Spring 5-15-2016

Music, Emotion, and Personality Typing: A Look into Coexisting Relationships

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MUSIC, EMOTION, AND PERSONALITY TYPING: A LOOK INTO COEXISTING RELATIONSHIPS

By

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Submitted to the faculty of the Graduate College of
Arkansas Tech University
in partial fulfillment of the requirements
for the degree of
MASTER OF SCIENCE IN PSYCHOLOGY
May, 2016

Abstract

This study was intended to replicate previous research findings on musical preferences as a result of specific personality typing; explore the potential for using musical preferences as predictors of determining personality types; and examine changes in personality and music preference across various demographics. Existing research in the areas of music and personality have provided essential information that leads to understanding motivations and influences for an individual's preference. The current study, utilizing both the Small Test of Musical Preferences (STOMP) and Big Five Inventory (BFI), consisted of a questionnaire completed by undergraduate student volunteers (n = 362) via a campus-wide e-mail invitation. Participants responded to demographic and qualitative questions, the BFI and the STOMP. Pearson's correlations reflected multiple significant relationships, with the highest between *Openness* and *Reflexive/Complex* ($r = 0.351$, $p < 0.001$), and sex and *Upbeat/Conventional* ($r = -0.332$, $p < 0.001$). Further, ordinary least square (OLS) linear regressions for the BFI subscales ((1) *Extraversion*, (2) *Agreeableness*, (3) *Conscientiousness*, (4) *Neuroticism*, and (5) *Openness*) indicated the potential for identifying individuals' personality traits through music preference, sex, and handedness. The study found statistical significance present in relation to all personality types where music preference was a predicting variable. *Upbeat/Conventional* and *Energetic/Rhythmic* music genres were the most statistically significant predictors. Limitations for this work include factors such as time constraints, lack of analysis of open-ended questions, and some weighted results, specifically *Neuroticism* in women; the study demonstrated support of almost all researcher hypotheses, reflecting relationships between musical preference and personality traits.

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I. Introduction

In one form or another, music can be found throughout most facets of life. Music has been used in a variety of ways from personal uses for entertainment and enjoyment to functional uses for mood influence and self-regulation. In years past, one was subject to the stylistic choices of radio disc jockeys or live artists bringing limitations to personal preference in available music content, specifically restricting preferences to that of the host of the show. Music availability then evolved into artistic visualizations represented through music videos, available to some simply by turning on their televisions. However, availability of preferred content was still at the liberty to those in charge of programming selections, again limiting individuals to the choices of others, only with an occasional shared preference.

This trend continued with the introduction of the internet, specifically that of dedicated websites devoted to providing musical content at the click of a mouse. Internet services increased listener preferences by making available the ability to skip, like, or dislike a particular song, genre, or class of music. This enabled an extended ability to tailor playlists to the individuals themselves, but still suffered from restrictions and limitations. Modern-day cell phones, mp4 players, and other mobile devices have further aided in the specific ease of access to preferred music and video content with the ability to search, store, retrieve, and manipulate playlists to the liking of the individual from a multitude of sources, localized or global. The introduction and increasing improvement of these devices further promote the ability to access just about any song, from any genre, at any time, solely based on the preferences of the listener.

A key factor in music preferences differences across individuals is explained by varied personality traits (North, 2010). Safe or dangerous, fast or slow, bold or meek, these are just some ways individuals can express themselves through a variety of actions and activities, including musical preferences and selections. Personalities from one to another can reflect almost identical tendencies or be quite different (Silvia, Fayn, Nusbaum, & Beaty, 2015). Generally speaking, certain personalities tend to lead individuals to seek out others with similar personalities, yielding commonalities in which to develop interpersonal relationships, while segregating or out-grouping those with dissimilar tastes than their own (Lastinger, 2011). Music preference is just one of the ways individuals can identify common ground for expressing their opinions and engaging in casual conversation through these socially similar groupings, which may make, break, degrade, or strengthen relationships.

Exploring the relationship between musical preferences and individual personality traits is the main focus of the current study. Understanding the personality similarities and differences between individuals, and their preferences of music, has the potential for yielding deeper insight into the influential role and importance music has on individuals. Beyond direct understanding of personality and preference, individual factors such as demographics or socioeconomic status may differ from person to person, and cannot be omitted as potential influence to personality development or musical preference. It is to this effect, this study proposes to: (1) replicate previous research findings on musical selections/preferences as a result of specific personality traits (i.e. it is hypothesized that there is a relationship between music preference and personality type); (2) explore the potential for using musical preferences as predictors of determining personality traits

(i.e. it is hypothesized that knowledge of musical preference can predict personality type); and (3) examine differences in personality traits and music preference across various demographics (i.e. it is hypothesized that knowledge of musical preference and demographics can predict personality type).

II. Literature Review

Music Influences on Personality

Influence on personality traits, such as extraversion, self-expression, or self-identity, can start at an early age and continue throughout the lives of individuals, both at important milestones and during daily routines. Havighurst, Kuhlen, and McGuire (1947) utilized numerous articles, journals, and publications in an attempt to define personality and analyze individual development across systems of complex societies and cultural sub-groups. Identifications of personality traits among those listed included over-inhibited, un-socialized, aggressive, self-disciplined, self-motivated, and compliant, among others. Based on the literature review, the authors hypothesized a multitude of possible causes for personality, attitude, value, or interest differences and changes resulting from relationships with parents, peers, or exposure to various social settings (Havighurst, Kuhlen, & McGuire, 1947). One such difference was that of interests in radio programming, which was reported as changing across age spans. The discovery of age, social, and culture related differences in social interests may explain how personalities differ across individuals and societies through personal preferences, such as music styles (Havighurst, Kuhlen, & McGuire, 1947).

Another example of personality influence through music was examined in a research experiment (Djikic, 2011). The study participants were 87 first-year Canadian university undergraduates, and the research tested whether music had the ability to produce significant changes in the experience of one's own personality traits. Participants completed pre- and post-condition questionnaires, which included the Big Five Inventory (BFI), a 44 question testing tool used for the identification and strength

measurement of personality traits through sub-category mean scores (e.g. *Extraversion*, *Agreeableness*, *Conscientiousness*, *Neuroticism*, and *Openness*). The participants, fluent in English and not proficient in the German language, were divided into three groups. The first group listened to a classical, instrumental song while reading an English translation of German lyrics composed specifically to accompany the music. The second group listened to the classical song which was then followed with the text of lyrics, written in German, to strictly gauge tonal impact. The last group only listened to the English translation of the lyrics, with no music, while following its text as well. Participants reported music producing significant increases, and lyrics producing significant decreases to their experience of short-term change in personality traits, examined by the increase or decrease in score sums of BFI responses (Djikic, 2011).

Developmental trends in musical attitudes and preferences were explored across a quarter of a million participants, aged adolescence through middle adulthood (Bonneville-Roussy, Rentfrow, Xu, & Potter, 2013). Two large cross-sectional studies were used wherein the first study investigated age trends in musical engagement (e.g. importance, frequency, and context) and the second, age trends in musical preferences. Results of the first study reported that music is considered important by adults, but that importance declines with age. Study one also found that young people listen to music significantly more and more publically than middle-aged adults. They listen to music for various reasons, whereas adults listen to music more privately and for more specific reasons, such as relaxation or motivation. Results of the second study reflected intense and contemporary music-preference dimensions decrease with age, whereas preferences for unpretentious and sophisticated music dimensions increase with age. Study two also

reported a close association between age trends in musical preferences and personality. Younger listeners initially preferred intense, upbeat music, which declined with age into more mellow and sophisticated preferences of music with older listeners. In summary, these findings suggest that musical preferences are subject to a variety of developmental influences, in areas such as psychosocial development, personality, and auditory perception, throughout the lifespan (Bonneville-Roussy et al., 2013).

