

The Psychological Relationship  
Between Spirituality and Emotional Responses to Music

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### Abstract

A study was conducted with 251 undergraduate psychology students at a Christian university to determine the nature of the relationship between spirituality and music-based emotions. Two hypotheses were proposed: First, students with higher levels of spirituality would experience higher emotional intensity while listening to music. Second, students will experience equal emotional intensity when listening to the “sacred” or “secular” selections. In answer to the first hypothesis, results indicated that overall intensity in emotional response to musical selections did significantly and positively correlate with higher spirituality scores. In answer to the second hypothesis, the strength of emotional intensity did differ, and intensity was found to be significantly higher for the secular musical selections. Implications of these results are explored.

## The Psychological Relationship Between Spirituality and Emotional Responses to Music

Music is a uniquely human experience, and for years, researchers have sought to narrow down and define this experience by its psychological elements. As a facet of worship around the world, music has been associated culturally with religion and spirituality, and as a form of art and entertainment, music has spoken to multitudes of individuals at deeply personal, and yet universally human, levels. Therefore, these three elements—spirituality, religion, and emotions—have been key to understanding music’s psychological effects. Yet as intertwined as these elements are, human responses to music have been challenging to trace back to the original source, and more research is required to understand the spiritual, religious, or emotional cause of music’s power over the human psyche.

### **Literature Review**

#### **Emotional Reactions to Music**

**Presuppositions of music and emotions.** In an article based on his Presidents’ Award Lecture at the Society’s Annual Conference in Belfast, British psychologist John Sloboda (1999) asserted that music should be perceived within the natural context of an emotional experience, not just as sound:

Some musicologists have tried to argue that ‘pure’ music listening means stripping away all mundane associations from music and hearing it as pure sound. Even if that were possible and desirable, our findings suggest that music would still be an intensely emotional experience. (Sloboda, 1999, p. 453)

Other researchers affirm this view. According to Juslin and Västfjäll (2008), human beings primarily value music for the emotions music evokes rather than the music itself, and conceptually, the two—music and emotional responses to music—are difficult to detach psychologically.

The source of emotional responses to music has been debated as well. Some researchers who claim a “cognitivist” viewpoint promote the idea that music-listeners simply mimic the emotions they hear in music (Lundqvist, Carlsson, Hilmersson, & Juslin, 2008). This concept presents a dilemma for the “emotivist” researchers who attempt to measure listeners’ emotional responses to music. To substantiate the emotivists’ underlying assumption (that listeners truly engage in the emotion presented by music), Lundqvist et al. (2008) conducted a study in which thirty-two participants self-reported emotions and were observed to respond physiologically to selected pieces of music. Their results indicated that music-listeners do emotionally engage in music and do not simply mimic the emotional themes presented in the music.

To counter this finding, however, Scherer (2004) suggested that researchers should vary their methodological approaches in measuring emotional responses to music, because emotions are more than just physiological responses. Emotions, beyond simply “feelings” in a physiological or even self-reported “emotional” sense, are complex; therefore, any attempt to measure them will be limited.

In response to this ongoing debate, Madsen (1997) simply declares that “emotional responses to music [...] indeed be measured” (p. 59), and studies attempting to measure emotional responses can include both highly trained musicians and people with little formal training in music. While differences exist between the two

groups, both musicians and non-musicians may participate in emotional response tests without drastically affecting results.

**Differences in emotional responses to lyrics and melodies.** In music-listening experiences, music with vocals features two influential elements in particular: lyrics (words and other uses of language) and melodies (tone quality of instruments and vocals, rhythmic qualities such as tempo and beat, and other musical elements). The researchers Lundqvist et al. (2008) additionally noted that, according to studies, listeners respond similarly, emotionally-speaking, to instrumental and vocal musical selections.

Perlovsky (2010) calls music the great “enigma” (p. 16). While evolutionary scientists have studied music as a language or a subset of language (being not unlike animal vocalizations), the neurological centers of language and music run parallel rather than singularly. According to the brain, music is not, in fact, language. Vocal intonations and music qualities both directly align to “ancient emotional centers, connected [by] semantic contents of vocalizations to instinctual needs, and to behavior” (Perlovsky, 2010, p.16), but research defines a critical division between the two. So while music encompasses both lyrics and melodies, these elements influence two different parts of the brain, and studies must not assume that lyrics and melodies have simultaneous effects on music-listeners.

In Ali and Peynircioğlu’s four psychoacoustical experiments (2006), findings conveyed that melodies and lyrics are not “equal partners” in music-listening: “in all cases, melodies of songs were more dominant than the lyrics in eliciting emotions” (Ali & Peynircioğlu, 2006, p. 529). Therefore, a person listening to music will likely perceive

a melodically “upbeat” song with melancholy lyrics to be “happy” or “energetic” rather than “sad,” though the lyrics would indicate otherwise.

**Intensity of emotional responses to music.** Findings in the above article also indicate that music-listeners’ emotional responses to music tend to fluctuate in intensity according to whether the emotion is positive or negative. Participants in Ali and Peynircioğlu’s repeated studies (2006; 2010) rated positive emotions, like happiness and calmness, higher on an intensity scale than negative emotions, such as sadness or anger. Other researchers have asserted that, not only is this the case, but when researchers tested for emotion-accuracy in music-listening, participants identified higher arousal emotions more accurately than lower arousal emotions, such as peacefulness (Hunter, Schellenberg, & Stalinsky, 2011). The music pieces that created less emotional intensity seemed more ambiguously emotional to the music-listeners, and the listeners could not guess the correct emotion.

Expectancy may greatly influence music-listeners’ emotional experiences with music. Sloboda (1999) noted what he called “hot spots” in music, which he defined to be deviations from musical structure that “tease” the listeners’ expectation (p. 452). For example, musical tensions are created and resolved again and again, or timing of the deviations comes earlier or sooner than expected, translating to an emotional experience that influences the emotional outcome of listening for the audience. The intensity of the music-listeners’ emotional responses are affected by these “hot spots.”

