in this regression model. Additional descriptive statistics are presented in Tables 4.53.1 through 4.53.3.

Table 4.53.1
Regression Analysis: Personality Traits, Gender, and Instrument (R^2 Timbre E)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.253[a]	.064	.053	2.589

a. Predictors: (Constant), agreeableness, conscientiousness, extraversion, emotional stability, openness, gender, instrument

Table 4.53.2
Regression Analysis: Personality Traits, Gender, and Instrument (ANOVA Timbre E)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	282.815	7	40.402	6.025	.000[ab]
Residual	4130.416	616	6.705		
Total	4413.231	623			

a. Dependent Variable: Number of preferences for timbre E
b. Significant ($p < .05$)

Table 4.53.3
Regression Analysis: Personality Traits, Gender, and Instrument (Coefficients Timbre E)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	4.042	1.112		3.634	.000
Gender	-.461	.227	-.089	-2.034	.042[b]
Agreeableness	-.020	.248	-.003	-.079	.937
Conscientiousness	.150	.188	.033	.800	.424
Emotional stability	-.142	.179	-.033	-.793	.428
Extraversion	.902	.182	.210	4.944	.000[b]
Openness	-.396	.191	-.088	-2.075	.038[b]
Instrument	-.113	.034	-.141	-3.367	.001[b]

a. Dependent Variable: Number of preferences for timbre E
b. Significant ($p < .05$)

A multiple linear regression was calculated to predict participants' choices of Timbre F (trombone, baritone, and horn) based on gender, specific personality traits, and chosen instrument. All traits measured with the *APSI* were examined, which indicated levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (7, 616) = 3.791, p <.05), with an R^2 of .041, where extraversion, openness, and music instrument selection were determined to be significant predictors of choosing Timbre F, Openness and gender were negatively loading *Beta* factors in this regression model.

Additional descriptive statistics are presented in Tables 4.54.1 through 4.54.3.

Table 4.54.1
Regression Analysis: Personality Traits, Gender, and Instrument (R^2 Timbre F)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.203[a]	.041	.030	2.316

a. Predictors: (Constant), agreeableness, conscientiousness, extraversion, emotional stability, openness, gender, instrument

Table 4.54.2
Regression Analysis: Personality Traits, Gender, and Instrument (ANOVA Timbre F)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	142.328	7	20.333	3.791	.000[ab]
Residual	3304.170	616	5.364		
Total	3446.498	623			

a. Dependent Variable: Number of preferences for timbre F
b. Significant ($p < .05$)

Table 4.54.3
Regression Analysis: Personality Traits, Gender, and Instrument (Coefficients Timbre F)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)[a]	5.990	.995		6.022	.000
Gender	-.357	.203	-.078	-1.762	.079
Agreeableness	-.203	.222	-.040	-.914	.361
Conscientiousness	.210	.168	.053	1.253	.211
Emotional stability	-.064	.160	-.017	-.402	.688
Extraversion	.476	.163	.125	2.914	.004[b]
Openness	-.448	.171	-.113	-2.625	.009[b]
Instrument	.074	.030	.105	2.471	.014[b]

a. Dependent Variable: Number of preferences for timbre F
b. Significant ($p < .05$)

A multiple linear regression was calculated to predict participants' choices of Timbre G (tuba) based on gender, specific personality traits, and music instrument selection. All traits measured with the *APSI* were examined, which indicated levels of agreeableness, conscientiousness, emotional stability, extraversion, and openness. A significant regression equation was found (F (7,616) = 15.806, p <.05), with an R^2 of .152, where gender and instrument were determined to be significant predictors of Timbre G and gender was a negative loading *Beta* factor. Additional descriptive statistics are presented in Tables 4.55.1 through 4.55.3.

Table 4.55.1
Regression Analysis: Personality Traits, Gender, and Instrument (R^2 Timbre G)

R	R^2	Adjusted R^2	Std. Error of the Estimate
.390[a]	.152	.143	3.181

a. Predictors: (Constant), agreeableness, conscientiousness, extraversion, emotional stability, openness, gender, instrument

Table 4.55.2
Regression Analysis: Personality Traits, Gender, and Instrument (ANOVA Timbre G)

	Sum of Squares	*df*	Mean Square	*F*	Sig.
Regression	1119.631	7	159.947	15.806	.000[ab]
Residual	6233.593	616	10.119		
Total	7353.224	623			

a. Dependent Variable: Number of preferences for timbre G
b. Significant ($p < .05$)

Table 4.55.3
Regression Analysis: Personality Traits, Gender, and Instrument (Coefficients Timbre G)

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	*Beta*	*t*	Sig.
(Constant)	8.327	1.366		6.095	.000
Gender	-1.487	.279	-.221	-5.335	.000[b]
Agreeableness	.195	.305	.026	.639	.523
Conscientiousness	-.002	.230	.000	-.010	.992
Emotional stability	.012	.220	.002	.053	.958
Extraversion	-.059	.224	-.011	-.265	.791
Openness	-.439	.234	-.076	-1.873	.062
Instrument	.235	.041	.228	5.702	.000[b]

a. Dependent Variable: Number of preferences for timbre G
b. Significant ($p < .05$)

Summary

The primary research question focused on a possibility of the presence of a relationship between specific personality traits and timbre preferences. Results from the current study provided evidence supporting the notion of a significant relationship between specific personality traits and timbre preference. When the five personality traits were loaded in a multiple linear regression with the students' timbre choices as the dependent variable, results provided information of potential use by band directors. Therefore, when predicting students' frequency of choices regarding timbre, 2.5% to 5% of the variance can be accounted for beyond a level of 95% confidence with

respect to the significant predictors of timbre choice. Although the results for a small part of the variance in choosing a timbre, Gordon (1984) found that approximately 10% of the variance in timbre preference is accounted for when explaining why students remain in or quit band.

The first secondary question was established to investigate the ratio of participants who were correctly matched by instrument to their timbre preference. A majority of participants were found to be incongruent with their specific timbre preference or their most frequent timbre choice. Implications of this finding are discussed in Chapter V.

Question 2, of the secondary questions, was examined to determine the ratio of matched to unmatched participants, considering age, as revealed by a cross-sectional investigation of the current data set. Through a detailed analysis of the current data set, the results provide evidence that the ratio of participants playing instruments congruent with their timbre preference increased favorably from an average of 26.3% of the participants matched as beginners to over 53% of the participants matched as seniors in high school. However, these data should be treated with caution as this research was not designed as a longitudinal study, but only to investigate a cross-section of a specific point in time. Another possible cause for this observation is a sense of familiarity students develop over their enrollment in band. Implications of

these results as well as recommendations for future research are discussed in Chapter V.

The third question in the secondary set was written in three parts; the first two parts of Question 3 set objectives to determine whether gender stereotyping of instrument choice and timbre preference were observable. An investigation of the results revealed a significant relationship between gender and instrument choice, which supported the presence of gender stereotyping. Because of the significant relationship between gender and instrument choice, analyses were applied to determine how the stereotyping factored into the regression model. Following a battery of linear regressions, the results provided evidence that gender was a moderate factor in determining a timbre preference. A summary of the final part of secondary question number 3 is provided in Table 4.56.

Table 4.56
Summary of Secondary Question 3 (Part 3)

Timbre	R^2	Significance	Significant Predictors
A	.129	.000	Gender(+), Openness(+), Instrument(-)
B	.051	.000	Gender(+), Extraversion(-), Openness(+)
C	.055	.000	Gender(+), Extraversion(-), Openness(+)
D	NS	NS	NS
E	.064	.000	Gender(-), Extraversion(+), Openness(-), Instrument(-)
F	.041	.000	Extraversion(+), Openness(-), Instrument(+)
G	.152	.000	Gender(-), Instrument(+)

CHAPTER V

DISCUSSION AND CONCLUSIONS

Introduction

The primary purpose of the current study was to determine if a relationship existed between specific personality traits and timbre preference among public school music students performing in secondary school instrumental music ensembles. Secondary objectives studied were associated with instrument selection by students, matching students to their timbre preference(s), and gender stereotyping. Determining whether a relationship existed between specific personality traits and timbre preference is intended to serve band directors in their continued development of the instrumental music recruiting process. Gordon (1984) asserts that almost 10% of the variance accounting for student retention or attrition in band can be attributed to timbre preference. Therefore, findings from research on relationships between personality traits and timbre preferences can provide valuable information for band directors that will facilitate and augment recruiting procedures and viable instrument selections for beginning band students. The following research questions were established to determine whether a relationship exists between personality traits, timbre preferences, gender, and instrument choice.