To delve a little deeper into the impact personality has on individuals and social situations, Lastinger (2011) conducted a study to discover if people have stereotypes about different music genres and whether or not these stereotypes were projected onto others. Student members of the American Music Therapy Association (n = 182) and non-music majored college students in the southeastern United States (n = 206) were asked to listen to a recording, where the control group heard only a script and experimental groups heard the same script with additional background music and crowd noises. They were then asked to complete a short survey in which they rated the person in the recording on personality descriptors and predetermined demographic information. Many responses were significantly affected by the genre of music, exhibiting more negative ratings to the script reader when in the presence of rap or country music, than when in the presence of classical, jazz, or no music. These findings make it possible to concur that music has the potential for adding additional influence to perceptions of personality, possibly through emotional connections to the music which they were exposed (Lastinger, 2011).

Emotion Associated with Music and Personality

Emotion is an essential core element to both personality and music individually, as well as together in the right context. Through the expression of emotion, individuals

may find alternate opportunities for reflection of personality through a variety of outlets such as hobbyist or professional compositions. Artists pride themselves in the conveyance of expressing specific emotions when crafting and composing their musical works, to which these emotions can most often be perceived by listeners as intended through the final music mix (e.g. Bradley, 1947).

Bradley (1947) reports in his autobiographical article from his first-hand experiences in composing background music for numerous live action and animated films. He regales his career in film and highlights a fundamental focus on adding "personality" to different soundtracks, in which he describes personality as being the expression of mood and drama. The main reason for the addition of personality, to him, was to heighten the viewing experience for the audience, through stylized auditory stimulation, as they watched films. Bradley further reported that no matter the situation, he and the orchestra were always ready to supply personality on the soundtrack emphasizing the needed intensity of a scene, or to aid in making unbearable silent action tolerable, if not enjoyable, through music. This ultimately set the tone for interpreting that the amount of fun and emotion the musicians invested into composing scores on the backside would have the ability to be perceived by viewers on the opposite side of the screen (Bradley, 1947).

Emotion has been associated with music and personality in other ways as well. In a study by Barrett et al. (2010), researchers presented participants with randomly selected excerpts of popular music before they rated how emotionally nostalgic each song made them feel. Nostalgia was defined by strength of response in eliciting greater numbers of positive, negative, and mixed emotions if a song was autobiographically salient, arousing,

and familiar. These effects were measured by individual differences across various measurement tools, including the BFI. *Neuroticism* is one of the five sub-scales of the BFI, where higher rated responses reflect higher levels of proneness in personality traits like fear, anxiety, and jealousy. Greater nostalgia proneness predicted stronger nostalgic experiences, and was associated with both joy and sadness, whereas irritation was associated with lower or non-nostalgic and non-autobiographical experiences. This suggests that music has the ability to reflect personality proneness, dependent on the strength of nostalgic emotional responses (Barrett et al., 2010).

In another reflection on emotions, Juslin, Liljeström, Västfjäll, Barradas, and Silva (2008) explored the relationships between naturally occurring emotions and music, focusing on how they related to the listener, music, and situation using the Experience Sampling Method (ESM). ESM is a procedure in which participants can report on an experience as it happens, usually through a handheld device that is always on their person. Specifically, thirty-two college students aged 20 to 31 carried a handheld Personal Data Assistant (PDA) that emitted a sound signal seven times per day for two weeks. At random intervals, participants were signaled to complete a questionnaire, to which results showed that music was present during 37% of the instances. Of those occurrences, the music present was reported to affect 64% of participants, reflecting that classified emotions of happiness-elation and nostalgia-longing were more frequent. Instances of anger-irritation, boredom-indifference, and anxiety-fear were found to be more frequent in occurrences with no music present, which may suggest music contains qualities with the ability to uplift individual spirits and enhance or modify personality traits (Juslin et al., 2008).

In a recent study examining participant liking for unfamiliar music across genres musical excerpts were played at varying tempos (fast or slow) and modes (major or minor) while participants listened (Ladinig & Schellenberg, 2012). Listeners rated their liking and emotional responses to the excerpts; these responses were classified and measured in intensity, happiness, and sadness. Results revealed listeners had a tendency to like music associated with stronger and happier feelings, displayed a dislike to music that represented sad feelings, and experienced mixed happy and sad feelings when listening to inconsistent emotional cues, those with varying tempos and modes. It was also discovered that listeners with a more intense emotional response to music scored high on *Agreeableness*, whereas those with stronger sad feelings also scored high on *Agreeableness* or *Neuroticism*. The researchers interpreted this to mean that those individuals who scored high on Openness-to-Experience or low on *Extraversion* also liked music that made them feel sad. The overall conclusion was that liking music varies as a function of the emotions evoking individual differences in personality (Ladinig & Schellenberg, 2012).

Openness to experience, among other traits, was explored during a British research study specifically on the contemporary heavy metal genre of music (Swami et al., 2013). Individuals from Britain were asked to rate their liking of 10 contemporary heavy metal clips from preselected tracks and complete a version of the BFI, as well as measures for attitudes toward authority, self-esteem, need for uniqueness, and religiosity. Results indicated that a stronger preference for the heavy metal music clips was associated with higher Openness to Experience, negative attitudes toward authority, lower self-esteem, a greater need for uniqueness, and lower religiosity. Additionally,

these results showed that men had a significantly stronger preference for the clips than women. Results utilizing the examination of one specific genre of music indicate a possibility for relationships to personality and other music genres as well (Swami et al., 2013).

It is within comprehension that emotion can be found in all manner of things derived from the senses, animate or not, depending on the reception of the individual. Research suggests that openness to experience presents suggestibility for awe-like experiences that enable an individual to perceive encountered stimuli with emotion, specifically in this case music and nature (e.g., Silvia et al., 2015). During a two-phase study, adult participants in one project viewed images of the sky and space and, in a later phase, listened to a song with qualities known, by authors, to evoke awe such as connectedness, smallness, and transcendence. Afterward, they were asked to rate their experiences on each item related to awe, wonder, and fascination. Openness to experience predicted the sense of awe for both space images (r = .48) and music (r = .35), while the other four factors of personality had much smaller effects. Awe-like experiences differed from typical positive affectivity, as *Extraversion* displayed effects consistently near zero; yielding conclusions that showed support of openness to experience as an essentially aesthetic trait. Despite that only *Openness* could predict the sense of awe among the other traits, it still appears that exposure to music or alternate stimuli served as an inspirational emotion evoking response (Silvia et al., 2015).

Choices of music are reflective of where a person draws inspiration, often exhibited through representative actions and preferences, comparable from one individual to another. Prinz and Seidel (2012) elicited directly predicted responses in emotion

between three groups of undergraduates (n = 66) using two different styles of instrumental music (e.g. happy and sad), and a control group of no music. Findings reflected the ability for music to incite compensatory responses either in creating an emotion or assisting in calming an emotion from an accelerated state. Use of music in this manner, serving as functions for emotional stabilization, further provides insight into the potential reasons why individuals choose specific music to accompany or distract from certain situations (Prinz & Seidel, 2012).

Inference can be drawn from the presented studies that music plays a key role in evoking emotions which can influence how an individual perceives that music (e.g. Bradley, 1947; Barrett et al., 2010; Ladinig & Schellenberg, 2012; Prinz & Seidel, 2012; Silvia et al., 2015). These perceptions may directly translate into the adaptive personality traits that individuals take-on throughout extended exposure to music. The degree and methods of exposure have bearing in regard to preferences that may develop within an individual; and emotion itself may also lend to frequency of listening to and preferred style of music.

Music Preferences on Personality

Styles of music can influence ones thoughts based on feelings conveyed by music. These introspections have direct key roles in the development and nurturing of individual identities exhibited through activities, attitude intensity, behaviors, and choices. A review of research suggests that music affects cognition, emotion, and behavior and serves various functions for people, including emotion regulation, self-expression, and social bonding (e.g. Rentfrow, 2012). Additionally, some self-reports indicate that music

provides a medium for self-exploration and serves as a self-reflection of individual identity (e.g., Bradley, 1947; Lawrie, 1974).

First introduced in a study by Rentfrow and Gosling (2003), the Short Test of Musical Preferences (STOMP) examined individual differences in music preferences across a series of six studies. Multiple samples from various geographic regions and a variety of methods were utilized for the analyses of the music preferences of over 3,500 individuals. Results revealed four dimensions of music-preference: *Reflective and Complex, Intense and Rebellious, Upbeat and Conventional,* and *Energetic and Rhythmic*. Additionally, general participant responses indicated that music is considered an important aspect of everyday life and that individuals in the study enjoyed listening to music during frequently engaged-in activities (Rentfrow & Gosling, 2003).