Additional research has been undertaken to determine music-based emotional intensity at the physiological level. Grewe, Nagel, Kopiez, and Altenmüller (2005) have discovered that music-produced “chills” (or “goosepimples”) are caused not by reflexes

but by conscious, attentive listening. In their study, Grewe et al. asked thirty-eight subjects with ages ranging from 11 to 72 ( $M=38$ ) and different musical backgrounds to listen to seven pieces of varying musical styles in addition to five to ten pieces of their own choosing. The researchers also instructed participants that whenever they experienced a chill while listening to the music to press a mouse button. Button-pressing was recorded simultaneous to the music track and therefore, the musical events triggering the subjects' chills could be identified with an accuracy range of five seconds. Once the subjects had completed the experimental sessions, they also completed a questionnaire about their knowledge of the musical piece and to self-report their bodily reactions as they perceived them. Researchers defined musical "chills" as a reaction resulting in: 1) the subjects' pressing of the mouse button, 2) the subjects' physiological reaction as measured by a skin conductance test, and 2) the subjects' self-report of their own "goosepimples" or "shivers down the back" on the questionnaire. Just like Sloboda (1999), Grewe et al. (2005) assert that these "chills" are affected by the participants' expectations of the structural musical elements.

Another crucial study noted the everyday emotionally-influential nature of music (Juslin, Liljeström, Västfjäll, Barradas, & Silva, 2008). Juslin et al. asked thirty-two college-age students (age range of 20 to 31 years old) to carry a signal-emitting palmtop that would sound seven times per day at random intervals for two weeks. Each time the palmtop signaled, the participants filled out a brief questionnaire regarding their musical surroundings, mood, and affected state due to their surroundings. According to the results, music occurred in 37% of the signalled episodes throughout the participants' days, and of 64% of the music episodes, the participants noted their own changed state



due to their musical surroundings. Most usually, the participants reported themselves to be “calm-content” or “happy-elated,” while they least commonly reported feeling emotions of “shame-guilt” and “disgust-contempt” (p. 678), a result consistent with previous studies indicating that Westerners tend to experience primarily more positive emotions

**Influence of preference.** Schäfer and Sedlmeier (2011) conducted two studies attempting to delineate the correlation of emotional arousal and musical preference. In the first study, twenty-eight students at Chemnitz University of Technology in Germany listened to eighteen pieces of music and rated the strength of their preference for the music, as well as self-reported their own arousal. Beyond this self-report measure, the researchers measured the subjects’ physiological arousal via heart rate, skin conductance, and rate of respiration. Their correlational findings signify that emotional arousal is much more closely connected to the strength of listeners’ musical preference rather than physiological arousal. In short, emotional and physiological arousal are not significantly correlated with one another. Schäfer and Sedlmeier’s second study, conducted at the same time, involved the manipulation of physical arousal by placing one group of students before a mirror during music listening in order for them to watch their own faces. As a result, musical preference varied according to the following principle: unknown music producing higher arousal was found to receive higher preference ratings. This was the case, however, when the given piece of music was not too complex. In light of these findings, the researchers propose that emotional arousal is not only a consequence of listening to preferred music (due to personal associations), but it is also a determining factor of music preference in the first place (Schäfer & Sedlmeier, 2011).

Familiarity is an important predictor of enjoyment (Schubert, 2007) and generally increases “liking” or “preference” of the given musical stimuli (Ali & Peynircioğlu, 2010). In other experimentation, Lowis (2010) found the enjoyment of musical selections and familiarity with those pieces to have significant and positive correlations (p. 83).

### **Spirituality and Music**

Tshabalala (2010) promotes the psychological benefits of holistic experiences with music-inspired emotions and spirituality and proposes that these concepts are already psychologically attached to one another. Based on a study of a Pentecostal charismatic youth group, this researcher indicates that a “sense of connection” and well-being prevailed in the small community due to the religious-spiritual involvement and the musical-emotional engagement (p. 73). Furthermore in 2010 Lowis wrote that “the more spiritually inclined a person is, the more he or she will perceive [...] music to have religious or spiritual qualities” (p. 83).

**Spirituality and emotional responses to music: three key studies.** The following three studies—the Penman and Becker study, the Miller and Strongman study, and the Lowis and Hughes study—sought to measure the correlation of spirituality and emotional responses to music as few studies had done before. With each study’s experimental procedure, the researchers provided helpful foundational insight in measuring the constructs of spirituality and musical responses for future studies.

*Penman and Becker study: strong physiological responses to music.* In analyzing the physiological responses of sixty students, researchers Penman and Becker (2009) divided sixty qualifying students into five categories: Pentecostal Ecstatics

(individuals who experience trances during music-listening), Pentecostal Non-Ecstatics (individuals who do not experience trances during music-listening), “Deep Listeners” (individuals who do not have explicit religious convictions but experience trances during music-listening), Other Protestants, and General Students. The researchers discovered that, within the five categories of students, “Deep Listeners” and Pentecostal Ecstatics seem most responsive physiologically to music they love (p. 64). “Deep Listeners” responded with strong physiological reactions to all types of music; however, with regard to preferred music, both groups—religious (Pentecostal Ecstatics) and non-religious (“Deep Listeners”)—experienced trances during music responded equally, physiologically speaking.

In their discussion, the researchers note that personality predispositions to ecstasy may underly such strong physiological responses to music and may serve as confounding factors (Penman & Becker, 2009). For instance, according to Rentfrow and Gosling (2003), specific dimensions of personality like “openness” have been found to correlate to preferences in music selection. One example would be participants scoring high in “sensation-seeking” statistically preferred styles of music like rock, heavy metal, and punk (Rentfrow & Gosling, 2003, p. 1237). For particularly heightened emotions as a result of music, personal preference statistically factors in, and particularly, subject preference for musical selections increases across the board when the given subjects prefer classical music (Kreutz, Ott, Teichmann, Osawa, & Vaitl, 2008). Yet these researchers also captured the nomothetic value of music: listening to music is an activity widely practiced and regarded as intrinsic to self and culture, regardless of type of music or personality.

*Miller and Strongman study: spirituality in emotion-arousing music.* In their original study of volunteer Pentecostal-Charismatic church members, Miller and Strongman (2002) asked participants to respond to questionnaires and interviews about the importance of music in their church services. Results indicated that participants' mood significantly increased from directly before the service until directly after the music and worship part of the service, the first 40-60 minutes (the usual length of the music section for a Pentecostal-Charismatic church); little change occurred throughout the remainder of the service. Too, the structure of the musical portion of the service was formatted in a way that appeared to trigger dissociative states during worship through religious ritual.

Part two of this study by Miller and Strongman (2002) assessed distinctions between a Pentecostal-Charismatic group and non-Pentecostal-Charismatic group in their responses to four musical selections. Two of these selections were secular and two were religious as would be played in typical Pentecostal-Charismatic church services. While both groups reacted similarly to the secular pieces, the Pentecostal-Charismatic group displayed stronger energetic and "awesome emotional" reactions than the non-Pentecostal-Charismatic group when the religious selections were played.