Primary Research Question

1. Does a relationship exist between a student's personality traits, timbre preference, and association with specific instruments?

Secondary Research Questions

1. Is a student's preference for a specific timbre congruent with their choice of instrument?

2. Based on a cross-sectional sample across all ages involved in the study, does the ratio of participants playing instruments congruent with their specific timbre preference versus participants playing instruments incongruent with their specific timbre preference increase as participants remain enrolled in instrumental music education?

3. Is gender stereotyping, as compared to music instrument selection and timbre preference, observable in the public school instrumental music ensemble? If observable, how does gender load into the regression model?

Null Hypotheses

The following null hypotheses were established for the current study:

1. There will be no significant relationship between personality traits and timbre choices of public school band students.

2. Gender stereotyping as associated with instrument selection will not be significantly observable.

3. There will be no significant relationship between gender, personality traits, instrument choice, and the timbre choices of public school band students.

The null hypotheses were tested at the $p \leq .05$ level.

Summary of the Study

Demographics and Testing Instruments

To address the research questions, a demographics questionnaire and two testing instruments were employed to collect pertinent data for analysis. The demographics questionnaire was researcher generated but modeled after a template provided by the *Survey Share Online Survey Tool*.[1] Information regarding gender, age, grade level, school, instrument, ethnicity, enrollment in private lessons, parental influence, seating rank in instrumental ensemble sections, and other relevant factors were collected from the questionnaire and used to create a profile of the students participating in the current study. Information collected was used to create a profile of each subject participating in the current study.

Adolescent Personal Style Inventory. Resource Associates' *APSI* (Lounsbury, Tatum, Gibson, Park, Sundstrom, Hamrick, & Wilburn, 2003), an assessment instrument created for purposes of determining individual levels of personality trait exhibition of adolescents ages 10-18 in five defined areas: extraversion, agreeableness, conscientiousness, emotional stability, and openness, was employed in the current study. In the *APSI*, each personality trait is measured on a 5-point Likert-type Scale across nine age-appropriate statements; therefore, the *APSI* consists of 45 total items. Lounsbury, et al. (2003) designed and conducted a series of eight studies to establish both

[1] http://www.surveyshare.com/templates/asicdemographics.html

reliability and validity of the *APSI*. Criterion-related, construct, and known-group validities were established and reliability estimates ranged from $r = .80$ to $r = .85$, thus providing a viable test for the current study because of its age appropriateness, reliability, validity, and succinctness.

Instrument Timbre Preference Test. Timbre preference was assessed using Gordon's (1984) *Instrument Timbre Preference Test*[2] and was designed to measure a person's preference for timbres of instruments commonly present in public school bands. A secondary objective was to assist band directors in making informed suggestions to prospective students regarding their selection of an instrument. Gordon focused on the premise that students should select an instrument that is congruent with their timbre preference. Gordon believed students would be more successful in a secondary school instrumental music ensemble if a band director correctly matched students' timbre preferences with their chosen instruments rather than performing on instruments for which no preference or a non-preference existed.

Gordon created seven timbres to represent instruments typically present in public school bands. Each timbre is paired with all other timbres twice, thus producing a total of 42 items. Scoring procedures require tabulating the frequency of responses for each timbre and, according to Gordon, students who choose a timbre more than nine times exhibit a

[2] Information regarding the reliability and validity of the *ITPT* is located in Chapter II.

preference for that specific timbre. Conversely, students who prefer a timbre less than three times exhibit a non-preference for that specific timbre. For example, Timbre A selected more than nine times would indicate a preference for the flute; however, Timbre F, selected only two times, would indicate a non-preference for trombone, euphonium, or horn.[3]

Overview

The current study was administered in four school districts within a southwestern state. The participants (*N* = 624) were members of elementary, middle-school, and high-school bands in their respective districts. A demographics questionnaire and two assessment instruments were employed for data collection. The demographics questionnaire was a researcher-generated and literature-supported tool aimed at obtaining profile information about the participants. The second instrument was a personality profile assessment entitled the *Adolescent Personal Style Inventory* (*APSI*), which is created and marketed by Resource Associates, an entrepreneurial company that develops, promotes, and delivers Internet-administered career-related assessments and personalized feedback reports. The *APSI* provided a validated personality trait profile of adolescent students (ages 10-18) and has been established as a personality trait assessment instrument that is

[3] Timbres for Gordon's *Instrument Timbre Preference Test* are: A - Flute; B - Clarinet; C - Saxophone and Horn; D - Oboe, English horn, and Bassoon; E - Trumpet and Cornet; F - Trombone, Baritone, and Horn; G-Tuba.

valid, reliable, and succinct.[4] The third testing instrument administered in the data collection phase was Gordon's *Instrument Timbre Preference Test* (*ITPT*). Gordon (1984) developed the *ITPT* as a result of his objective to assess a person's preference for timbres of music instruments commonly present in public school bands and to assist band directors in making informed suggestions to prospective students regarding their selection of an instrument.

The questionnaire and both tests were administered to participants in the spring semester of 2009. The three assessments were administered in succession for purposes of time conservation within one school period (approximately 50 minutes) for every band class meeting at each test site. The entire process of collecting signed consent forms and assent forms, distribution of materials, test taking, and test collection consumed approximately 45 minutes depending on the response rate of the participants at the respective sites. Data were subsequently processed, tabulated, and analyzed to produce the results, form the conclusions, and develop implications as generated by the current study.

[4] Lounsbury, etal. (2003) administered a series of eight studies to develop, establish reliability, and validate the *APSI*. Reliabilities range from $r = .80$ to $r = .85$. Construct validity, criterion-related validity, and known-group validity were also established in the series of eight studies by Lounsbury, et al. (2003).

Treatment of the Results

Using the two assessment instruments described above, data were collected and analyzed for purposes of treating the null hypotheses.

The first null hypothesis was expressed:

H_O: There will be no significant relationship between personality traits and timbre choices of public school band students.

Multiple linear regression analysis was employed to analyze the data set and determine whether the presence of a relationship between specific personality traits and timbre preferences existed. Results from the current study provided evidence supporting the existence of a significant relationship between specific personality traits and timbre preference. Therefore, the null hypothesis as stated was rejected ($p < .05$).

The second null hypothesis was expressed:

H_O: Gender stereotyping as associated with instrument selection will not be significantly observable.

A chi-square analysis was computed to determine if gender stereotyping was observable in the current population (χ^2 (24, $N = 624$) = 5.08, $p < .001$). Results indicated significant gender stereotyping was observable in the current study. Therefore, the null hypothesis as stated was rejected ($p < .05$).

The third null hypothesis was expressed:

H_O: There will be no significant relationship between gender, personality traits, instrument choice, and the timbre choices of public school band students.

The data were analyzed to determine if gender was a factor in the identification of a timbre preference as indicated in the second part of the final secondary question. Following a chi-square analysis and a battery of multiple linear regressions, the results provided evidence that gender was significantly related to timbre preferences A (flute), B (clarinet), F (trombone/ baritone/ horn), and G (tuba) ($p < .05$), and also served as a significant predictor of choosing (or not choosing) timbres A (flute), B (clarinet), F (trombone/ baritone/horn), and G (tuba) ($p < .05$). The music instruments the participants were playing at the time of data collection were also examined to determine the relationship of the instruments participants were playing compared to personality traits. Therefore, gender and music instrument choice were loaded into the current model along with agreeableness, conscientiousness, emotional stability, extraversion, and openness to determine the relationship between these factors and students' timbre preferences.