Rentfrow and Gosling (2003) paved the way for others to expand research on relationships between music preferences and personality. Zweigenhaft (2008) utilized the STOMP in collaboration with the Neuroticism-Extraversion-Openness Personality Inventory (NEO-PI) to study music and personality in undergraduates. The NEO-PI was selected for its more extensive question inventory compared to the BFI. NEO-PI mean scores analyzed with the four dimensions of music preference suggested that the personality patterns for the specific music genres differed considerably from one individual to the next (Rentfrow & Gosling 2003). *Openness* was by far the most robust of the BFI traits assessed by the NEO-PI, and preferences for some music genres like folk ($r = 0.40$, $p < 0.05$), international music ($r = 0.43$, $p < 0.05$), and rap/hip-hop ($r = 0.38$, $p < 0.05$) were more strongly correlated to personality than others such as classical ($r = 0.04$, $p < 0.05$), rock ($r = 0.04$, $p < 0.05$), and electronic ($r = 0.04$, $p < 0.05$).

Langmeyer, Guglhör-Rudan, and Tarnai (2012) also examined the relationship between music preferences and personality by replicating Rentfrow and Gosling (2003) with a sample of younger Germans (n = 422, age range 21–26 years) rating sound-clips. The relationships between the BFI and STOMP were analyzed, along with sex differences. Results suggested that individuals open to experience preferred *reflective/complex* music and *intense/rebellious* music, while they simultaneously disliked upbeat/conventional types of music. The results went on to reveal that extraverts in the study preferred *upbeat*, *conventional*, *energetic*, and *rhythmic* types of music. Results were consistent with those in other research that examined the relationship between music preferences and personality (Langmeyer, Guglhör-Rudan, & Tarnai, 2012).

Boyle, Hosterman, and Ramsey (1981) also examined individuals' choices on pop music and compared responses of students in grades five, seven, nine, eleven, and college, examining self-reported reasons for pop music preferences. The study factored in responses of students with different experiences, including those enrolled in choir, band, or music theory courses, and participant background characteristics such as music ability, parent/sibling interest/preference in music, and level of music importance. These factors revealed the most important reasons for preference were criterion specific to the music, such as the melody, mood, rhythm, and lyrical content. Socio-cultural variables were also examined and determined to be viewed as less important predictors, while some differences for preference were found between different grade levels and some student background characteristics. These results suggest that music preference can be

influenced or changed across factors of age, grade, or even familiarity with an instrument or music composition (Boyle, Hosterman, & Ramsey, 1981).

In a George, Stickle, Rachid, and Wopnford (2007) study, a sample of 358 individuals completed questionnaires which collected preferences from 30 different musical styles, demographic information, instrumental and vocal involvement, and personal variables (e.g. *social skills, openness, Conscientiousness, Extraversion, Agreeableness*). The 30 music styles were compressed down to eight classifications: *Rebellious* (e.g., punk, grunge, heavy metal), *Classical*, *Rhythmic/Intense* (e.g., hip-hop and rap, pop, rhythm and blues), *Easy Listening* (e.g. swing, folk), *Fringe* (e.g. New Age, electronic), *Contemporary Christian*, *Jazz and Blues*, and *Traditional Christian* (e.g. hymns). Results of correlations and regression analyses revealed negative relationships between *Rebellious* and *Rhythmic/Intense* listeners, meaning individuals that reflect negative personal profiles are more likely to prefer *Rebellious* and *Rhythmic/Intense* music. *Classical* music, however, produced positive relationships, which indicates that individuals with positive profiles are more likely to prefer *classical* music. Information derived from this study allows a deeper understanding of how personality profiles may reflect an individual's personal choices in various music styles (George et al., 2007).

North and Hargreaves (1995) investigated the relationships between the effects of stimulus familiarity and subjective complexity on the liking of music excerpts. Seventy-five undergraduate participants were asked to rate 60 excerpts of contemporary popular music for liking, subjective complexity, or familiarity. Subjective complexity was related to objective properties of the stimuli (i.e. individual's knowledge of music and musical composition elements), while familiarity was determined by cultural exposure and the

subjects' own choices. Each of these factors was found to have a unique relationship with liking of the music selection to which the participant was exposed. Results suggested a positive relationship between liking and familiarity, and a relationship between liking and subjective complexity, described by authors as an inverted-U. This further expands on the idea that preferences of music are influenced by individual tastes (personality traits) and cultural exposure (North & Hargreaves, 1995).

Building on his previous research on personality, North (2010) further expanded the extent to which personality factors correlate with liking for a wide range of musical styles. Over 36,000 participants each rated their liking for 104 musical styles, completed a short BFI, and provided additional information regarding their favorite musical styles. North found that personality factors were related to both liking for the musical styles and participants' reasons for listening to this music. Results reflect that music style preferences, while still significant, were more closely related to variables regarding participants' age, sex, and income more so than to BFI scores. Although findings indicated a greater relationship between demographics and preferences, the correlational analysis in this study lent support to the statement that personality played a role in participant musical preferences (North, 2010).

A cross-generational study explored the relationship between continuity in music taste and transmission of music preferences from parents to their children (ter Bogt et al., 2011). Music preferences were collected from adolescents and both of their parents, (n = 325) using educational levels, as a reference of social position, as covariates across all. Preferences of the parents, defined by their generationally categorized music, and currently categorized preferences of their children were gauged for similar likeness and

re-categorized for this study under the general labels of *Pop*, *Rock*, *Highbrow* (e.g. classical, jazz), and *Dance* (e.g. funk, disco, trance). Results revealed trends where lower education was associated to preferences for *Dance* music, musical tastes were relatively similar for both generations, and parental preferences were generally able to predict the music choices of the adolescents. This ability for prediction suggested that *Pop* and *Highbrow* preferences of mothers and fathers contributed to the likelihood of adolescent preferences for *Pop* and *Dance*, and parents' preferences for *Rock* indicated similar *Rock* music preferences for their daughters, but not their sons. In conclusion, it stands that preference for certain music indeed shows continuity from generation to generation with a small margin for error. This trend reflects that music is an influencing factor, not only to parents and their children independently, but also through the exposure of preferences from parent to child as well (ter Bogt et al., 2011).

Studies continue to provide evidence which supports that music preferences are influenced by a variety of factors (e.g. Boyle, Hosterman, & Ramsey, 1981; North & Hargreaves, 1995; ter Bogt et al., 2011). Social surroundings, generational trends, and familiarity all point toward suggestible factors which might sway an individual in personality development and musical preference. Exposure is possibly a core component of these trends through the introduction of new or retro styles, based on the preferences of others. Regardless of the flow, the relationship between music preferences and personality is apparent to exist and be manipulated through exposure to external stimuli encompassing the individual's environment.

Relevant Measures

It would seem the ability to correlate music preference and personality is possible through a wide array of testing measures (e.g. Cattell and Anderson, 1953; John, Donahue, & Kentle, 1991; Cutietta and McAllister, 1997; Rentfrow & Gosling, 2003; Gurven et al., 2013). Some reflect great accuracy, while others generalize relationships. When looking to understand these relationships, it is important to ensure the proper tools were used for measure. Utilizing an improper method of measurement may lead to inconclusive or false data, yielding inadequate or skewed results, neither of which ensures reliability or validity. Therefore, efforts were made by the researcher to identify, understand, and eliminate alternative measurement tools in order to determine the adequacy of using the BFI and STOMP.