According to Miller and Strongman (2002), familiarity with and personal/corporate associations to the music seemed to be the important factors in this emotionally heightening effect. The participants' level of enjoyment of the music also heavily relied upon their familiarity as coincides with past research (Miller & Strongman, 2002, p. 21). For these researchers, the two studies highlight both the nature of music as a

joint spiritual and emotional facilitator in Pentecostal-Charismatic churches and the universal links between musical, emotional, and religious/spiritual experiences.

*Lowis and Hughes study: sacred versus secular music.* One study of particular interest for music and spirituality correlations would be Lowis and Hughes's (1997) matched pairs study of elderly people. Participants in this study were thirty retired South African White men and women with varying educational and musical backgrounds. After responding to basic demographic questions, these participants answered 7 items on the Inspirit scale, which measured personal levels of spirituality. On an individual basis in an environment conducive to listening (in their homes and with a specific "listening technique"), these participants listened to two thirty-minute audio tales, each with seven selections of "sacred" or "secular" music. The listening technique required that the participant sit upright with his or her weight distributed evenly on the thighs, knees slightly apart, and hands resting on the knees; they were only encouraged to close their eyes. After listening, they responded to questions regarding the degree of familiarity with the music, their personal enjoyment of the pieces, open questions on provoked thoughts or images, and a four-point rating scale indicating thirteen types of emotion they might have experienced in the music (rest/quiet, sadness, joy, love/tenderness, longing, amusement, dignity/stateliness, patriotism, reverence/spirituality, disgust, action, boredom, and memory/thoughtfulness).

Interestingly, researchers divided "sacred" and "secular" music based upon the composers' backgrounds: Bach, for instance, wrote for ministerial purposes, so his music served as one of the "sacred" musical selections. No English vocals were employed, so the inherent "spirituality" of a given song was not conveyed by the lyrics. The sacred and

secular selections were superficially musically comparable and followed a set pattern: one to two pieces of slow rhythm (for relaxation, concentration, and awareness), one brighter tune (to maintain concentration), one vocal piece (for stimulation of interest), and one to two tunes (to relax again) (Lowis & Hughes, 1997).

To establish a pretest-posttest control research design, Lowis and Hughes (1997) allocated participants to sacred/secular conditions alternately as they agreed to be a part of the study. The sole manipulation was gender redesignation, because there were so few men participants. The researchers found no significant relationship between the participants' self-reported spirituality and ratings of the strength of their emotional responses to music. However, the researchers did find a significant positive correlation between spirituality scores of the listeners and the ratings of music (both secular and sacred) as producing feelings of reverence.

While the results of the statistical analyses between secular and sacred groups were not significant, two theoretical concepts remain to be discussed. For one, it is possible that an individual's level of spirituality, high or low, may be so rooted in them that the gentle intervention of music selections may not alter that consciousness. The statistically significant relationship between participants' scores on the Inspirit Scale and the ratings of musical selections for reverence/spirituality may evidence that participants who are spiritually-minded have a tendency to experience spiritual feelings when listening to music. Another theoretically pertinent consideration would be that perhaps spirituality is not actually inherent in music, especially since the composer's spiritual state at the time of writing is arguable (Lowis & Hughes, 1997). The very definition by

which the selections of music are defined “secular” or “sacred,” for this study at least, can be questioned as highly arbitrary.

### **Religiosity**

Ellison (1991) notes that individuals with strong religious faith report higher levels of life satisfaction and greater personal happiness, in addition to psychosocial stability in the wake of trauma. Previous studies furthermore propose the possible psychological benefits of personal religious practices like prayer and meditation (Ellison, 1991, p. 81). With this in mind, interdisciplinary research combining satisfying musical experiences with religion and spirituality would offshoot naturally from such implications.

### **Research Rationale**

A review of the above literature suggests the following research questions: what exactly is the relationship between a person’s reported levels of spirituality and his or her arousal responses to music? Does a causal relationship exist between the two or is there an intervening variable? Furthermore, how would college-age students, inundated by all types of modern music, respond emotionally to “sacred” compared to “secular” music? As Lowis and Hughes (1997) defined the construct, no strong difference between the categories existed. However, if the songs were divided into “sacred” and “secular” based on the lyrics rather than the songwriters’ purposes for writing the music, would the students respond with different emotional intensities between the two? Although previous studies indicate that lyrics and melodies influence emotional responses differently, would lyrics containing references to “God” with melodic qualities similar to modern “secular” music affect differences in students’ emotional responses?

From these questions arose two hypotheses. First, students with higher levels of spirituality would experience higher emotional intensity while listening to music: the higher their spirituality score, the higher their emotional intensity score. Second, students will not respond differently in their emotional intensity scores to songs with “sacred” or “secular” lyrics.

Additionally, in conducting this study, the researcher hypothesized that students would report generally high religiosity scores, even if their reported spirituality levels varied according to the first hypothesis. This religiosity score indicates the frequency of religious activities the students engage in during a given week, and it was included, because the sample set would be drawn from a large Christian university.

## **Method**

### **Participants**

After submitting to the Institutional Review Board, permission was given to elicit volunteers from the undergraduate body at Liberty University in Lynchburg, Virginia. Psychology majors primarily were represented, since the study was offered for “psychology activity” credit, which is a required class credit for all undergraduate psychology courses at the university. The 251 undergraduate students ranged in age from 17 to 57 years old with a mean age of 20 and a standard deviation of 3.7 years, and 74.2% were female. Classification was fairly evenly distributed, with 33.2% designating themselves as freshman, 22.5% as sophomores, 20.5% as juniors, and 23.8% as seniors. The racial distribution of the participants was overwhelmingly Caucasian (81.6%). Other races were represented in much smaller percentages: African-American (6.1%), Asian (3.7%), and Hispanic (3.7%) (see Appendix E).



Though the gender distribution was not equivalent to school-wide gender statistics, it was representative of the psychology majors, 75.7% of which are female (Liberty University Registrar, 2013). This racial sample also fairly represents the Liberty University population at large (though significantly more self-reported to be “other” in the campus-wide population) (Liberty University, 2010). As one professor noted, it is unlikely the majority of these campus-wide self-reported “other” are actually racially diversified; it is more likely they are Caucasian declining to report (F. Volk, personal communication, October 9, 2012).

## **Materials**

**Musical selections.** The researcher determined a reasonable number of songs for undergraduate attention during the study was six shortened selections, which fulfilled the defined categories of “sacred” or “secular” and sounded similar in style.