A multiple linear regression was calculated to predict participants' timbre preferences based on gender, specific personality traits, and instrument of choice. Specific personality traits examined, as revealed by the

APSI, included assessments of agreeableness, conscientiousness, emotional stability, extraversion, and openness. Timbres were labeled with letters designating associated instruments: A – Flute; B – Clarinet; C – Saxophone and Horn; D – Oboe, English Horn, and Bassoon; E – Trumpet and Cornet; F – Trombone, Baritone, and Horn; and G - Tuba. A significant regression equation was found for timbre choices A (flute), B (clarinet), F (trombone, baritone, horn), and G (tuba) with extraversion, openness, gender, and instrument choice identified as significant predictors of timbre choice. Therefore, the null third null hypothesis as stated: There will be no significant relationship between gender, personality traits, instrument choice, and the timbre choices of public school band students, was rejected ($p < .05$).

Discussion and Conclusions

Researchers have worked to define the relationship between personality and various aspects of music (Bell & Cresswell, 1984; Bergee, 1992; Cutietta & McAllister, 1997; Fortney, Boyle, & DeCarbo, 1993; Gibbons, 1990; Hudson, 2004; Kemp, 1981a, 1981b, 1981c; Kemp & Mills, 2002; Teachout, 2001; Wubbenhorst, 1994). Attempts to define this relationship were implemented to improve various areas within the arena of music including musicians and music teaching. Furthermore, researchers have recently examined the relationship between personality traits, timbre

preference, and instrument choice (Chang, 2007; Hudson, 2004). The primary purpose of the current study was to determine if a relationship existed between specific personality traits and instrument timbre preference among public school music students performing in secondary school instrumental music ensembles. Results of the current study revealed significant regression equations ($p < .05$) for six (A, B, C, E, F, and G[5]) of the seven timbres identified in Gordon's *ITPT* with openness, extraversion, and agreeableness identified as significant predictors of those six timbres.

Primary Question: Relationship Between Personality Traits, Timbre Preference, and Specific Instruments

The Primary Question was stated: Does a relationship exist between a student's personality traits, timbre preference, and association with specific instruments? Results of the current study revealed six significant regression equations relating openness, extraversion, and participants' choices for timbres A (flute), B (clarinet), C (saxophone and horn), E (trumpet), F (trombone, baritone, and horn), and G (tuba). When testing the ability of the five traits to predict a preference for Timbre D, the analysis produced a regression equation that was not significant. The dispersion across timbre choices in the respective equations as revealed by R^2, the percentage of variance accounted for by the predictors, ranged from .020 to .046.

[5] Timbres for Gordon's *Instrument Timbre Preference Test* are: A - Flute; B - Clarinet; C - Saxophone and Horn; D - Oboe, English Horn, and Bassoon; E - Trumpet and Cornet; F - Trombone, Baritone, and Horn; G-Tuba.

Therefore, a distribution of 2.0 to 4.6 % of the variance of timbre choice across the six aforementioned classifications is accounted for by openness and extraversion. While this amount of variance accounted for is relatively limited, an awareness of the strengths of extraversion and openness personality traits may provide support to band directors when helping students choose beginning-band instruments.

Significant Predictors. Openness was a significant predictor ($p < .05$) for choosing timbres A (flute), B (clarinet), C (saxophone and horn), E (trumpet), F (trombone, baritone, and horn), and G (tuba) and had *Beta* coefficients of $B = .681$, $B = .380$, $B = .585$, $B = -.429$, $B = -.461$, and $B = -.497$,[6] respectively. However, openness was a positive loading factor for timbres A (flute), B (clarinet), and C (saxophone), while functioning as a negative loading factor for timbres E (trumpet), F (trombone, baritone, and horn), and G (tuba). The difference apparently existed in the instruments for which the timbres represented. Timbres A (flute), B (clarinet), and C (saxophone) represent woodwind instruments, and timbres, E (trumpet), F (trombone, baritone, and horn), and G (tuba) represent brass instruments. Therefore, a clear dividing line exists between the preference of woodwind and brass timbres when predicted by the level of openness a prospective student exhibits. Results indicate that a student who is more open will be more likely to prefer a woodwind instrument than a brass instrument on the

[6] The italicized "B" (*B*) represents the factor coefficient and is not associated with the clarinet timbre.

basis of timbre preference, thus the high score in openness is multiplied by a positive *Beta* weight resulting in a stronger preference for a woodwind instrument. While Gordon (1984) used synthesized timbres rather than actual instrument sounds, the results of the current study provide evidence supporting a distinction in preferences on the basis of factor loadings in terms of openness scores of participants. This delineation should be examined in greater depth to determine the basis of this observation.

Extraversion was another significant predictor ($p < .05$) of choosing timbres B (clarinet), C (saxophone and horn), E (trumpet), F (trombone, baritone, and horn), and G (tuba), and had *Beta* coefficients of $B = -.588$, $B = -.855$, $B = .892$, $B = .354$, and $B = -.513$, respectively. Again, as with openness, there was delineation in the factor loading of extraversion. Extraversion was found to be a negatively loading factor for choosing timbres B (clarinet), C (saxophone), and G (tuba), while functioning as a positively loading factor for choosing timbres E (trumpet) and F(trombone, baritone, and horn). Therefore, a clear separation exists between the preference of woodwind and brass timbres, excluding the atypical results regarding Timbre G (tuba), when predicted by the level of extraversion a prospective student exhibits. Results indicate that a student who is extraverted will be more likely to prefer a brass instrument than a woodwind instrument on the basis of timbre preference. This delineation supports Kemp's (1981c) findings that

woodwind players tend to be more introverted than their brass counterparts; however, timbre G (tuba) is a negatively loading factor and should be examined to a greater extent for purposes of determining whether the current results for timbre G are an anomaly. The novelty of Timbre G may also have contributed to a false reading regarding the negative *Beta* coefficients for Timbre G (tuba) versus the positive *Beta* coefficients of Timbres E (trumpet) and F (trombone/baritone/horn) when determining the relationship between extraversion and timbre preference. The strongest factor loadings were for Timbre C (saxophone and horn) and E (trumpet) with loadings of -.855 and .892, respectively.

The results of the current study enhance the existing literature by providing evidence that personality traits may assist band directors in more effective and informed decisions when recommending music instruments for prospective beginning instrumental music students. Band directors who are aware of these findings may use the results to guide prospective students toward choosing an instrument that may be more appropriate for individual students. Therefore, band directors should be inclined to incorporate results from the *APSI* and *ITPT* into their recruiting practices, thus providing a quantitative foundation upon which appropriate music instruments may be recommended to students and parents beyond the anecdotal procedures expressed in the non-empirical literature.

Secondary Question 1: The matching of participants' timbre preferences to their choice of instrument.

Secondary Question 1 was stated: Is a student's preference for a specific timbre congruent with their current choice of instrument? A majority (64.9%) of the participants was found to be unmatched to their specific timbre preference or with their most frequent timbre choice; whereas, only 26.6% of the participants, at the time of the study, were playing instruments congruent with their respective timbre preference. Likewise, only 6.9% were matched to the timbre which reflected their most frequent choice if no preference was recorded for a total of 33.5%. The sample was stratified according to a four-part hierarchy (Match, No Match, No preference – most frequent choice matched, No preference – no match). Participants were either playing instruments that matched their timbre preference or playing instruments that were not matched to their timbre preference. Participants who had no timbre preference (approximately 21%) were subsequently divided into two groups: those who had no timbre preference but played instruments that matched their most frequent choice, or those who had no timbre preference and were playing instruments that did not match their most frequent choice.

Results from the current study indicate that only 33.5% of the sample was matched to their timbre preference or most frequent timbre choice. These results are consistent with Kemp and Mills' (2002) assertion that the

process of assisting students when selecting musical instruments lacks a scientific basis and is rarely based on research. These results may also generate some intrigue regarding the importance Gordon (1984) places on a student's timbre preference. Results of the current study, combined with Gordon's (1984) assertion that almost 10% of the variance of band student attrition is attributed to timbre preference, indicate that the issue of matching students to their timbre preferences or most frequent choice must continue to be examined and addressed in secondary school music ensembles. Furthermore, in order to achieve greater accuracy when setting students to instruments, researchers and band directors must work together to close the gap between research and practice.

Secondary Question 2: The extent to which the ratio of matched to unmatched is observed across all ages from a cross-sectional view.