Researchers often disagree on the most relevant and reliable measures of personality and preference for use in empirical work. A review of literature yields multiple works comparing various assessable instruments that measure these concepts. One such comparison to the BFI was a study exploring the 16 Personality Factors (PF) questionnaire, a test on 16 personality factors from the Institute for Personality and Ability Testing (IPAT). In the instrument's original study, Cattell and Anderson (1953) examined a sample of 380 adults ranging from 18 to 68 years of age. Researchers scrutinized the 16PF as a personality test, after inspections of the musical excerpts were found to be loaded with culturally-determined groupings (weighted by cultural influence) which authors described as contradicting the logic of personal preference (i.e. reflecting a group opinion instead of the individuals). Cattell and McMichael (1960) later explored the IPAT in the context of its ability to determine any differences in musical preference

expressed by a control group, consisting of individuals with and without various psychiatric disorders. This particular experiment utilized a single, long-playing record to which participants could respond on answer sheets regarding preference. Unfortunately, very little information has been collected regarding its validity or reliability as a clinical instrument (e.g. Cattell & Anderson, 1953; Cattell & McMichael, 1960).

In a study by Cutietta and McAllister (1997), researchers administered a questionnaire to ascertain propensity for certain personality types. Examining 668 students in grades 7-12 who were about to begin or continue in musical instrument study, a questionnaire was administered to assess homogeneity of personality and the relationships between continued studiers and specific instruments, grouped into woodwinds, brass, percussion, and strings. Participant scores, reported on the four subscales of the Junior Eysenck Personality Questionnaire (e.g. *Tough-Mindedness, Extraversion*, *Emotionality*, and *Lying*) showed no significant correlations between personality types and students choosing to participate in music studies in either middle or high school. As well, results indicated that there was no trend toward homogeneity of personality type found in those that continue playing instrumental music. Though an aspect of the BFI (e.g. *Extraversion*) personality typing is present in this measure, combined with other assessed traits (e.g. *Tough-Mindedness, Emotionality, Lying*), this tool provided a questionable ability to encompass the breadth of personality type identification (Cutietta & McAllister, 1997).

Gurven, von Rueden, Massenkoff, Kaplan, and Lero Vie (2013) examined a more contemporary tool for assessing the personality of individuals. The five-factor model (FFM) is a universal test on personality assessment, which Gurven et al. presented to a

largely illiterate, indigenous society of 632 horticulturalist men and women of Bolivia. Results reported an inability to find support for the FFM through internal consistency, response stability, external validity, factor structure, and replication. Regardless of the removal of reverse-scored items, which may have produced response biases including *Extraversion*, *Agreeableness*, and *Conscientiousness*, the FFM remained unsatisfactory in the formerly mentioned areas.

The Current Project

Although there have been a plethora of studies regarding personality alone (e.g., Havighurst, Kuhlen, & McGuire, 1947), music by itself (e.g., Chenoweth, 1946), and a combination of the two (e.g., Lewis & Schmidt, 1991), there is an apparent lack of investigation into music preference as a predictor of personality type. Generally speaking, most existing research has focused specifically on that of an individual's personality having a role in musical preference, versus the opposite (e.g. Barrett et al., 2010). Insight into this possible relationship may be gained through further understanding of what components are involved in music preference and personality development.

Beyond personality and preference understanding, the driving force behind this study was broken down into three dimensions. The purpose of the first dimension was to (1) replicate previous research findings on musical preferences as a result of specific personality typing. The second dimension was to (2) explore the potential for using musical preferences as a predictor of personality types. Finally, the last dimension was to (3) examine changes in personality and music preference across various demographic groups. Specifically, the researcher addressed multiple hypotheses across each

dimension. The hypothesis for the first dimension was that (1) there is a correlational relationship between music preferences and personality types. The second dimension included hypotheses that (2) knowledge of an individual's musical preference can accurately predict their personality type, specifically that those preferring music genres containing relatively *Energetic* music will reflect individuals that are more outgoing, preferences of *Reflexive* genres will reflect more *Conscientiousness* in individuals, those liking *Intense* music will show higher *Neuroticism*, and *Conventional* music tastes will reveal more *Agreeableness*. Lastly, the hypothesis for the third dimension was that (3) knowledge of musical preferences can further predict personality types through the identification of covariates sex and handedness.

III. Methods and Design

Participant Selection and Informed Consent

After procuring the necessary authorizations and Institutional Review Board (IRB) approval for the project, a campus-wide e-mail was distributed to all enrolled students attending a mid-sized university in the South-central part of the United States of America at both a four-year and associated two-year campus during the spring semester of 2016. Through this mass e-mail, undergraduate and graduate students were invited to participate in the research study by following a web-link (via QuestionPro.com, with which the university had a data collection contract) for direct access to identical surveys designating the recruitment mode (e.g., the campus through which the students were currently enrolled). All study procedures, including reading the consent document, were completely voluntary and in no way impacted a student's academic standing or relationship with the university. Data collection retained anonymity through omission of asking specific identifiers such as exact date of birth, name, or questions that might reveal distinguishable information about the individual, such as degree major or extracurricular activities. After participants indicated consent, the questionnaire was self-administered.

Design Protocol

The survey contained questions including: general demographics; the Short Test of Musical Preferences (STOMP) (Rentfrow & Gosling, 2003); the Berkeley edition of the Big Five Inventory (BFI) (John, Donahue, & Kentle, 1991) personality test; and several open-ended questions reflecting emotion, mood, personal opinions (e.g. whether participants feel music affects mood, mood affects music preference, music has changed their personalities) and music exposure in regards to its perceived normalcy within

participants' daily routine. Demographic questions (e.g. Boyce, Torsheim, Currie, & Zambon, 2006) were utilized to ascertain possible differences in personality and music preferences previously demonstrated by pre-existing research, including differences between: sex (e.g. North, 2010) and age (e.g. Bonneville-Roussy et al., 2013). Handedness, as a novel exploration, was sought after for analysis as a potentially co-morbid factor for predicting music preferences and personality type.

The decision to use the BFI and STOMP was based on the literature review and an analysis of the comparison of tests and measures across existing research. In addition to these comparisons, the remaining elements for the decision to use the BFI and STOMP measures included: how easily participants could answer the content; previous assessments of reliability and validity of the measures; simplified conveyance of content to be measured; consideration of an individual's available participation time; and accuracy of analysis. Ultimately, utilization of the BFI, STOMP, sex, and handedness responses were anticipated aid in exploring the relationships between musical preferences and individual personality.

The STOMP and BFI allowed validated standards for measuring personality type and musical preferences. The Berkeley edition of the Big Five Inventory (BFI) was chosen for use in this study for its consistency in validity and reliability, as expressed through its use in previous studies (John, Donahue, & Kentle, 1991). It is comprised of 44 questions relating to the identification and strength of personality traits, reported on a 1-5 Likert scale. Participants are asked to answer each question on the scale to whether they (1) *strongly agree* to (5) *strongly disagree* with the phrase of each question. Questions contain phrases instigating introspection on each participants' feelings

regarding whether they are talkative, full of energy, or reliable (see Appendix A), for example. Responses are then grouped into sub-categories associated with each rated personality type (e.g. *Extraversion*, *Agreeableness*, *Conscientiousness*, *Neuroticism*, and *Openness*), and a mean score is computed to determine the tendencies and strengths of each.

The Small Test of Musical Preference (STOMP) was chosen to use in this study for its reliability and validity, as expressed through its in previous studies (Rentfrow & Gosling, 2003). The STOMP is composed of a list of 23 different music genres, to which participants rate the strength of preference for each on a 1-7 Likert scale. Participants are asked to answer each question on the scale to whether they *strongly dislike* (1) to *strongly like* (7) each genre of music such as rock, pop, soundtracks (see Appendix B). Responses are then grouped into sub-categories associated with each genre or music (e.g. *Reflexive and Complex*, *Intense and Rebellious*, *Upbeat and Conventional*, and *Energetic and Rhythmic*), and a mean score is computed to determine the tendencies and strengths of each.

Coding and Analysis

All collected data, both quantitative and qualitative, was exported from Questionpro into individual Microsoft Excel files designated for each sample pool. Once in Microsoft SPSS, variables were coded for use in analyses. For sex, all "choose not to answer" responses were treated as missing; as well, sex identification responses were re-coded as to exclude intersex and transitioning, as they comprised only 1% of the sample population. Sex was further coded into a dummy variable, *male*, with females as a referent. Responses for handedness were treated in a similar fashion, where "choose not

to answer" selections were considered missing. Left-handed and ambidextrous responses were coded into dummy variables, *left* and *ambi*, with right-handedness as a referent.