**“Sacred” vs. “secular.”** “Sacred” or “secular” songs were categorized based on lyrics. When the lyrics (or usual lyrics, in the case of the accompaniment track) referred to God, the Spirit, or Jesus Christ, the song was classified as “sacred.” “Secular” songs lacked mention of any of these references and often maintained a more “pop”-style topic (e.g. romantic love, youthful independence, or spiritual loneliness). The researcher matched the three sacred and three secular selections based on similar musical qualities.

**Song choices.** Six selections of music were chosen for the music-listening portion of the experiment, three “secular” and three “sacred,” about one minute and thirty seconds each. These six clips included Audrey Assad’s “For Love of You” (“sacred” female vocal), Bess Rogers’s “Anchor” (“secular” female vocal), Matthew Reed’s “Awake, Awake” (“sacred” male vocal), Matthew Perryman Jones’s “O Theo” (“secular”

male vocal), Bethany Dillon's "Beautiful" Accompaniment Track ("sacred" instrumental), and High School Musical's "Breaking Free" Accompaniment Track ("secular" instrumental). Instrumental accompaniment tracks were included to capture vocal versus non-vocal distinctions in the music-based emotional responses of the participants, as the literature review often noted such distinctions in previous experimentation. Unlike other research, however, this study was not designed to exclude lyrical confounding variables by using only foreign-language vocal music; each of the vocal tracks selected were in English.

**Questionnaires.** Students completed a battery of tests, including a demographics index, an edited version of the Duke University Religious Inventory, the Spiritual Transcendence Index, and an Emotional Response Index for each of the six songs.

**Demographics.** An index of basic demographic information was included. Students reported their race, age, gender, and class rank and were offered "other" options when anonymity was preferred (see Appendix A).

**Self-reported religiosity variable.** A series of questions regarding the participants' religious activities (how often they read the Bible, how often they attend church, etc.) was used, specifically the Duke University Religious Inventory (Koenig & Büssing, 2010; see Appendix B). The index was edited: the second item was separated into two (2a - prayer and meditation and 2b - Bible study) in order to better capture varied responses regarding the religious activity. The first three questions were 6-point Likert scales, and the last three questions were 5-point Likert scales.

**Self-reported spirituality variable.** A series of questions regarding the participants' spirituality was found: the Spiritual Transcendence Index (Seidlitz et al.,

2002; see Appendix C). Theoretically, spirituality was approached differently than religiosity in the following research. The self-reported number of religious activities a student completed per week determined the student's religiosity score. However, the concept of spirituality was measured as a mindset of awareness, a transcendence of daily activity to a cognitive level of awareness of the presence of God. All eight questions were 6-point Likert scales.

***Emotional responses to music index.*** Based on the previous study by Juslin et al. (2008), the researcher created a response index using a series of questions about the participants' emotional reactions to the song selections (see Appendix D). The five items of this emotional response index included a categorical question of the type of emotion the student experienced while listening. The student also was asked to name a possible source of emotion (such as a memory or mental image; see Appendix D, ERI #5), but the researcher included this question in order to describe the song as it was generally perceived by most students rather than to determine self-awareness in the students. A question was included to measure general student familiarity with the music ("yes," "no," and "I don't know") as well as two 7-point Likert scale questions: the intensity of the previously identified emotion (Appendix D, ERI #2) and the strength of the participant's preference for the musical selection (Appendix D, ERI #4).

## **Procedure**

Announcements for the study were posted online and emailed to professors to notify their students in class with an optional advertisement-type PowerPoint slide. Potential participants were informed of three test dates varied in time to accommodate as

many schedules as possible to receive their “psychology activity” credit. The location of the testing took place in two different classrooms.

As the students arrived, they were told to sit at seats where response sets had already been placed and to refrain from putting their names on the response sets. Once all the students had arrived or seats ran out, the researcher read the Informed Consent Waiver out loud and asked students for questions.

In the seats, these students were given four numbered response sets (the DI [Demographic Inventory], DUR [Duke University Religious Index], STI [Spiritual Transcendence Index], and ERI [Emotional Response Index]). Within the first seven minutes, they were asked to remain quiet and answer the first three inventories. After responding to these, the students were instructed briefly on the listening technique created by Lowis and Hughes (1997) and observed a fellow student model the proper posture. The model student sat upright with her knees slightly apart and closed her eyes, which the researcher encouraged all of the students to do in order to limit distraction and establish a level of isolation. Then these students were asked to listen and respond to six abbreviated selections of music. Each song was played and faded out and then the participants were told to respond to the corresponding ERI without over-thinking their responses.

At the conclusion of the half-hour, they were given information to contact the researcher in the spring if they were interested in the results of the study. Upon completing the administration aspect of this study, the researcher logged the data into an SPSS version 19 document.

## Results

### **Spirituality, Religiosity, and Emotional Intensity**

A mean overall spirituality score per student was computed from their responses to the Spiritual Transcendence Index. The Likert-scale questions were treated quantitatively with higher numeric selections equaling relatively higher spirituality measures. After the six questions were averaged, possible scores ranged from 1 (indicating low overall spirituality) to 6 (indicating high overall spirituality). Encompassing all student responses, the mean of overall spirituality equaled 5.27 with standard deviation of .73.

A mean overall emotional intensity score per student was computed from their responses to the Emotional Response Index. The students' responses to question 2 ("how intense was the feeling?"; see Appendix D, ERI #2) for all six songs were averaged, and possible scores ranged from 1 (indicating the student experienced low emotional intensity) to 7 (indicating the student experienced high emotional intensity). The mean of overall emotional intensity equaled 4.85 with a standard deviation of .78.

A mean overall religious activities score was calculated per student from their responses to the Duke University Religious Index. Question 1, 2a, and 2b (see Appendix B, DUR I #1, 2a, and 2b) were treated as quantitative values measuring frequency of behaviors (praying/meditating, church attendance, and Bible-reading). Because the researcher wanted a higher score to indicate more relatively frequent religious behaviors, the researcher reverse-coded the scores (see Appendix B; according to this index, higher scores indicate lower frequency of behavior). Once the scores were reverse-coded to make logical sense, students' responses were averaged so that possible scores ranged

from 1 (indicating the student engaged in few religious activities) to 6 (indicating the student engaged in many religious activities). The mean of overall religious activities for students equaled 4.85 with a standard deviation of .84.

The researcher ran a correlational analysis with all three of the above variables. Results indicated that the students' mean emotional intensity in response to all the songs correlated significantly with their mean overall spirituality ( $r=.32, p<.001$ ). Students' mean overall religious activities correlated significantly with their mean overall spirituality ( $r=.49, p<.001$ ), but their mean overall emotional intensity did not correlate significantly with their mean overall religious activities.