Secondary Question 2 was stated: Based on a cross-sectional sample spanning all ages of participants in the study, does the ratio of participants playing instruments congruent with their specific timbre preference versus participants playing instruments incongruent with their specific timbre preference increase as participants continue in band? Following an analysis of the current data set, the results provide evidence that the ratio of students who are currently playing music instruments that are congruent with their timbre preference or most frequent choice compared to participants who are

not increases from 26.3% of the participants matched as beginners to over 53% of the participants matched as seniors in high school; however these data should be treated with caution as this research is not designed to function as a longitudinal study. While only a cross-section data set was analyzed, the percentage of participants who were playing instruments that were matched to their respective timbre preferences increased steadily when compared by grade level. Participants were stratified as stated in Secondary Question 1 and all participants who were playing instruments that matched their preference or most frequent choice were considered a match. Conversely, participants who were playing instruments that were not congruent with their preference or most frequent choice were considered unmatched. Beginning band participants were started on an instrument that matched their timbre preference or most frequent timbre choice 26.3% of the time, which is slightly lower than the aggregate average stated in Secondary Question 1. Sixth grade participants were playing instruments matched to their preferences or most frequent choice 30.6% of the time. Seventh grade participants were matched to their instruments at a slightly lower proportion (23.9%). Several factors may contribute to this finding. Among the explanations are the beginning grades of instrumental music of the four school districts, social factors, or a slightly smaller group of respondents. Eighth grade participants were playing instruments matched to their

preferences or most frequent choice with 30.9% accuracy. From beginning band through middle school, the ratio of participants playing an instrument congruent to their timbre preference increased from 26.3% in the beginning classes to 30.9% when observing the middle-school students. This steady increase was also observable with the participants in high school, as the accuracy rates of matching timbre preference to music instrument choice for freshmen, sophomores, juniors, and seniors revealed an increase to 37%, 42.9%, 42.2%, and 53.9%, respectively.

The results of the current study provided evidence that supports Gordon's (1984) assertion that almost 10% of the variance of why a student remains enrolled in or quits band can be attributed to matching participants' choices of instrument with their timbre preference. Another possible explanation for these results could be the development of an affinity, or familiarity, with the timbre of the instrument, thus being able to decipher the tone. However, a slim majority (53%) of the sample was identified, as high school seniors, to have been matched with their timbre preference or most frequent choice indicating further research is needed to address this issue. Even as seniors in high school, almost one out of every two students remained unmatched with their timbre preference. Therefore, researchers must continue to examine the role of timbre preference as well as students' reasons for remaining in band and how these factors coincide within the

context enrollment in a performing ensemble. Because of the nature of the current study, a longitudinal approach was not feasible nor apropos. Therefore, caution must be used when conclusions are drawn from these results.

Secondary Question 3: Gender Stereotyping, Parts 1 and 2

Secondary Question 3 was stated: Is gender stereotyping observable in the public school instrumental music ensemble? If so, are gender and timbre preference related? Furthermore, how does gender stereotyping load into a regression model? Gender stereotyping was examined in relation to music instrument choice, initially to reveal if congruence with the research literature existed. The current study provided evidence that supported the premise that gender stereotyping based on instrument choice was significantly observable and corroborates the results found by Abeles and Porter (1978). Significant results from a chi-square analysis (χ^2 (24, N = 624) = 5.08, p < .001) revealed that gender and instrument choice were not independent. Several factors could have contributed to these results. Among the possible factors could be band director bias, a need for balanced instrumentation, recruiting strategies, peer and social pressures, and tradition. Results are congruent with the findings of Abeles and Porter (1978) and Byo (1991) with gender stereotyping functioning as a significant contributing factor regarding music instrument choice. Gender stereotyping

was not only observable with music instrument selection, but was also observable with timbre preference. A chi-square analysis of gender and timbre preference revealed a significant association (χ^2 (7, N = 620) = 56.54, p < .001) between gender and timbre preference. Females were more likely to choose timbre A (flute) than males (78%) and were also more likely to choose timbre B (clarinet) than males (64%), and males were more likely to choose timbre G (tuba) than females (73%). All other timbres (Timbres C, D, E, and F) were considered gender neutral. These results were consistent with Hallam, Rogers, and Creech (2008), who found upper woodwinds (flute and clarinet) to be associated with girls and tuba and trombone to be associated with boys. Whereas, horn, saxophone, and baritone were gender neutral.

These findings contribute to the current literature because a significant relationship between gender and timbre preference may change the way the existence of gender stereotyping for music instrument choice is perceived. Combined with Gordon's (1984) theory of the power of timbre preference, gender stereotyping regarding instrument choice may be an obsolete argument. Byo (1991) and Tarnowski (1993) suggest that changing the modes of presentation by which students are recruited to beginning band may lower the effect gender stereotyping; however, with significant results regarding the relationship of gender and timbre preference, attempting to

control stereotyping of music instrument choice could be detrimental to maintaining or increasing enrollment in bands.

The current study revealed significant linear relationships ($p < .05$) between gender and timbre preferences A (flute), B (clarinet), F(trombone, baritone, and horn), and G (tuba). The percentage of variance accounted for by the significant predictor (gender), as expressed by the R^2 coefficient, were 8.8% (timbre A), 1.5% (timbre B), 1% (timbre F), and 10.2% (timbre G); therefore, a range of 1.0% to 10.2 % of the variance of timbre choice is accounted for by gender. These results are similar to the chi-square analysis stated above. Revealing a significant linear relationship between gender and timbre preference is important because the timbres of the *Instrument Timbre Preference Test* are not digital samples of actual instruments but only synthesized timbres. Therefore, with no authentic representation of an actual instrument, timbre preference may extend beyond instrument preference with respect to gender. These results also contradicted the findings of Rideout and Clinton (1987) and Rideout (1988) who found no observable relationship between timbre and gender. Additionally, the results of the current study create a need to revisit whether the question about changing the mode of presentation, as suggested by Abeles and Porter (1978) and Byo (1991), to affect gender stereotyping in the instrumental selection process is fully necessary. Such a choice by a

band director could result in placing students on instruments for which they have no preference or a non-preference. According to Gordon (1984), doing so may ultimately lead to students quitting band. Further investigation of gender and timbre preference must be conducted to clarify and define this preferential relationship.

Secondary Question 3: Gender Stereotyping Part 3

With the influential presence of gender in the current study, as stated above, gender was added to the regression model with personality traits and instrument choice. Results from the study provided evidence that gender combined with personality traits and instrument choice are significantly related ($p < .05$) to the selection of specific timbres of the *ITPT*. Six significant regression equations were found when loading personality traits, gender, and music instrument choice ($p < .05$). The range of the R^2, which indicates the percentage of variance, accounted for by the predictors, fluctuated from .041 to .152; therefore, a distribution of 4.1% to 15.2% of the variance of timbre choice is accounted for by combining personality traits, gender, and music instrument choice. These results are an increase from the 2.0% to 4.6% when considering personality traits alone.

Significant predictors of timbre choice indicated by the results were openness, extraversion, gender, and music instrument. Openness was again a significant predictor for choosing timbres A (flute), B (clarinet), C

(saxophone and horn), E (trumpet), and F (trombone, baritone, and horn). Extraversion was also a significant predictor for choosing timbres B (clarinet), C (saxophone and horn), E (trumpet), and F (trombone, baritone, and horn). Similar to the results of the Primary Question, openness was positively loaded for timbres A (flute), B (clarinet), and C (saxophone and horn), while negatively loaded for timbres E (trumpet) and F (trombone, baritone, and horn). Again, extraversion was again negatively loaded for timbres B (clarinet) and C (saxophone and horn), while positively loaded for timbres E (trumpet) and F (trombone, baritone, and horn).

Gender was found to be a significant predictor for timbre choices A (flute), B (clarinet), C (saxophone and horn), E (trumpet), and G (tuba). Therefore, according to the results of the analyses, adjustments stated below can be made for gender as the predictor of timbre choice. The coefficient for gender ranged from B = .593 to B = 1.413 for the positively loading timbres of A (flute), B (clarinet), and C (saxophone and horn), while the coefficient for gender in the negative loading factors ranged from B = -.461 to B = -1.487. The factors are once again delineated (positively or negatively loading) by the instrument classification (woodwind or brass) they represent. While music instrument choice is a significant predictor, the amount of impact based on their coefficients is much smaller than that of the personality traits and gender; therefore, no further explanation is warranted.