The 44 question BFI was used to rate participant responses on a 1-5 Likert scale for each question pertaining to introspection of personal characteristics (e.g. (1) *strongly disagree*, (5) *strongly agree*). Each Likert score provided insight into specific areas of personality through said questions regarding if the participant was talkative, full of energy, or reliable (see Appendix A). Per the validated BFI personality test scoring requirements, specifically designated questions were reverse coded to reflect proper personality type scoring during analysis; example: "tends to find faults in others" was re-coded so that a Likert rating of (1) *strongly disagree* would be a (5) *strongly agree* (John, Donahue, & Kentle, 1991). Further, BFI raw scores were re-coded as to treat "choose not to answer" responses as missing variables. Mean scores were then computed and coded into new variables for identification of BFI sub-categories (e.g. *Extraversion*, *Agreeableness*, *Conscientiousness*, *Neuroticism*, and *Openness*) for use in analyses.

The 23 question STOMP was used to rate individual participant responses for each question on a 1-7 Likert scale (e.g. (1) *strongly dislike*, (7) *strongly like*). Each question referenced a different music genre to which the Likert scores provided comparative insight into the personal preferences across all provided genre choices (see Appendix B). The STOMP preference test responses were re-coded to treat the "choose not to answer" responses as missing variables (Rentfrow & Gosling, 2003). Mean scores were then computed and coded into new variables for representative identification of the STOMP sub-categories (e.g. *Reflexive and Complex*, *Intense and Rebellious*, *Upbeat and Conventional*, and *Energetic and Rhythmic*) for use in analyses.

Primarily, the focus of this research study was to investigate any relationships between personality type and music preference. Due to the fact that the primary focus of the study was to investigate potential relationships between personality type and music preference the core attention of data analysis was placed on the accurate identification of personality as a predictor of music preference, music preference as a predictor of personality type, both, or a lack of relationship at all. Additional relationships were also investigated through participant responses to demographic questions.

IV. Results

Descriptive Statistics

The sample (n = 362) of enrolled college students, made up of females (n = 252; 69.6%) and males (n = 107; 29.6%), leaving less than 1% of participants identifying as transitioning or whom chose not to answer. Participants age (*M* = 27.67 years; range 18-65) was also collected, as well as individual races identified as African American/Black (n = 17; 4.7%), Asian (n = 14; 3.9%), White/Caucasian/Non-Hispanic (n = 319; 88.1%), Hispanic/Latino (n = 15; 4.1%), and American Indian/Alaskan Native (n = 11; 3.0%); unknown (n = 2) and those that chose not to answer (n = 1) made up the last 1% of the sample population, and no participants identified as Native Hawaiian/Pacific Islander. Right-handers (n = 320) dominated the survey at 88.4%, while left-handers (n = 31) and those who responded as ambidextrous (n = 11) completed the remaining 11.6%.

Analyzing the BFI sub-scoring categories, relatively normal distributed curves (see Figures 1-5) were reflected across all, with the highest deviation of scores occurring in the *Extraversion* (*M* = 3.006, sd = 0.906) and *Neuroticism* (*M* = 3.063, sd = 0.865) scales. Relatively normal distribution curves (see Figures 6-9), with only slight skewing, were reflected for the STOMP preference test responses. The STOMP responses indicated deviations the highest in *Intense and Rebellious* (*M* = 4.628, sd = 1.345) sub-categorized music preferences. Complete descriptive information for all subscales is listed in Table 1 below.

Table 1: Descriptive Statistics

Measure	Mean	Std. Deviation	Min	Max
BFI Extraversion	3.0055	.90565	1.13	4.88
BFI Agreeableness	3.9413	.63733	1.56	5.00
BFI Conscientiousness	3.7968	.63759	1.67	5.00
BFI Neuroticism	3.0626	.86461	1.00	4.88
BFI Openness	3.7223	.56326	2.00	5.00
Stomp Reflexive and Complex	4.1198	1.09767	1.13	6.75
Stomp Intense and Rebellious	4.6280	1.34534	1.00	7.00
Stomp Upbeat and Conventional	4.8754	1.14484	1.00	6.83
Stomp Energetic and Rhythmic	4.3594	1.13257	1.00	7.00

Pearson's correlations were then used to identify any relationships between the BFI and STOMP sub-category means, sex, and handedness. Multiple significant relationships were discovered, with the highest between *Extraversion* and *Upbeat/Conventional* ($r = 0.178$, $p = 0.001$); *Agreeableness* and *Upbeat/Conventional* ($r = 0.270$, $p < 0.001$); *Conscientiousness* and sex ($r = -0.173$, $p = 0.001$); *Neuroticism* and *Intense/Rebellious* ($r = 0.178$, $p = 0.001$); *Openness* and *Reflexive/Complex* ($r = 0.351$, $p < 0.001$), *Openness* and *Intense/Rebellious* ($r = 0.217$, $p < 0.001$); sex and *Upbeat/Conventional* ($r = -0.332$, $p < 0.001$). Complete list of covariate correlational relationships listed in Table 2 below.

Table 2: Variable Correlations

		BFIe	BFIa	BFIc	BFIn	BFIo	Stomp RC	Stomp IR	Stomp UC	Stomp ER	Gender	Hand
BFIe	Pearson Correlation	1	.223**	.237**	-.333**	.110*	-.064	-.097	.178**	.073	-.067	.121*
BFIa	Pearson Correlation		1	.286**	-.302**	.003	.024	-.128*	.270**	.127*	-.179**	.051
BFIc	Pearson Correlation			1	-.316**	.025	-.092	-.126*	.050	-.150**	-.173**	.047
BFIn	Pearson Correlation				1	.025	-.011	.178**	-.089	.070	-.118*	-.044
BFIo	Pearson Correlation					1	.351**	.217**	-.076	.162**	.071	.083
StompRC	Pearson Correlation						1	.267**	.225**	.426**	-.002	.110*
StompIR	Pearson Correlation							1	-.156**	.295**	.025	.013
StompUC	Pearson Correlation								1	.193**	-.332**	.050
StompER	Pearson Correlation									1	-.105*	.079
Gender	Pearson Correlation										1	-.007
Hand	Pearson Correlation											1
**. Correlation is significant at the 0.01 level (2-tailed).												
*. Correlation is significant at the 0.05 level (2-tailed).												

Regression Analyses

Five individual ordinary least square (OLS) linear regressions were completed to predict each of the BFI sub-categories regressions (1) *Extraversion*, (2) *Agreeableness*, (3) *Conscientiousness*, (4) *Neuroticism*, and (5) *Openness*) from all four 4 STOMP sub-categories, sex identification (male, referent female), and dominant handedness (left, ambidextrous, referent right).

(1) *Extraversion*. A statistically significant unique negative relationship was found between *Extraversion* and *Reflexive/Complex* (b = -0.111, p = 0.022), and *Extraversion* and handedness (b = -0.392, p = 0.018). Also, a statistically significant unique positive relationship was discovered between *Extraversion* and *Upbeat/Conventional* (b = 0.159, p = 0.001), and *Extraversion* and *Energetic/Rhythmic* (b = 0.098, p = 0.037). These factors can explain approximately 8% of variability in

Extraversion scores. Ultimately, results indicate a greater potential for identifying an individual that is higher in *Extraversion* if they prefer *Upbeat/Conventional* and *Energetic/Rhythmic* music genres, are right-handed, and dislike *Reflexive/Complex* music.

(2) *Agreeableness*. A statistically significant unique negative relationship was found between *Agreeableness* and *Intense/Rebellious* (b = -0.055, p = 0.035). Also, a statistically significant unique positive relationship was discovered between *Agreeableness* and *Upbeat/Conventional* (b = 0.117, p < 0.001), and *Agreeableness* and *Energetic/Rhythmic* (b = 0.07, p = 0.032). These factors can explain approximately 12% of variability in *Agreeableness* scores. Results point to a greater potential for identifying an individual that is higher in *Agreeableness* if they prefer *Upbeat/Conventional* and *Energetic/Rhythmic* music genres, and dislike *Intense/Rebellious* music.