The researcher observed that, on the students' response sets for the non-vocal pieces "Beautiful" and "Breaking Free," "interest/expectancy" (see Appendix D, ERI #1) tended to be marked as one of the top three causes for the overall emotional response, and students' responses in intensity between vocal and non-vocal pieces appeared to have some difference. To determine the exact variation between the two, the researcher ran a second correlational test with almost all of the same variables as the first analysis. However, instead of using an emotional intensity score based on all of the song selections, a new variable was formed using only the four songs employing vocals: "Awake, Awake," "For Love of You," "O Theo," and "Anchor." The mean of emotional intensity for vocal pieces equaled 4.9 with a standard deviation of .86. The results of a paired *t*-test indicated significant differences between students' responses of emotional intensity for songs with vocals versus songs without vocals ( $t(236)=9.96, p<.001$ ): vocals-based music scored higher in intensity. After the new correlational analysis was run with only vocals, students' emotional intensity responses and overall religious

activities correlated significantly at the .05 level, unlike the previous analysis including non-vocal tracks in which no correlation between emotional intensity responses and religious activities existed ( $r=.13$ ,  $p=.04$ ).

### **Sacred versus Secular Music**

Using the Emotional Response Index, the researcher ran descriptive tests per song in order to reveal possible tendencies in the students' responses per music selection. A trend in students' emotional intensity responses was observed, in which it seemed that students tended to score higher in emotional intensity on "secular" songs.

The researcher calculated two dependent variables from the Emotional Response Index. The first, called "Sacred Mean Emotional Intensity," was calculated by averaging students' emotional intensity responses to only the "sacred" songs ("Beautiful," "For Love of You," and "Awake, Awake"). The mean of emotional intensity for "sacred" selections equaled 4.39 with a standard deviation of 1. The second, called "Secular Mean Emotional Intensity," was calculated by averaging students' emotional intensity responses to only the "secular" pieces ("O Theo," "Breaking Free," and "Anchor"). The mean of emotional intensity for "secular" selections equaled 4.91 with a standard deviation of .91. A paired  $t$ -test was run, and this test revealed a significant difference in mean intensities between the groups:  $t(235)=7.24$ ,  $p<.001$ . On average, students self-reported to experience stronger emotional reactions to "secular" selections of music than the "sacred" pieces.

### **Discussion**

The researcher observed a statistical correlation between the participants' self-reported spirituality and the intensity of the participants' emotional responses to music.

Though a ceiling effect was reached in the participants' spirituality scores, due largely to the location of the study, the correlation between spirituality and emotional responses indicates a trend for these two variables to occur together. However, in the battery of questionnaires, confounding variables like personality were not measured, so the underlying source for this trend is not entirely definable.

Two particular issues for further inquiry became evident in the above results. For one, the students' self-reported emotional intensity scores and religious activities scores were not found to be significantly related until non-vocal selections were removed from the emotional intensity variable. This is likely due to the depressed intensity scores as a result of significantly lower intensity responses to non-vocal selections.

Specifically, on response sets for the non-vocal pieces "Beautiful" and "Breaking Free," students tended to mark "interest/expectancy" as one of the top three sources for their emotional response to the songs. One student even marked that the tracks sounded "incomplete." This finding indicates that the students expected lyrics and/or lead melodies they were not hearing in the non-vocal, accompaniment track music. While previous literature proposes that emotions may be aroused equally in response to vocal and non-vocal music (Lundqvist et al., 2008), another variable likely contributes to this depression in response. These non-vocal selections were accompaniment tracks, chosen due to their similarity in style to the other contemporary pieces. A better research choice, however, would have been to select music specifically written as "non-vocal" music rather than instrumental accompaniment tracks.

While the "sacred" non-vocal selection was less well-known, almost every time students would respond audibly to the musical introduction of "Breaking Free," which is



from the hugely popular Disney Channel movie, *High School Musical*. Therefore, the students' expectations to hear Zac Efron and Vanessa Ann Hudgens' vocals were not met, and not only was the intensity of emotional responses for the non-vocal pieces significantly less, but general preference for the pieces was lower.

While the "sacred" versus "secular" intensity differences might have been expected from college students cynical of Christian culture, the significant difference in emotional intensity responses between the two groups in this context—when the selections were unnamed, unclassified, and no piece said "Jesus" or curse words to distinctly distinguish them—was surprising. Yet the difference in responses remains, and this may be as a result of a number of factors. The quality of the production may have varied between the selections, subconsciously affecting the students' reception, and hence emotional perception, of the music. Volume differences may have contributed as well.

### **Limitations**

First, this study was designed solely based on self-report. This is particularly problematic in the case of sourcing musical emotions. As Emotional Response Inventory indicated, the participant had to respond as to what "caused" the emotions, and participants may truly be unaware as to the cause of their experienced emotions in the midst of the music-listening experience. The Likert scale limited adequate feedback to determine these influences, and open-ended responses were not included to allow for students' additional thoughts.

Second, the musical selections were not based on a panel decision. Only the researcher determined which songs to use and when to trim and fade them, though a faculty advisor guided the decision-making process. The researcher has musical

background and training and was deemed qualified enough by the advisor, but a panel would have been a safer way to determine general acceptability of pieces to represent modern-day “sacred” and “secular” music.

Third, the participant sample of this study indicate systematic selection bias. Not only were only undergraduate students included, but the sample was limited to undergraduate students at a Christian university who answered questions about spirituality and religious practices. A ceiling effect occurred in the spirituality scores.

Fourth and very importantly, correlational research without definitive control over every aspect of the study (particularly in sourcing and identifying emotions) does not allow for solid conclusions to be made about causality. These results should not be generalized incautiously without taking the context of this study into account. In a similar spiritual environment (e.g. another Christian university), though, such results may apply. Also, no time-order or hierarchical relationship was drawn between spirituality or emotional responses, and no items were included in the response sets to measure for state or trait inclinations of mood. The environment was simply not well-controlled enough, and even then, defining causality of emotional responses would require great depth of research beyond simple self-report.

### **Future Research**

In hindsight, multiple aspects of the study design would have been changed. For one, the influence of social psychology on the environment of the classrooms would have been better noted. The researcher’s brief observations during one of the smaller sessions indicated that a few people still kept their eyes open, for instance, after being encouraged

to tune out all distractions by closing their eyes. The researcher would have included a “yes” or “no” response to “Did you close your eyes?” on the anonymous response set.

On the demographic index, students would have been asked to indicate denominational preference. This variable could have provided more descriptive variability among the students and gleaned new findings to compare to the previous Pentecostal-Charismatic studies.