The results of the current study revealed a significant relationship between gender and timbre preference. These findings provide a fresh view of an old issue. There has been little research regarding gender and timbre preference compared to the amount of literature with gender stereotyping of instrument choice (Abeles & Porter, 1978; Byo, 1991; Griswold & Chroback, 1981; Tarnowski, 1993). The current study may reveal a new dimension to the perception of gender stereotyping and that is the relationship of gender and timbre preference. Since timbre preference is measured without using authentic instrument sounds, significant results from the current study may contradict studies included in the current literature. If band directors choose to use the information from the current study, matching students with their timbre preference(s) may enable the phenomenon of gender stereotyping, but the placing of students on their respective instruments while considering gender and timbre preference is in the best interest of the student and the program because retention may be improved according to Gordon's (1984) premise.

Summary of Results and Conclusions

Timbre preference, as examined in the current study, was found to be significantly related to the personality traits of openness and extraversion ($p < .05$), supporting previous research findings (Chang, 2007; Hudson, 2004; Kemp, 1981c). A majority of participants (64.9%) in the current study

were not matched with their current instrument and timbre preference or their most frequent choice of timbre; therefore, actions contradicting Gordon's premise of matching students' timbre preference(s) to the music instrument they play were observed in this study. The ratio of participants who were congruently matched with their timbre preferences increased incrementally from about 1 out of every 4 participants as beginners (an average of 26.3%) to over 1 out of every 2 participants (53.9%) as high school seniors. Results revealed a significant relationship between gender and instrument choice ($p < .001$), supporting current published research (Abeles & Porter, 1978; Byo, 1991; Griswold & Chroback, 1981; Tarnowski, 1993). However, a significant relationship was also found to exist between gender and timbre preference ($p < .001$), which may contradict the current literature regarding gender stereotyping in the public school band. Results indicated that gender also served as a significant predictor ($p < .05$), with an R^2 ranging from .010 to .102, of choosing timbres A, B, E, F, and G. Once loaded into the regression model, six significant regression equations ($p < .05$) were found for timbres A (flute), B (clarinet), C (saxophone and horn), E (trumpet), F (trombone, baritone, and horn), and G (tuba), with gender, instrument choice, openness, and extraversion revealed as significant predictors of timbre preference.

Collectively, results from the current study fuel conclusions that timbre preference and personality traits are significantly related. Furthermore, personality traits of openness, extraversion, gender, and instrument choice were statistically confirmed to serve as significant predictors when assessing participants' timbre preferences. However, while these results and conclusions are empirically solid, practical applications should be interpreted and generalized with caution primarily due to human nature, variables not accounted for, and influences beyond the scope of the current study.

Regardless of these limitations, results and conclusions from the current study may be helpful to band directors and prospective beginning band participants. Supported by the current research findings, students and directors can be empowered to act with confidence throughout the process of instrument selection and recommendation on the basis of quantifiable data. Band directors who are aware of these results may be inclined to include the *Instrument Timbre Preference Test* and the *Adolescent Personal Style Inventory* to support their recommendations to beginning band participants for a first music instrument that will facilitate student satisfaction, promote retention in instrumental participation throughout their formal schooling, and enhance musical achievement and success in musical arenas throughout a lifetime.

Recommendations for Further Research

Three areas are recommended for inclusion in further research: increased ethnic diversity, improving the measurement accuracy and testing of timbre preference, and intensive study directed toward the delineation of timbre choices between the loadings of openness, extraversion, and gender as associated with music instrument classifications. The first recommendation centers on conducting a study with a more diverse ethnic sample to achieve a stronger level of generalization beyond the scope of the current population. While the enrollment records of the districts obtained from the state wherein the study was conducted were considered in identifying a population, the purposive nature of finding participating school districts in both rural and urban schools inadvertently skewed the diversity of the population. However, the sample was consistent with the demographics of the population (school districts) from which the participants were selected. While the current sample was representative of the population from which it was drawn, results are difficult to generalize beyond a limited locale. Replicating the current study with a more diverse sample would provide greater external validity and strengthen the implications of the findings.

While Gordon's (1984) *ITPT* is the only test of its kind, the test's reliability and validity have been questioned by several researchers regarding the use of synthesized versus actual timbres (Schmidt & Lewis, 1988;

Weaver, 1987). Further development of a new test using actual instrument sounds while controlling for instrument recognition and subsequent comparisons with the results of the current study would allow for more analysis regarding the relationship of personality traits, timbre preference, gender, and instrument selection.

The research literature suggests that woodwind players are more reserved than brass or string players (Kemp, 1981c). Results of the current study indicate an observable difference in the loading of openness and extraversion into a regression model measuring timbre preference with respect to instrument families. Furthermore, a similar difference is observable in the loading of gender into the same regression equations. Examining these instrument family differences in depth may provide insightful information regarding the attributes contributing to this discrepancy.

In conclusion, researchers investigating timbre preference for purposes of recruiting students for participation in secondary school bands should continue to examine the relationship between timbre preference and personality traits, including openness and extraversion. Additional significant predictors of timbre preference that directors should examine are gender and instrument choice. Further examination of these variables may be indispensible for band directors in many ways and for numerous reasons when recruiting students, ensuring ensemble balance, increasing as well as

maintaining enrollment, and promoting student satisfaction. Results of the current study revealed that using a personality inventory and timbre preference test may increase the accuracy by which band directors suggest a music instrument to undecided, prospective students, which in turn may improve the retention rate of the respective secondary school band. For researchers and band directors, the relationship of timbre preference and gender should also be examined at greater depth because the significant relationship revealed in the current study may alter perceptions of gender stereotyping. Therefore, the relationship of personality traits and timbre preference, along with examining the significant predictors of openness, extraversion, gender and instrument choice, remains a viable and indispensible area for additional study.

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APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL

The University of Oklahoma

OFFICE FOR HUMAN RESEARCH PARTICIPANT PROTECTION

IRB Number: 12349
Amendment Approval Date: December 10, 2008

December 10, 2008

Phillip Payne
Music
500 W. Boyd Street, CMC 138
Norman, OK 73019

RE: IRB No. 12349: An Examination of the Relationship Between Specific Personality Traits and Instrument Timbre Preference

Dear Mr. Payne:

On behalf of the Institutional Review Board (IRB), I have reviewed your protocol modification form. It is my judgement that this modification allows for the rights and welfare of the research subjects to be respected. Further, it has been determined that the study will continue to be conducted in a manner consistent with the requirements of 45 CFR 46 as amended; and that the potential benefits to subjects and others warrant the risks subjects may choose to incur.

This letter documents approval to conduct the research as described in:

Amend Form Dated: November 21, 2008
Survey Instrument Dated: November 21, 2008 Adolescent Personal Style Inventory (APSI)
Protocol Dated: December 08, 2008 Revised

Amendment Summary:

1) Change in Data Collection Instrument from - "Saucier's Mini-Marker Set" to "Resource Associates' Adolescent Personal Style Inventory (APSI).
2) Revised Protocol to reflect instrument change.

This letter covers only the approval of the above referenced modification. All other conditions, including the original expiration date, from the approval granted December 10, 2008 are still effective.

If consent form revisions are a part of this modification, you will be provided with a new stamped copy of your consent form. Please use this stamped copy for all future consent documentation. Please discontinue use of all outdated versions of this consent form.

If you have any questions about these procedures or need additional assistance, please do not hesitate to call the IRB office at (405) 325-8110 or send an email to irb@ou.edu.

Cordially,

Lynn Davenport, Ph.D.
Chair, Institutional Review Board

Ltr_Amend_Final_Appv_Exp

IRB Number: 12349
Approval Date: December 10, 2008

The University of Oklahoma

OFFICE FOR HUMAN RESEARCH PARTICIPANT PROTECTION

December 10, 2008

Phillip Payne
Music
500 W. Boyd Street, CMC 138
Norman, OK 73019

RE: An Examination of the Relationship Between Specific Personality Traits and Instrument Timbre Preference

Dear Mr. Payne:

On behalf of the Institutional Review Board (IRB), I have reviewed and granted expedited approval of the above-referenced research study. This study meets the criteria for expedited approval category 7. It is my judgment as Chairperson of the IRB that the rights and welfare of individuals who may be asked to participate in this study will be respected; that the proposed research, including the process of obtaining informed consent, will be conducted in a manner consistent with the requirements of 45 CFR 46 as amended; and that the research involves no more than minimal risk to participants.