(3) *Conscientiousness*. A statistically significant unique negative relationship was discovered between *Conscientiousness* and *Energetic/Rhythmic* (b = -0.08, p = 0.018), and *Conscientiousness* and handedness (b = -0.233, p = 0.049). These factors have the ability to explain approximately 6% of variability in *Conscientiousness* scores. Conclusions can be drawn from these results which indicate a greater potential for identifying an individual that is higher in *Conscientiousness* if they dislike *Energetic/Rhythmic* music and are predominantly right-handed.

(4) *Neuroticism*. A statistically significant unique negative relationship was found between *Neuroticism* and *Upbeat/Conventional* (b = -0.111, p = 0.01), and *Neuroticism* and sex (b = -0.481, p < 0.001). Also, a statistically significant unique positive relationship was discovered between *Neuroticism* and *Intense/Rebellious*

(b = 0.121, p = 0.001). These factors can explain approximately 11% of variability in *Neuroticism* scores. Results are indicative of a greater potential for identifying an individual that is higher in *Neuroticism* if they prefer *Intense/Rebellious* music genres, identify as female, and dislike *Upbeat/Conventional* music.

(5) *Openness*. A statistically significant unique negative relationship was discovered between *Openness* and *Reflexive/Complex* (b = -0.178, p < 0.001), and *Openness* and *Upbeat/Conventional* (b = -0.07, p = 0.011). These factors possess the ability to explain approximately 16% of variability in *Openness* scores. Conclusively, results indicate a greater potential for identifying an individual that is higher in *Openness* if they dislike *Reflexive/Complex* and *Upbeat/Conventional* genres of music.

V. Conclusions

Discussion

In summary, the study found statistical significance present in relation to all personality types where music preference was a predicting variable. *Upbeat/Conventional* and *Energetic/Rhythmic* music genres were the most statistically significant predictors, found in almost all analyses. The identification of existing predicative relationships between personality type and preference, and the determination of the strength of these relationships, were interpreted as dependant on the liking or dislike for specific genres. Further, dominant handedness and sex played roles in the significance between personality and music preference; however, this influence was small in comparison to musical preferences by themselves. The complete list of significant relationships from OLS linear regression listed in Table 3 below.

Table 3: BFI Regression Results

	Dependent Variable				
	BFI Extraversion (b)	BFI Agreeableness (b)	BFI Conscientiousness (b)	BFI Neuroticism (b)	BFI Openness (b)
(Constant)	2.479	3.472	4.353	3.278	3.123
StompRC	-.111*	-.022	-.011	-.052	.178**
StompIR	-.052	-.055*	-.031	.121*	.043
StompUC	.159*	.117**	.011	-.111*	-.070*
StompER	.098*	.070*	-.080*	.024	.004
male	.186	-.122	-.149	-.481**	-.003
left	-.392*	-.185	-.233*	.185	-.091
ambi	.143	-.240	-.189	.119	.068

*$p < 0.05$, two-tailed. **$p < 0.001$, two-tailed.

With these results, it can be stated that through the series of regression analyses, enough statistically significant evidence was apparent to support each hypothesis within the three stated dimensions. The first of these dimensions was replication of previous research findings. For the first dimension, (1) there is a correlational relationship

between music preferences and personality types, revealed through multiple correlations across each BFI sub-category and sub-categories of the STOMP.

The second of these dimensions was to explore the ability of music preference to predict personality type. For the hypotheses in the second dimension, (2) knowledge of an individual's musical preference can accurately predict their personality type, specifically that those preferring music genres containing relatively *Energetic* music will reflect individuals that are more outgoing, to which the positive relationship discovered between *Extraversion* and preference of *Energetic/Rhythmic* music support this claim. Another hypothesis in the second dimension was that those liking *Intense* music will show higher *Neuroticism*, to which results also reflected a positive correlational relationship. Again, a hypothesis of the second dimension stated *Conventional* music tastes will reveal more *Agreeableness*, also discovered through a positive correlational relationship. Preferences of *Reflexive* genres, however, did not reflect any significance, positively or negatively, to the strength of *Conscientiousness* in individuals.

Finally the third dimension, (3) knowledge of music preference, with sex and handedness as covariates, can be used to predict personality type. Analyses did uncover that utilization of sex and handedness as covariates had the ability to further assist in predicting personality type, either independently or combined, in some cases. Relationships were found between *Intense/Rebellious* music and *Neuroticism*, when accompanied by females with this preference. As well, deeper relationships were revealed to *Extraversion* and *Conscientiousness* as a result of exploring handedness as a novelty. These results support the hypothesis that covariates enhance the ability to predict personality type. An examination of the cumulative results suggests that the

introduction of covariates enhanced the ability to predict personality types and support researcher hypotheses. With this in mind, it is possible to speculate the addition of additional covariates may yield an even greater potential for personality identification. Such covariates might include other responses collected from this questionnaire, like educational levels, socioeconomic status, cultural biases, geographical location, or analyses of answers to open-ended questions. Unfortunately, not all covariates could be included in the researcher hypotheses or analyses, which remain somewhat of a limitation, but may yield new directions for the future.

Limitations of the Study

Size and homogeneity of the sample was one of the most notable limitations of this research study. The use of a convenience sample was a limitation. Notably, participant samples were relatively limited, primarily based on the most easily achievable mediums for distribution, yielding only students enrolled within two university campuses in a relatively limited geographical location (the campuses used in recruitment are less than 50 miles apart, and both are situated in small cities). This created the possibility for bias on musical preferences of those living within these geographical regions. In an attempt to offset recruitment bias, the university's campus-wide e-mail systems were utilized to recruit samples across all disciplines offered at the institution. This e-mail invitation further allowed for the absence of physical mediums, namely the principle investigator or corroborating instructors, ensuring those who participated did so truly of their own volition and without external pressures.

Data results were compiled for enrolled students at two individual university campuses. This was completed without regard to class standing and solely by enrollment

status of students across all disciplines. The main reason for compiling undergraduates and graduates results data, and limiting comparisons between the two, was the inability to separate class standing through the university campus e-mail system. Unfortunately during distribution of the e-mail invitations, the campus e-mail system did not possess the capabilities for separating class standing between students, only segregating students from faculty. Additionally, a distribution was to occur at a third university campus; however, time constraints would not allow for adequate data collection and analysis from this institution.

Another limitation to this study resulting from time constraints was the inability to review open-ended questions. This series of open-ended questions provided introspection into the role and influence music plays in the lives of participants. A relatively extensive portion of the questionnaire, that which contained the open-ended questions and other demographics, was omitted from analysis due to external constraints, specifically time constraints of fast-approaching deadlines.

Another item to consider might be the weight carried by dominance of handedness on distributions. Since participants were predominantly right handed, distribution results could have possibly been skewed. Though results were indicative of participant demographics that reflect population statistics regarding lefties and righties, further investigation may be necessary.

Sex was another article to watch, especially in the reflection of *Neuroticism*. With results so strong toward females reflecting neurotic personality traits, investigation may be needed toward virtue of the questions presented by the BFI; as with similar measures like the (MMPI) (Lindsay, Sankis, & Widiger, 2000), where there is a tendency

for over-diagnosis of women on the Histrionic scale. Responses from prompted open-ended questions were stored for future analyses. The limitations of this study somewhat hindered extensive insight into predicting covariates of personality; however, the results of the study, despite its limitations, allow for new directions for future studies.

Future Directions

It is hoped that the methods and findings from this project may be utilized for future studies in a variety of ways. In regards to the limitations of the current project, future steps may be taken in an effort to reduce or eliminate biases through more targeted recruitment invitations; procuring adequate distribution mediums through a more vast expansion into social media; managing time allocation of the project; and increasing the scope of future samples for a more generalizable population representation. Further, expansion of demographics and qualitative questions may yield additional insight into alternate pairings of predictors for personality and music preference.