Also on the demographic index, the researcher would have asked if the students lived on campus or not, which could have an effect on the religious activities response set. At Liberty University’s campus, convocation meets three times a week, and an off-campus student would be less likely to have as many “religious meetings” (signifying little to nothing of their actual spirituality).

Because of the religious demographics of the sample, the researcher would have sought to include students from a like university without Christian affiliation. The ceiling effect in spirituality affected all analyses. Given the nature of the variables (the use of self-report and the treatment of ordinal values like quantitative variables), the scores derived must be taken carefully into account anyway. Overarching implications should be cautiously surmised from this sample and to similar populations as the sample used in the study.

Finally, to better control for state moods, the researcher would have included a state-anxiety or state-mood index in the initial response battery. This would have better measured for previous influences on the given participants’ moods and provided further explanation for their emotional responses to the music.

Though the above findings feature limitations and design flaws, this analysis adds to the growing theoretical foundation in the psychological field of spirituality and music-based emotions. This study can provide a launching pad for further research about the connection between individual levels of spirituality and emotional tendencies, religious activities and personal spirituality, and the differences in responses to “sacred” vs. “secular” music.

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## Appendix A

**Please respond to each of the items below by circling the ONE response that most closely describes you.**

1. Gender

Male

Female

2. Age\_\_\_\_\_

3. University Classification

a. Freshman

b. Sophomore

c. Junior

d. Senior

4. Race

a. Black or African American

b. Hawaiian Native/Pacific Islander

c. Caucasian/White

d. American Indian/Alaska Native

e. Asian

f. Hispanic

g. Other

h. Unspecified/I prefer not to answer

## Appendix B

## Edited Duke University Religion Index

**Please respond to each of the items below by circling ONE number.**

1. How often do you attend church or other religious meetings?

1. More than once a week
2. Once a week
3. A few times a month
4. A few times a year
5. Once a year or less
6. Never

2a. How often do you spend time in prayer or meditation?

1. More than once a day
2. Daily
3. Two or more times/week
4. Once a week
5. A few times a month
6. Rarely or never

2b. How often do you spend time in Bible study?

1. More than once a day
2. Daily
3. Two or more times/week
4. Once a week
5. A few times a month

6. Rarely or never

**The following section contains 3 statements about religious belief or experience. Please mark the extent to which each statement is true or not true for you.**

3. In my life, I experience the presence of the Divine (i.e., God).

1. Definitely true of me
2. Tends to be true
3. Unsure
4. Tends *not* to be true
5. Definitely *not* true

4. My religious beliefs are what really lies behind my whole approach to life.

1. Definitely true of me
2. Tends to be true
3. Unsure
4. Tends *not* to be true
5. Definitely *not* true

5. I try hard to carry my religion over into all other dealings in life.

1. Definitely true of me
2. Tends to be true
3. Unsure
4. Tends *not* to be true
5. Definitely *not* true

## Appendix C

## The Spiritual Transcendence Index

**Please respond to each of the items below by circling the ONE number that most closely describes the extent to which you agree or disagree with the statement.**

1	2	3	4	5	6
strongly disagree	disagree	slightly disagree	slightly agree	agree	strongly agree

1. My spirituality gives me a feeling of fulfillment.

1	2	3	4	5	6
---	---	---	---	---	---

2. I maintain an inner awareness of God's presence in my life.

1	2	3	4	5	6
---	---	---	---	---	---

3. Even when I experience problems, I can find a spiritual peace within.

1	2	3	4	5	6
---	---	---	---	---	---

4. I try to strengthen my relationship with God.

1	2	3	4	5	6
---	---	---	---	---	---

5. Maintaining my spirituality is a priority for me.

1	2	3	4	5	6
---	---	---	---	---	---

6. God helps me to rise above my immediate circumstances.

1	2	3	4	5	6
---	---	---	---	---	---

7. My spirituality helps me to understand my life's purpose.

1	2	3	4	5	6
---	---	---	---	---	---

8. I experience a deep communion with God.

1	2	3	4	5	6
---	---	---	---	---	---

## Appendix D

## Emotional Response Inventory

**Please respond to each of the items below by circling the ONE response that most closely describes your response to the musical selection.**

1. What alternative corresponds best to how you felt? Please circle.

happiness-elation	anxiety-fear	pleasure-enjoyment
sadness-melancholy	love-tenderness	boredom-indifference
calm-contentment	surprise-astonishment	interest-expectancy
anger-irritation	shame-guilt	other emotion _____
nostalgia-longing	disgust-contempt	

2. How intense was the feeling? (1=weak, 7=strong)

1                  2                  3                  4                  5                  6                  7

3. Had you heard the music before?

yes                  no                  I don't know

4. How much did you like the music? (1=weak, 7=strong)

1                  2                  3                  4                  5                  6                  7