This letter documents approval to conduct the research as described:

IRB Application Dated: December 04, 2008 Revised
Consent form - Parental Dated: December 04, 2008 Revised
Assent Form Dated: December 04, 2008 Revised
Protocol Dated: December 04, 2008 Revised
Other Dated: October 31, 2008 Bibliography
Survey Instrument Dated: October 31, 2008 Instrument Timbre Preference Test
Survey Instrument Dated: October 31, 2008 Demographic and Personality Inventory
Other Dated: October 31, 2008 Support letter - Blanchard Public Schools
Other Dated: October 31, 2008 Support letter - Blanchard Intermediate
Other Dated: October 22, 2008 Support letter - Highland East Junior High
Other Dated: October 22, 2008 Support letter - Moore High School
Other Dated: October 22, 2008 Support letter - Central Junior High
Other Dated: October 20, 2008 Support letter - Noble High School
Other Dated: October 20, 2008 Support letter - Blanchard Middle School
Other Dated: October 03, 2008 Support letter - Elk City Middle School
Other Dated: October 03, 2008 Support letter - Curtis Inge Middle School
Other Dated: October 03, 2008 Support letter - Elk City Junior High School
Other Dated: October 03, 2008 Support letter - Grandview 5th & 6th Grade Center
Other Dated: October 03, 2008 Support letter - Elk City High School

As principal investigator of this protocol, it is your responsibility to make sure that this study is conducted as approved. Any modifications to the protocol or consent form, initiated by you or by the sponsor, will require prior approval, which you may request by completing a protocol modification form. All study records, including copies of signed consent forms, must be retained for three (3) years after termination of the study.

The approval granted expires on December 09, 2009. Should you wish to maintain this protocol in an active status beyond that date, you will need to provide the IRB with an IRB Application for Continuing Review (Progress Report) summarizing study results to date. The IRB will request an IRB Application for Continuing Review from you approximately two months before the anniversary date of your current approval.

If you have questions about these procedures, or need any additional assistance from the IRB, please call the IRB office at (405) 325-8110 or send an email to irb@ou.edu.

Cordially,

Lynn Devenport, Ph.D.
Chair, Institutional Review Board

1401 Parrington Oval, Suite 316, Norman, Oklahoma 73019-3085 PHONE: (405) 325-8110 FAX:(405) 325-2373

The University of Oklahoma
OFFICE FOR HUMAN RESEARCH PARTICIPANT PROTECTION

IRB Number: 12349
Amendment Approval Date: June 16, 2009

June 16, 2009

Phillip Payne
Department of Music
909 N Avery Drive
Moore, OK 73160

RE: IRB No. 12349: An Examination of the Relationship Between Specific Personality Traits and Instrument Timbre Preference

Dear Mr. Payne:

On behalf of the Institutional Review Board (IRB), I have reviewed your protocol modification form. It is my judgement that this modification allows for the rights and welfare of the research subjects to be respected. Further, it has been determined that the study will continue to be conducted in a manner consistent with the requirements of 45 CFR 46 as amended; and that the potential benefits to subjects and others warrant the risks subjects may choose to incur.

This letter documents approval to conduct the research as described in:

Amend Form Dated: June 11, 2009
Assent Form Dated: June 12, 2009 Revised
Consent form - Parental Dated: June 12, 2009 Revised

Amendment Summary:

1) Change in Subject Enrollment - Request to increase from a previously approved maximum of 500 participants to a new maximum of 650 participants.
2) Revised Parental Informed Consent Form and Assent Form to reflect the increased number of participants.

This letter covers only the approval of the above referenced modification. All other conditions, including the original expiration date, from the approval granted December 10, 2008 are still effective.

If consent form revisions are a part of this modification, you will be provided with a new stamped copy of your consent form. Please use this stamped copy for all future consent documentation. Please discontinue use of all outdated versions of this consent form.

If you have any questions about these procedures or need additional assistance, please do not hesitate to call the IRB office at (405) 325-8110 or send an email to irb@ou.edu.

Cordially,

Donald Baker, Ph.D.
Vice Chair, Institutional Review Board

Ltr_Amend_Final_Appv_Exp

APPENDIX B

INFORMED CONSENT FORM

University of Oklahoma
Institutional Review Board
Parental Consent to Participate in a Research Study

Project Title:	An Examination of the Relationship Between Specific Personality Traits and Instrument Timbre Preference.
Principal Investigator:	Phillip D. Payne
Department:	School of Music, University of Oklahoma

You are being asked to volunteer for this research study. This study is being conducted at your child's school. Your child was selected as a possible participant because he/she is currently enrolled in band.

Please read this form and ask any questions that you may have before agreeing to take part in this study.

Purpose of the Research Study

The purpose of this study is to determine whether a relationship exists between personality traits and timbre preference. Secondary considerations will include choice of instrument, gender, peers, music director influence, years of experience, chair placement, and private instruction.

Number of Participants

About 650 people from four school districts will take part in this study.

Procedures

If you agree to be in this study, you will be asked to do the following:

1) Take a demographic and personality inventory (The DPI is included at the end of the form for review).

2) Take the *Instrument Timbre Preference Test*, which identifies a student's preference for specific sounds of instruments.

Length of Participation

Students will participate in the study for a total of no more than one hour. The DPI takes about 20-25 minutes and the *ITPT* takes less than 30 minutes.

This study has the following risks:

There are no risks in the current study.

Some research designs require that the full intent of the study not be explained prior to participation. Although we have described the general nature of the tasks that you will be asked to perform, the full intent of the study may not be explained to you until after the completion of the study. At that time, we may provide you will a full debriefing which will include an explanation of the hypothesis that was tested and other relevant background information pertaining to the study. You will also be given an opportunity to ask any questions you have about the hypothesis and the procedures used in the study.

Benefits of being in the study are

Benefits of the current study include improvement of a student's instrument selection process.

Confidentiality

In published reports, there will be no information included that will make it possible to identify you without your permission. Research records will be stored securely and only approved researchers will have access to the records.

There are organizations that may inspect and/or copy your research records for quality assurance and data analysis. These organizations include the OU Institutional Review Board.

Compensation

Your child will not be reimbursed for you time and participation in this study.

Voluntary Nature of the Study

Participation in this study is voluntary. If you withdraw or decline participation, you will not be penalized or lose benefits or services unrelated to the study. If you decide to participate, you may decline to answer any question and may choose to withdraw at any time.

Contacts and Questions

If you have concerns or complaints about the research, the researcher(s) conducting this study can be contacted at paynes21@ou.edu or (405) 818-6162 or Dr. James Sherbon at jsherbon@kc.rr.com or (405) 325-2081.

Contact the researcher(s) if you have questions or if you have experienced a research-related injury.

If you have any questions about your rights as a research participant, concerns, or complaints about the research and wish to talk to someone other than individuals on the research team or if you cannot reach the research team, you may contact the University of Oklahoma – Norman Campus Institutional Review Board (OU-NC IRB) at 405-325-8110 or irb@ou.edu.

You will be given a copy of this information to keep for your records. If you are not given a copy of this consent form, please request one.

Statement of Consent

I have read the above information. I have asked questions and have received satisfactory answers. I consent to participate in the study.

Signature Date

Child's Name (Please print)

APPENDIX C

CHILDREN'S ASSENT FORM

University of Oklahoma
Institutional Review Board
Assent to Participate in a Research Study

Project Title: An Examination of the Relationship Between Specific Personality Traits and Instrument Timbre Preference
Principal Investigator: Phillip D. Payne
Department: School of Music, University of Oklahoma

For children 10-18 years old

Why are we meeting with you?

We want to tell you about something we are doing called a research study. A research study is when researchers collect a lot of information to learn more about something. Researchers will ask you a lot of questions. After we tell you more about it, we will ask if you'd like to be in this study or not.

Why are we doing this study?

This study is being done to try and understand if the way a person acts influences what instrument he or she likes to hear.