Ultimately, a better understanding of musical preference, personality, individual differences, and the relationships between them, may someday yield a greater utilization of music as a therapeutic intervention. Degmečić, Požgain, and Filaković (2005) discussed the option for using music as a therapeutic option in psychiatry. The effect of music on the mind has been discussed historically by philosophers Aristotle and Plato, who mentioned the idea of music as a healing influence of health and behavior (Lawrie, 1974). Authors also discussed more modern therapy of using music to address physical, psychological, cognitive, behavioral, and social functioning as being well-established segments of the health profession. Aside from occupational therapy and physical

therapy, individuals also reported the importance of rhythm and music in their daily lives for a variety of other reasons (Degmečić, Požgain, & Filaković, 2005).

Great strides have been made in the field of Psychology and Rehabilitation Science over the last century in music involvement and usage in therapy. New ideas and directions in the field unveil opportunities for researchers, therapists, counselors, and professionals to forge ahead with modifications and enhancements to these ideas. These new ideas and opportunities provide fuel for creating even more directions for therapeutic means and research. Through scientific replication and enhancement/expansion of this research, a deeper understanding of the influence, importance, and role of music on individuals may be further revealed. These revelations, ultimately, may be used to provide new, non-invasive methods for identifying subjectivity for disorders, structure new and enhance pre-existing treatments utilizing music, or create institutions for promoting social solidarity by unifying people through the power of music.

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Figures

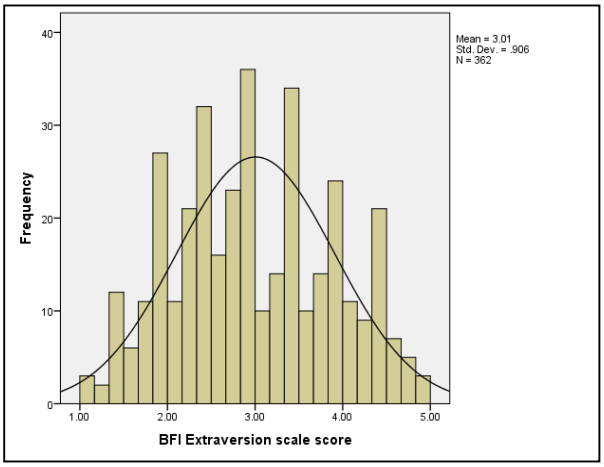

Figure 1: Distribution Curve for BFI Extraversion Mean Scores

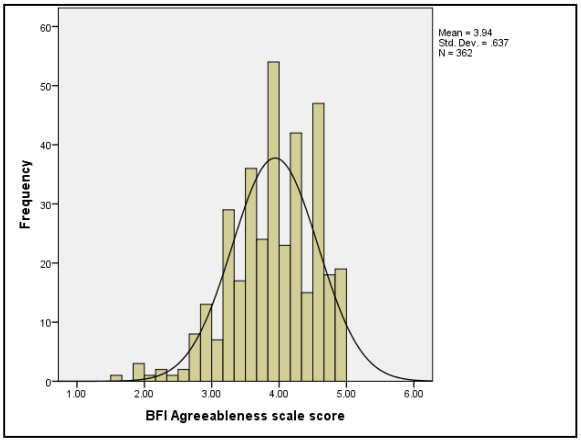

Figure 2: Distribution Curve for BFI Agreeableness Mean Scores

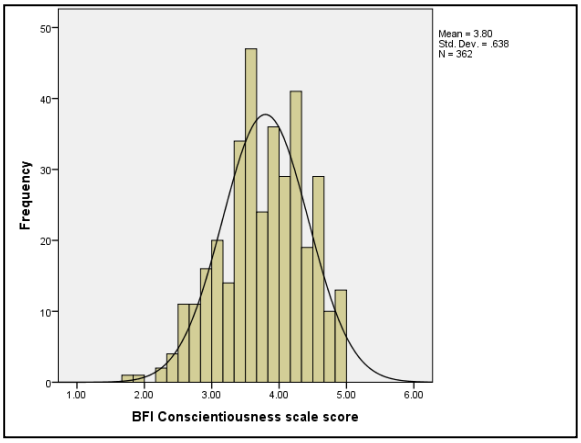

Figure 3: Distribution Curve for BFI Conscientiousness Mean Scores

Figures (Continued)

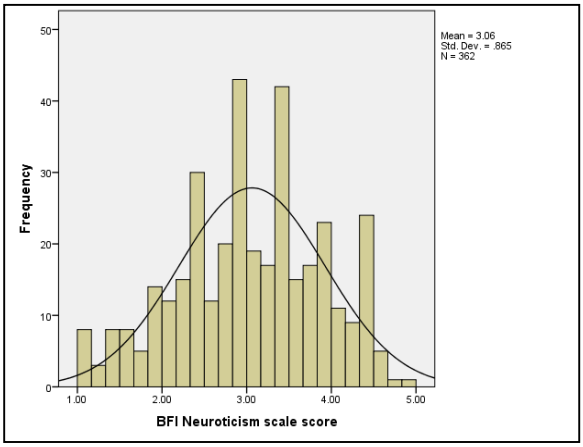

Figure 4: Distribution Curve for BFI Neuroticism Mean Scores

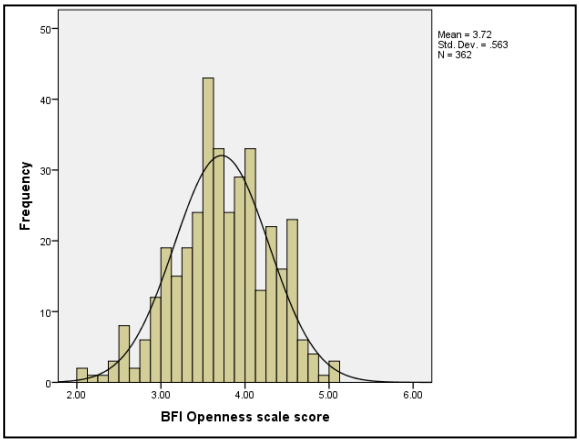

Figure 5: Distribution Curve for BFI Openness Mean Scores

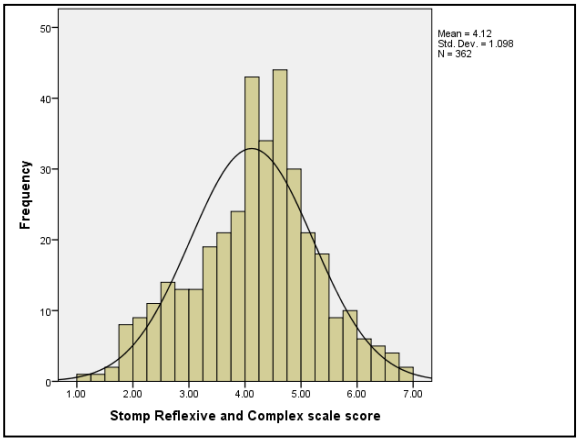

Figure 6: Distribution Curve for STOMP Reflexive/Complex Mean Scores

Figures (Continued)