5. What do you think caused the feeling?

personal memories

the lyrics

the music's emotional expression

other \_\_\_\_\_

arousing sound/rhythm

I don't know

inner images or fantasies

confirmed or disconfirmed expectation

subconscious associations

Appendix E

Participant Demographic Visuals

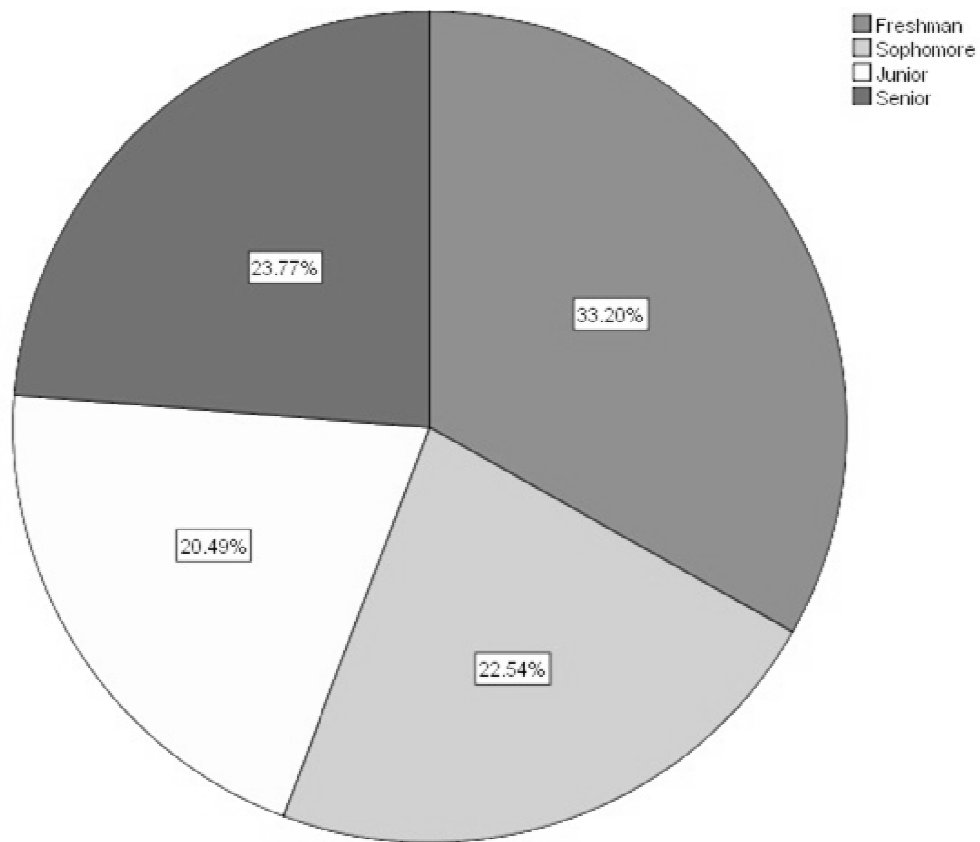
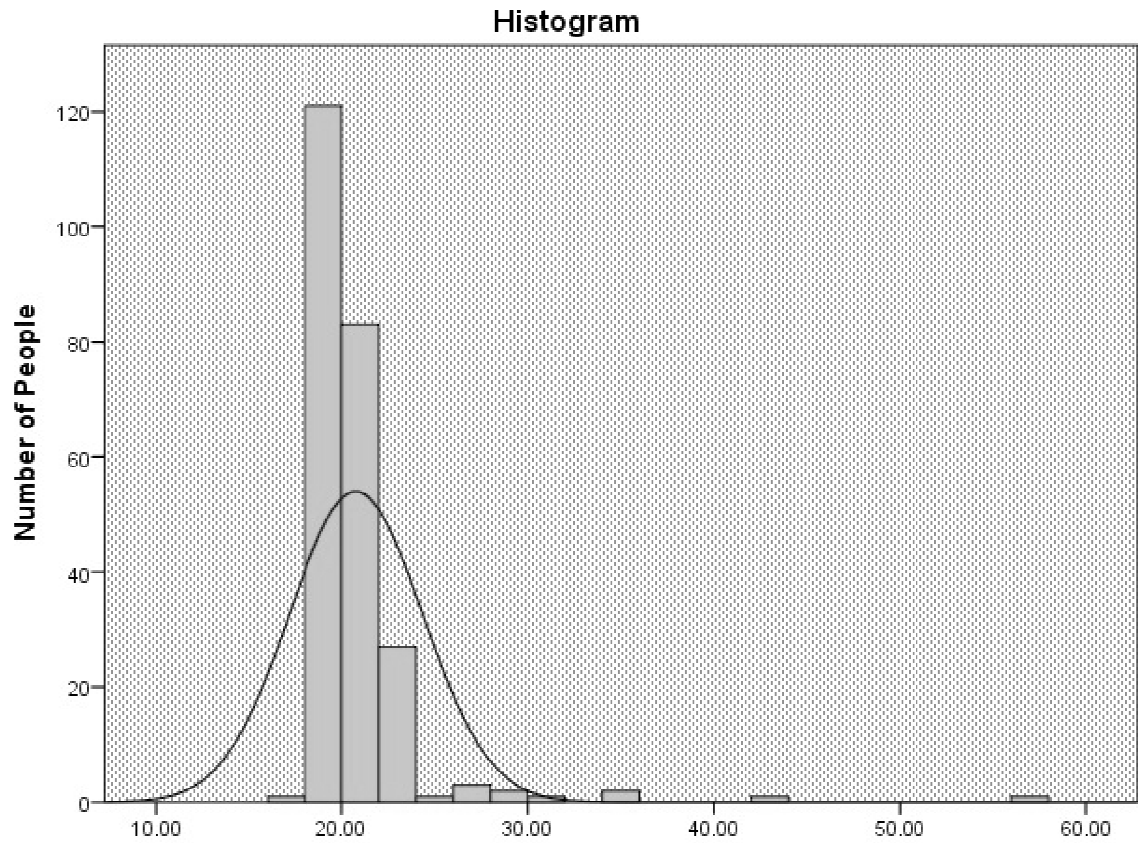