In the whole study, there will be about 650 children who have taken both the personality test and the timbre preference test.

What will happen to you if you are in this study?

If you agree to be in this study, the following things will happen:

1. You will answer a lot of questions. These questions will ask about how you see yourself and what sounds you like.

How long will you be in the study?

You will be in the study for about one class period.

What bad things might happen to you if you are in the study?

No bad things will happen to you. The questions might take a long time to answer.

What good things might happen to you if you are in the study?

You may have fun learning what sounds you like.

Do you have any questions?

You can ask questions any time. You can ask now. You can ask later. You can talk to me or you can talk to someone else.

Do you have to be in this study?

No, you don't. No one will be mad at you if you don't want to do this. If you don't want to be in this study, just tell us. Or if you do want to be in the study, tell us that. And, remember, you can say yes now and change your mind later. It's up to you.

If you don't want to be in this study, just tell us.

If you want to be in this study, just tell us.
The person who talks to you will give you a copy of this form to keep.

Name (Please print)

Signature **Date**

APPENDIX D

REMINDER E-MAIL TO THE DIRECTORS

[Insert music teacher's name],

Good afternoon! I hope all is going well. I am e-mailing to remind you to collect the informed consent forms that I delivered last week. Please let me know how many consent forms you have as of receipt of this e-mail, so that I may have enough tests for my visit.

On the day of my visit, I will take the list you have provided then compare it with those that have returned informed consent forms. I will add names when needed. Once the list is finalized, we will take the participating students to another room for test administration. The students will then be in the testing process for the remainder of the class period.

If you have any questions, please feel free to e-mail me.

Sincerely,

Phillip D. Payne
Music Education Research/Teaching Assistant
GMSA Treasurer 2008-2009
University of Oklahoma

APPENDIX E

SCRIPT TO OBTAIN ASSENT

To Students:

Good morning![1] My name is Phillip Payne and I am currently a doctoral student at the University of Oklahoma. [pause] Does everyone have a test? If so, everyone should be looking at a page that says "Assent to Participate in a Research Study". I am going to quickly go through this sheet with you.

Why are we meeting with you?

I am working on a research study that is investigating the relationship between personality and timbre preference and the following tests will ask questions to help me arrive at some conclusions.

Why are we doing this study?

This is my final project as a doctoral student and I am trying to understand the relationship between students' personality traits and their timbre preference. There will be about 500 students that participate in the current study.

What will happen to you if you are in the study?

Two things will happen to you if you choose to be in the study. The first is you will be asked to answer several questions about yourself. The second test will measure what sounds you like best.

How long will you be in the study?

You will be in the study for no longer than one class period. Both tests take about 35 minutes to finish.

What bad things might happen to you in the study?

No bad things will happen to you. The only bad thing might be is the questions take a little time to answer and the listening test is about 18 minutes long.

What good things might happen to you in the study?

You may have fun learning what sounds you like!

Does anyone have any questions?

[Answer any questions they might have.]

Do you have to be in this study?

---

[1] Salutation dependent on time of administration.

No, you do not and if you choose to participate, you may leave the study at anytime, no questions asked. No one will be mad if you choose to do so.

Now, if you choose to be in the study, please sign and print your name where the paper indicates and turn to the next page and await further instructions. If not, you may [direction depends on the size of the group participating].We will begin shortly.

Thank you! [Wait time.]

APPENDIX F

DEMOGRAPHICS QUESTIONNAIRE

1. What is your gender? (Circle one)
    a. Male
    b. Female

2. What is your age? (Circle one)

    10 11 12 13 14 15 16 17 18

3. What grade are you in? (Circle one)

    6 7 8 9 10 11 12

4. What school do you attend?
    a. _____

5. What band instrument do you play?
    a. _____

6. What is your ethnicity?
    a. African American/Black
    b. Asian American/Asian Pacific Islander
    c. American Indian/Alaskan Native
    d. Hispanic
    e. White/Caucasian
    f. Other (please specify)
        i. _____

7. Do you take private lessons on your instrument?
    a. Yes
    b. No

8. How long have you taken private lessons?
    a. _____

9. How long have you played your instrument?
    a. _____

10. Are you placed in chairs by chair tests?
    a. Yes
    b. No

11. What chair are you currently?
    a. _____

12. Do your parents play an instrument or played an instrument in the past?
    a. Yes
    b. No

13. If yes, what instrument?
    a. _____

14. Is your parent (or parents) a professional musician?
    a. Yes
    b. No

15. Do any of your relatives (parents included) play the same instrument you do?
    a. Yes
    b. No

16. Was your first instrument
    a. From your home
    b. Bought outside of your home
    c. A hand-me-down from a relative

17. Are most of your friends:
    a. In band
    b. Not in band

18. Describe the degree to which the following factors affected or could affect your selection of an instrument.

	1	**2**	**3**	**4**	**5**
	Extremely unaffected	**Moderately unaffected**	**(Neutral)**	**Moderately affected**	**Extremely affected**
Sound of instrument					
Band Director					
Parents					
Friends					
Other					

If you answered other, please describe on the line below:

_____

19. Rate your enjoyment of playing your instrument from 1 to 5, with one meaning no enjoyment to 5 meaning the complete enjoyment.

1	**2**	**3**	**4**	**5**
No enjoyment	Moderately unenjoyable	Neutral	Moderate Enjoyment	Complete Enjoyment

APPENDIX G

RESOURCE ASSOCIATES'

ADOLESCENT PERSONAL STYLE INVENTORY

APSI
Adolescent Personal Style Inventory (v. 081903)

As you read each of the following sentences, think about how you act or feel most of the time. Think about whether you agree or disagree with each sentence. Next to each sentence, there are five numbers that measure how much you agree with the sentence. For each sentence, decide which of the 5 numbers best describes how much you agree with the sentence. Circle that number.

For example, if you agree with the sentence, you might want to circle the number 4 or 5, depending on whether you agree or strongly agree with the sentence. If you disagree with the sentence, you might want to circle the number 1 or 2, depending on whether you strongly disagree or disagree with the sentence. If you are unsure about whether you agree or disagree, or if you feel in-between about the sentence, you might want to circle the number 3. You can use a pencil or pen to mark your answers. If you change your mind about an answer, make sure you erase your old answer completely. Then mark your new answer clearly.

Here are three examples:

EXAMPLE 1:
I will do anything I can to make sure a project gets done on time. **1 2 3 4 ⑤**
In this example, the person circled number 5. This means that the person strongly agrees with the sentence. The person thinks it is very important to get a project done on time.

EXAMPLE 2:
When I am working on a problem, I hate it when a person tries to talk to me. **1 ② 3 4 5**
In this example, the person circled number 2. This means that the person disagrees with the sentence. The person does not mind when someone talks to him or her while he or she is working on a problem.

EXAMPLE 3:
For me to feel good about myself, it is important that I do well on my assignment. **1 2 ③ 4 5**
In this example, the person circled number 3. This means that the person is in-between or that they cannot decide on whether it is important to do well on his or her assignments.

There are no right or wrong answers to the questions. Please answer each of the questions from your point of view. Do not answer the questions like you think others would expect you to answer. BE HONEST in how you answer the questions. If you do not understand these instructions, ask the person who gave you this form to explain what you don't understand.

PERSONAL STYLE INVENTORY for Adolescents (v. 081903)

Directions:
Read each sentence. **Circle** the answer that describes you best. Use the following scale to help you answer each statement:
1 = **Strongly Disagree** – you strongly disagree with the sentence; it really does not describe you at all.
2 = **Disagree** – you disagree with the sentence; it does not describe you.
3 = **In-between** – you are not sure whether you agree or disagree with this sentence; you are undecided.
4 = **Agree** – you agree with this sentence; it describes you**.**
5 = **Strongly Agree** - you strongly agree with the sentence; it really describes you.