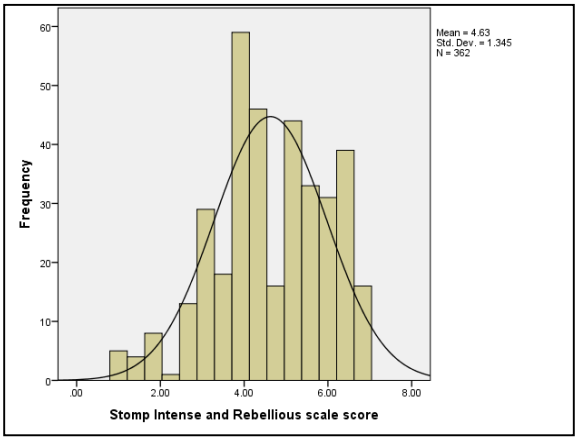

Figure 7: Distribution Curve for STOMP Intense/Rebellious Mean Scores

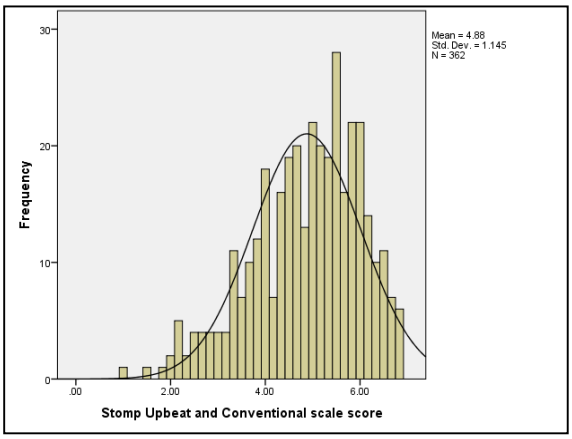

Figure 8: Distribution Curve for STOMP Upbeat/Conventional Mean Scores

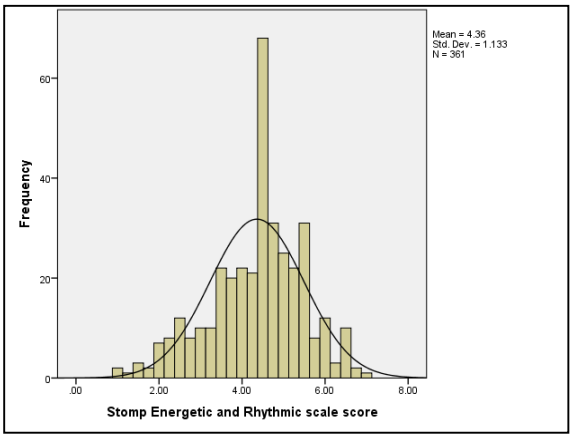

Figure 9: Distribution Curve for STOMP Energetic/Rhythmic Mean Scores

Appendix A

Informed Consent

You are being asked to take part in a research study of how music affects individuals and personality. This survey may take approximately 20 - 30 minutes to complete. Please read this form carefully and ask any questions you may have before agreeing to take part in the study.

What the study is about: The purpose of this study is to learn the impacts of music on individuals and personality.

What we will ask you to do: Upon receiving consent, a questionnaire will be administered to which you will be asked to answer questions as accurately and honestly as possible.

Risks and benefits:
There is the risk that you may find some of the questions to be sensitive, however, no risks are anticipated from participating in this study beyond those encountered in day-to-day life. At this time, direct benefits may only include introspection to musical preference and personality of participants.

Compensation: Participation in this study is purely voluntary and warrants no promises for compensation, financially or academically, by the researcher/s or institution.

Your answers will be confidential. The records of this study will be kept private. In any report made public, no information will be included that will make it possible to identify you. Research records will be secured; only the researcher/s will have access to the records.

Questionnaire: Taking part in this study is completely voluntary. You may skip any questions that you do not want to answer. If you decide not to take part in or skip certain questions, it will not affect your current or future relationship with Arkansas Tech University or the researcher/s. You are free to terminate participation at any time.

If you have questions: The researchers conducting this study are Bradley Thorsen, principle investigator, with Dr. Rebecca McHugh serving as advisor. If you have questions, you may contact Bradley Thorsen at bthorsen@atu.edu or Dr. McHugh at rmchugh@atu.edu. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Institutional Review Board (IRB) through Academic Affairs:

Academic Affairs
Administration Building 200
1509 North Boulder Ave
Russellville, AR 72801
Phone: (479) 968-0319 Fax (479) 968-0644

Statement of Consent: I have read the above information, have received answers to any questions I asked, and **I consent to take part in the study**.

If you have chosen to continue participation in this study please remove this consent form for you to keep and continue to the next section.

Appendix B

Questionnaire Protocol

How I am in General

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which **you agree or disagree with that statement.**

1	2	3	4	5
Disagree Strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly

I am someone who…

1. _____ Is talkative
2. _____ Tends to find fault with others
3. _____ Does a thorough job
4. _____ Is depressed, blue
5. _____ Is original, comes up with new ideas
6. _____ Is reserved
7. _____ Is helpful and unselfish with others
8. _____ Can be somewhat careless
9. _____ Is relaxed, handles stress well.
10. _____ Is curious about many different things
11. _____ Is full of energy
12. _____ Starts quarrels with others
13. _____ Is a reliable worker
14. _____ Can be tense
15. _____ Is ingenious, a deep thinker
16. _____ Generates a lot of enthusiasm
17. _____ Has a forgiving nature
18. _____ Tends to be disorganized
19. _____ Worries a lot
20. _____ Has an active imagination
21. _____ Tends to be quiet
22. _____ Is generally trusting
23. _____ Tends to be lazy
24. _____ Is emotionally stable, not easily upset
25. _____ Is inventive
26. _____ Has an assertive personality
27. _____ Can be cold and aloof
28. _____ Perseveres until the task is finished
29. _____ Can be moody
30. _____ Values artistic, aesthetic experiences
31. _____ Is sometimes shy, inhibited
32. _____ Is considerate and kind to almost everyone
33. _____ Does things efficiently
34. _____ Remains calm in tense situations
35. _____ Prefers work that is routine
36. _____ Is outgoing, sociable
37. _____ Is sometimes rude to others
38. _____ Makes plans and follows through with them
39. _____ Gets nervous easily
40. _____ Likes to reflect, play with ideas
41. _____ Has few artistic interests
42. _____ Likes to cooperate with others
43. _____ Is easily distracted
44. _____ Is sophisticated in art, music, or literature

Appendix B (Continued)

Please rate your enjoyment for each of the following music types/genres using the scale below.

	1	2	3	4	5	6	7
1. _____ Alternative	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
2. _____ Bluegrass	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
3. _____ Blues	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
4. _____ Classical	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
5. _____ Country	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
6. _____ Dance/Electronica	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
7. _____ Folk	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
8. _____ Funk	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
9. _____ Gospel	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
10._____ Heavy Metal	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
11._____ International/Foreign	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
12._____ Jazz	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
13._____ New Age	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
14._____ Oldies	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
15._____ Opera	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
16._____ Pop	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
17._____ Punk	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
18._____ Rap/hip-hop	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
19._____ Reggae	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
20._____ Religious	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
21._____ Rock	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
22._____ Soul/R&B	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly
23._____ Soundtracks/theme song	Dislike Strongly	Dislike Moderately	Dislike a Little	Neither Like nor Dislike	Like a Little	Like Moderately	Like Strongly

Appendix B (Continued)

Below are a few questions to help understand the influence of music on your life. Please complete the next series questions as accurately and honestly as they relate to you. If answering yes, tell us a little more about each. (Leave question/s blank if you choose not to answer)

1. **Do you or have you ever played a musical instrument? ___Yes ___No**
   a. If yes, what type/s of musical instrument?

   _____

2. **Do you listen to music throughout your daily activities? ___Yes ___No**
   a. If yes, what state of mind are you usually in when you choose to listen to music most often?

   _____

3. **Do or have you ever used music to change your mood? ___Yes ___No**
   a. If yes, what type/s or genre/s are or were used to create what result?

   _____

   b. Do/did your music choices provide the desire result?

   _____

4. **Do you listen to music during physical activities? ___Yes ___No**
   a. If yes, what music type/s or genre/s do you listen during which activities?

   _____

5. **Do/would you feel listening to music provides benefits for these types of activities? ___Yes ___No**
   a. If yes, what benefits has/would music provide for these activities?

   _____

6. **Do or have you ever practiced meditation or relaxation techniques? ___Yes ___No**
   a. If yes, do/did you utilize music to aid these practices?

   _____

7. **Are you employed? ___Yes ___No**
   a. If yes, is music played at your place of employment?

   _____

   b. Is the selected music most often preferred by you?

Appendix B (Continued)

c. How do the songs make you feel?

d. How do the songs affect your work performance?

8. What music type/s or genre/s did you listen to when you were younger?

a. Is it the same today or different?

b. If different, what music type/s or genre/s do you listen to now?

9. Do you feel your personality has changed as you have aged? ___Yes ___No

a. If yes, in what ways?

10. Do you feel music has been important to the development of your personality, past or present? ___Yes ___No

a. If yes, in what ways?

11. Do you think that music influences your mood? ___Yes ___No

a. If yes, how?

12. Do you think that your mood influences what music you listen to? ___Yes ___No

a. If yes, how?

Thank you again for your participation in this study!!!

If you have anything additional you would like to tell us about how music impacts your life, please use the space below.