Figure 1. Participant Class Rank Distribution



*Figure 2.* Participant Age Distribution

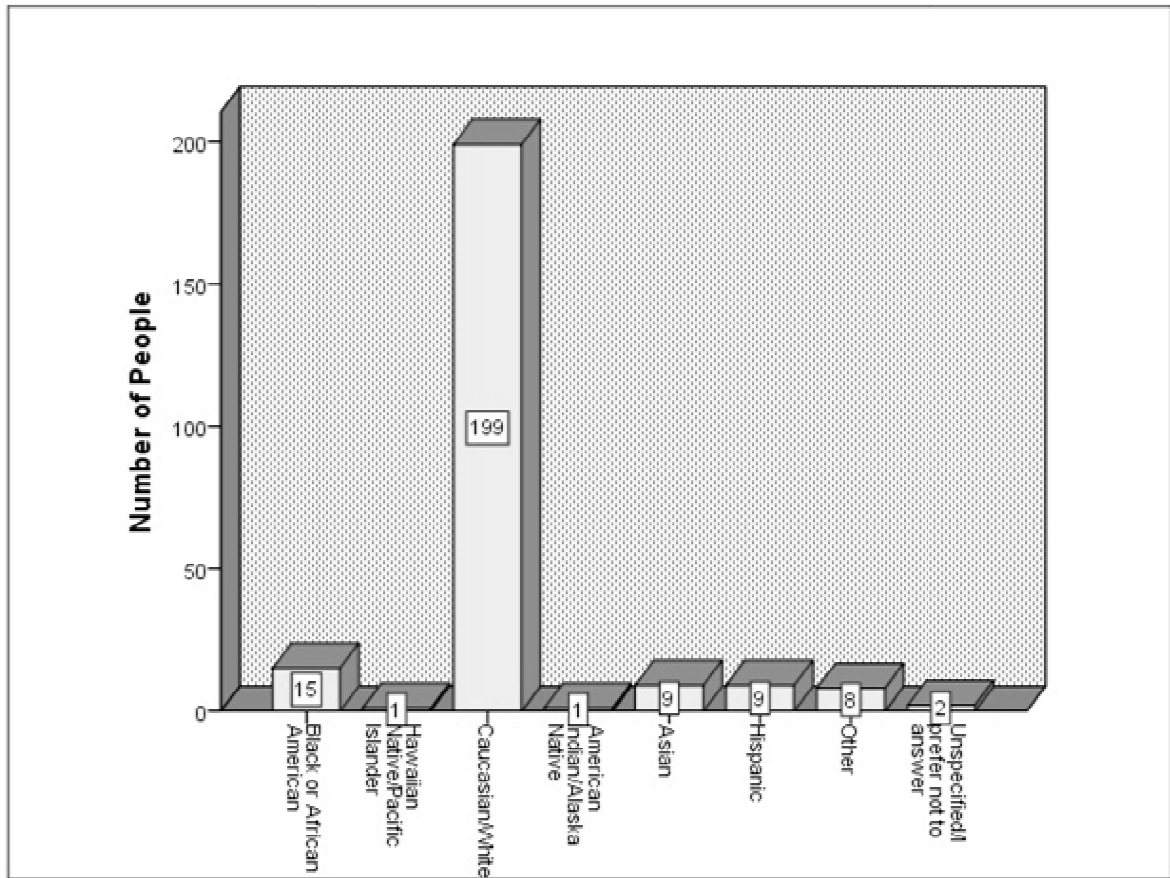


Figure 3. Participant Racial Distribution

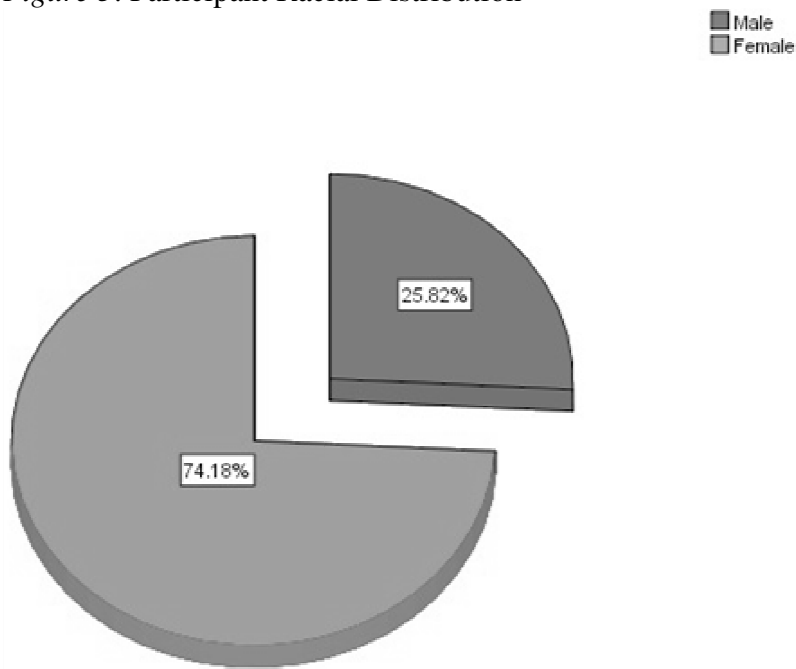
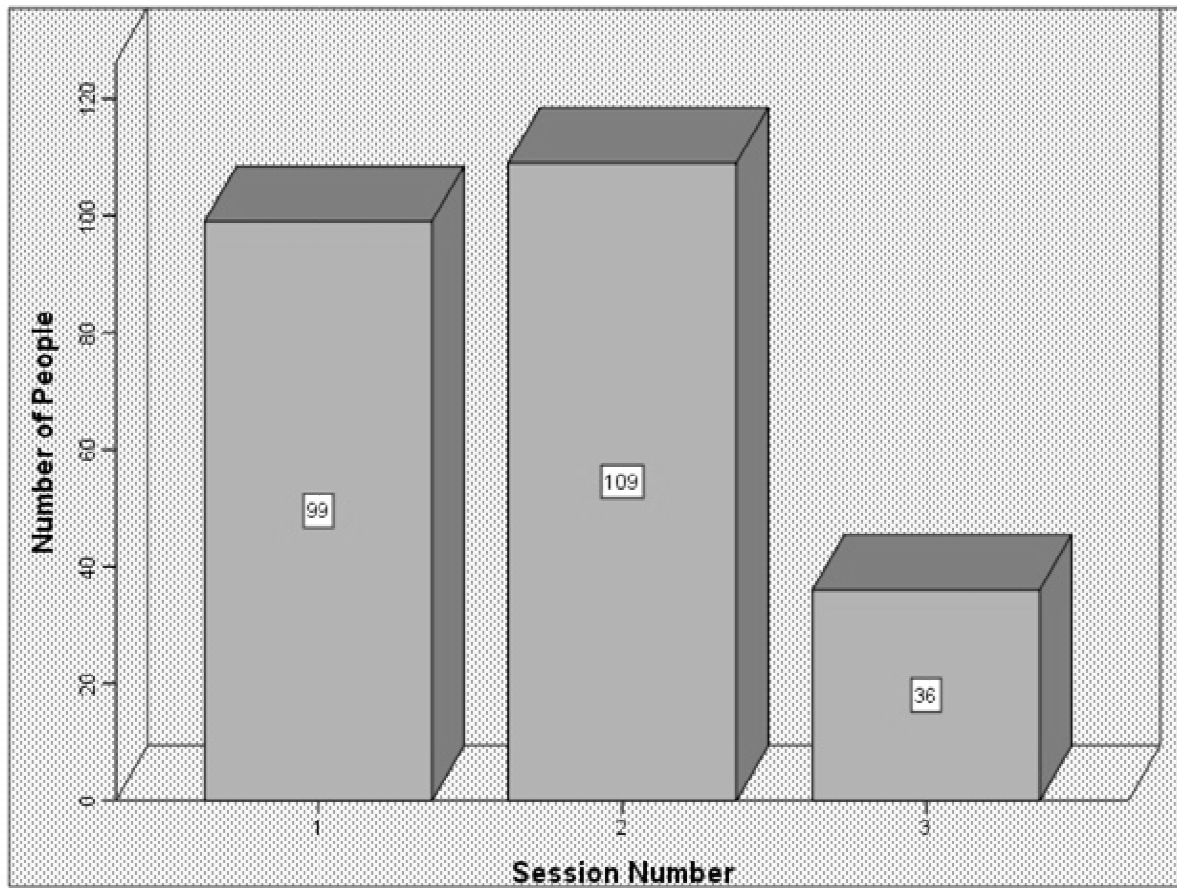


Figure 4. Participant Gender Distribution





*Figure 5.* Number of Participants per Session