	Strongly Disagree	Disagree	In-Between	Agree	Strongly Agree
1. I am always very careful when I am doing school work.	1	2	3	4	5
2. My mood goes up and down more than most people.	1	2	3	4	5
3. I spend a lot of time talking to other people.	1	2	3	4	5
4. I like to find out about new things that interest me, even though they are not required for any class.	1	2	3	4	5
5. I try to get along with other people, even if I don't agree with them.	1	2	3	4	5
6. I always finish everything I start.	1	2	3	4	5
7. Sometimes I don't feel like I'm worth much.	1	2	3	4	5
8. It is hard for me to make new friends.	1	2	3	4	5
9. I like to try new ways of doing things.	1	2	3	4	5
10. I sometimes say things just to make other people mad.	1	2	3	4	5
11. I like to plan things before I do them.	1	2	3	4	5
12. I often feel tense or stressed out.	1	2	3	4	5
13. I am very outgoing and talkative.	1	2	3	4	5
14. I would like to keep going to school for many years just to learn new things.	1	2	3	4	5
15. I am always polite to other people.	1	2	3	4	5
16. I try to be very neat and organized in my homework and class assignments.	1	2	3	4	5
17. I sometimes feel like everything I do is wrong or turns out bad.	1	2	3	4	5
18. I smile a lot when I am around other people.	1	2	3	4	5
19. I like to read books on different subjects.	1	2	3	4	5
20. I try to be nice and polite in every situation.	1	2	3	4	5
21. My teachers can always count on me to do what they ask me to do in class.	1	2	3	4	5
22. I feel like I can't handle everything that is going on in my life.	1	2	3	4	5
23. I like to go to big parties.	1	2	3	4	5
24. I would like to learn how to read and speak a foreign language.	1	2	3	4	5
25. I sometimes make fun of other kids in school.	1	2	3	4	5
26. I try to be very neat and organized in my homework and class assignments.	1	2	3	4	5
27. I sometimes feel like I'm going crazy.	1	2	3	4	5
28. I have a lot of energy when I am around other people.	1	2	3	4	5
29. I like to do most things the way I've always done them.	1	2	3	4	5

30. If anybody says something mean to me, I say something mean right back to them.	1	2	3	4	5
31. I like to keep everything I own in its proper place.	1	2	3	4	5
32. It takes a lot to get me worried.	1	2	3	4	5
33. Most people who know me like me.	1	2	3	4	5
34. I like to hear about ideas that are different from mine.	1	2	3	4	5
35. I sometimes say I agree with other people just to avoid an argument.	1	2	3	4	5
36. It is hard for me to keep my bedroom neat and clean.	1	2	3	4	5
37. I sometimes feel sad or blue.	1	2	3	4	5
38. I talk on the phone a lot.	1	2	3	4	5
39. I like to find out how people live in other places in the world.	1	2	3	4	5
40. I sometimes trick other people into doing what I want them to do.	1	2	3	4	5
41. I always clean up after I have made a mess.	1	2	3	4	5
42. I feel good about myself most of the time.	1	2	3	4	5
43. If I am in a group and no one says anything, I will say something first.	1	2	3	4	5
44. I would like to travel to other countries.	1	2	3	4	5
45. Sometimes I say things on purpose to hurt other people's feelings.	1	2	3	4	5

Remember, answer all of the questions honestly. **All of your answers will be kept confidential**.

(Actual appearance and size may vary based on stipulated margins.)

APPENDIX H

INSTRUMENT TIMBRE PREFERENCE TEST

ANSWER SHEET

INSTRUMENT TIMBRE PREFERENCE TEST - Edwin E. Gordon

NAME _____

GRADE _____

SCHOOL _____ ROOM _____

IMPORTANT:

- USE NO. 2 PENCIL ONLY
- EXAMPLE: ⊏1⊐
- ERASE COMPLETELY TO CHANGE

KEY
1 2

	1	2
1	⊏1⊐	⊏2⊐
2	⊏1⊐	⊏2⊐
3	⊏1⊐	⊏2⊐
4	⊏1⊐	⊏2⊐
5	⊏1⊐	⊏2⊐
6	⊏1⊐	⊏2⊐
7	⊏1⊐	⊏2⊐
8	⊏1⊐	⊏2⊐
9	⊏1⊐	⊏2⊐
10	⊏1⊐	⊏2⊐
11	⊏1⊐	⊏2⊐
12	⊏1⊐	⊏2⊐
13	⊏1⊐	⊏2⊐
14	⊏1⊐	⊏2⊐
15	⊏1⊐	⊏2⊐
16	⊏1⊐	⊏2⊐
17	⊏1⊐	⊏2⊐
18	⊏1⊐	⊏2⊐
19	⊏1⊐	⊏2⊐
20	⊏1⊐	⊏2⊐
21	⊏1⊐	⊏2⊐
22	⊏1⊐	⊏2⊐
23	⊏1⊐	⊏2⊐
24	⊏1⊐	⊏2⊐
25	⊏1⊐	⊏2⊐
26	⊏1⊐	⊏2⊐
27	⊏1⊐	⊏2⊐
28	⊏1⊐	⊏2⊐
29	⊏1⊐	⊏2⊐
30	⊏1⊐	⊏2⊐
31	⊏1⊐	⊏2⊐
32	⊏1⊐	⊏2⊐
33	⊏1⊐	⊏2⊐
34	⊏1⊐	⊏2⊐
35	⊏1⊐	⊏2⊐
36	⊏1⊐	⊏2⊐
37	⊏1⊐	⊏2⊐
38	⊏1⊐	⊏2⊐
39	⊏1⊐	⊏2⊐
40	⊏1⊐	⊏2⊐
41	⊏1⊐	⊏2⊐
42	⊏1⊐	⊏2⊐

TEST RECORD
A
B
C
D
E
F
G

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APPENDIX I

SCRIPTS FOR ADMINISTERING THE TESTS

Script for test administration:

To Students:

Good morning![2] Everyone should have a demographics questionnaire and the *Adolescent Personal style Inventory* in front of you. Before taking the questionnaire, I would like to remind you of the voluntary nature of the study. If at any time you wish to leave you may do so. The following papers are two separate sets: the first section contains questions about you. Please answer all questions as accurately as possible. If you have any questions, please feel free to raise your hand and I will come to assist you. Take the next 5 minutes to complete the first page. [Wait until finished]

To Students:

The second section is a personality inventory. Please turn to the page that says Resource Associates' Adolescent Personal Style Inventory. Please read through the first page which has the directions for the inventory. [wait] Are there any questions? As you see, there are 45 statements regarding how you feel. Circle a number between 1 and 5 as to the degree to which that statement reflects how you view yourself today. A rating scale is provided at the top of the inventory. The ratings are: [List Ratings]. [Go through the examples on the first *APSI* page]

When you are completed, turn your test over and place your pencils on the desk. You will have 10 minutes to take the test.

[After the first section is completed:]

To Students:

This is the last phase of your involvement in this study. This test allows us to find out what sounds you prefer over others. You will be asked to listen to the following recording. There are 42 items on this test. There is no right or wrong answer to any item on the following test and individual scores on this test will not be shared with anyone. During each question you will hear a melody with two different timbres, or sounds. Please choose the timbre that sounds better to you. If you like the first sound better, color in the number "1" on your test like so: [demonstrate the task]. If you like the second sound better, color in the number "2" like so: [demonstrate the task]. Are there any questions?

[2] Salutation will be varied depending on the time of administration.

[If there are any, answer now. If not,] This task will be the same for all 42 questions. The test will take about 20 minutes to complete.

To students:

Thank you for your participation today. Have a great day!

APPENDIX J

LIST OF OTHER FACTORS OF INSTRUMENT SELECTION

PROVIDED BY STUDENTS

List of Factors

1. Look
2. Size
3. Other family member played the same instrument
4. Had the instrument in the house
5. Played the recorder prior to enrollment in band
6. Recruiting music selections
7. Myself (the student)
8. Success of the program
9. Ensemble experience
10. Price (Cost of the horn and band fees)
11. Music
12. Ensemble need (Instrumentation)
13. Played piano
14. Easy
15. Difficult/No one else played it.
16. Famous actor/musician/celebrity played the same instrument.
17. Fun
18. Challenging
19. Sounds of other instruments
20. Braces
21. Tricks to learn
22. Older students
23. Played the instrument in elementary school
24. Had to play one instrument to play another
25. Health
26. Boy Scouts of America
27. It was required
28. Embouchure
29. Art
30. Range of the instrument
31. Church Band
32. A cool name
33. Jazz