

Cognitive Dissonance and Its Effects on Religious Beliefs

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Abstract

How does an individual change his or her own religious beliefs when contrary evidence is presented? Cognitive dissonance affects Christian college students' beliefs about a specific religious practice—speaking in tongues. A four-group between-subjects experimental design was utilized. A news story that objectively examined brain activity of those who speak in tongues was presented to a sample of Christian undergraduate students ranging in their beliefs about the issue of speaking in tongues. Cognitive dissonance was induced in two of the four conditions and its effects were measured by calculating participants' changes in beliefs. It was hypothesized that dissonant cognitions (contradictory belief-disconfirming information) about personal religious beliefs would cause Christian college students to pursue a dissonance-reduction method that enables self-justification, allowing an individual to adhere or more strongly adhere to his or her pre-existing beliefs. Findings surprisingly did not support this hypothesis. Data also revealed that anti-tongue belief groups altered their beliefs more than pro-tongue belief groups.

Cognitive Dissonance and Its Effects on Religious Beliefs

People have a tendency to self-justify religious beliefs when contradictory evidence is presented (Barlett, Drew, Fahle & Watts, 1974; Batson, 1975; Burris, Harmon-Jones & Tarpley, 1997; Mahaffy, 1996). Despite the truth of a notion that one does not accept, he or she may choose to dwell in ignorance of that truth to remain in a state of self-justification. Even if it means lying to oneself, one may still choose that option as a means of not confronting reality. Furthermore, he or she may absorb only information that affirms a pre-existing belief. Self-justifying one's religious beliefs against contrary evidences has the potential to cause an individual to experience *cognitive dissonance*—mental distress caused by a conflict between two or more opposing beliefs (Aronson, Turner & Carlsmith, 1963; Barlett, Drew, Fahle & Watts, 1974; Batson, 1975; Burris, Harmon-Jones & Tarpley, 1997; Festinger, 1957; Mahaffy, 1996).

According to the cognitive dissonance theory, an individual makes one of four choices to reduce dissonance. One may choose to 1) assimilate the dissonant cognition and change beliefs accordingly, 2) alter his or her conceptualization of the dissonant cognition to fit his or her existing mindset, 3) augment his or her explanation for a phenomenon to reduce dissonance, or 4) allay the source of dissonance to reduce the burden of the mental discord (Aronson et al., 1963; Batson, 1975). In regards to these dissonance-reduction approaches, how does an individual typically react when his or her religious beliefs are challenged? Based on past empirical studies and other research, it is hypothesized that dissonant cognitions about personal religious beliefs cause individuals to reduce dissonance through self-justification, allowing an individual to hold onto their beliefs more firmly than before. The following literature review examines the formation

of Christian adolescents' religious beliefs, the religious practice of speaking in tongues within Christianity, and the influence cognitive dissonance has on one's religious beliefs.

The Formation of Christian Adolescents' Religious Beliefs

National survey of youth and religion. Smith and Denton (2005) implemented an exhaustive multi-method research approach to gain a comprehensive understanding of the spiritual and religious lives of teenagers living in the U.S. This study entailed survey and interview methodologies. A nationally representative sample from the population of American teenagers was gathered via a random-digit-dial (RDD) telephone survey called the National Survey of Youth and Religion (NSYR). The NSYR included 3,370 teenagers—ranging from 13 to 17 years of age who spoke English or Spanish—as well as their parents. The RDD approach enabled a fair opportunity to collect data from teens who are school dropouts, home-schooled, or constantly absent from school in addition to those currently in attendance within the public/private school setting. This study provided a robust representative sampling of American teenagers.

Part two of the NSYR was qualitative, involving 267 in-person interviews. The interview process incorporated select teens who participated in the previous stage of the NSYR. The intended purpose of the in-person interviews was to highlight numerous demographics, e.g. region, school type, religion, household income. The NSYR provided valid findings because of its representativeness and broad range of demographics covered.

Influence of moralistic therapeutic deism. The dominant religious demographics of today's teenagers are narrow in range. Most American teens claim to be Christian, with the rest of the religious mix spreading to Mormon, Jewish, or nonreligious

identities (Smith & Denton, 2005). In light of the religious demographics of U.S. teenagers, a newly emerging worldview—Moralistic Therapeutic Deism (MTD)—has become rooted in American youth culture, affecting the way professing Christian adolescents perceive God, themselves, and the world and form religious beliefs. MTD is a blend of beliefs from various religious systems, yet this worldview has disguised itself as Christianity, fooling the minds of many professing Christian adolescents. MTD's five main beliefs are as follows:

1. A God exists who created and orders the world and watches over human life on earth.
2. God wants people to be good, nice, and fair to each other, as taught in the Bible and by most world religions.
3. The central goal of life is to be happy and to feel good about oneself.
4. God does not need to be involved in one's life except when God is needed to resolve a problem.
5. Good people go to heaven when they die. (Smith & Denton, 2005, p. 162-163)

While MTD is affecting most teens of various professed faiths and religious systems, it is merely a worldview label created by Smith and Denton. Teenagers would not label themselves as Moralistic Therapeutic Deists. MTD is an overarching belief system that arose from Smith and Denton's research in which adolescents are unaware that they adhere to principles of a worldview that are contradictory to their professed faiths.

Influence of postmodernism. Related to MTD, postmodernism has become the underlying worldview of a majority of adolescents (Kinnaman & Lyons, 2007; Mueller, 2007). *Postmodernism* is a vague worldview that deemphasizes the necessity of religious

doctrine and encourages personal freedom and self-defined truth and morality (Chan, 2007; Kinnaman & Lyons, 2007; Moore, 2004; Mueller, 2007; Nasel & Haynes, 2005; White, 2007). Postmodernism asserts that the act of believing in a concept makes it true (McDowell & Bellis, 2006). Being an eclectic approach towards spirituality, postmodernism is contrary to traditional Christianity (Chan, 2007; Kinnaman & Lyons, 2007; McDowell & Bellis, 2006; Moore, 2004; Mueller, 2007; Nasel & Haynes, 2005; White, 2007).

Many of today's Christian adolescents have succumbed to a postmodern cultural blend of religious beliefs (Mueller, 2007). Postmodern culture has blended Biblical truth with personal opinions and what feels true to oneself. Postmodernism has clouded adolescents' abilities to discern what is right, true, and good (Mueller). Kinnaman and Lyons (2007) asserted that young people willingly tolerate contradiction and ambiguity as a result of postmodernism. Adolescents' views of Christianity are distorted because they are not grounded in a biblical worldview (Kinnaman & Lyons; McDowell & Bellis, 2006; Mueller; Smith & Denton, 2005). Professed Christian youth have been indoctrinated by postmodern culture rather than the Bible (McDowell & Bellis). From the data collected during NSYR interviews, Smith and Denton found most American Christian teenagers to be religiously inarticulate, having a hard time explaining their personal beliefs about their professing faiths; however, most of today's teens personally profess a traditional style of religious-orientation. Teens tend to cling to the religion of their parents/caregivers, without much ownership of or critical thinking about one's personal faith (McDowell & Bellis; Smith & Denton).

The purpose of examining the dominant worldviews—MTD and Postmodernism—of the current adolescent generation (Kinnaman & Lyons, 2007; Mueller, 2007; Smith and Denton, 2005) was to learn how adolescents' perceptions toward the world, themselves, and Christianity are being formed. From the NSYR, Smith and Denton identified numerous trends about teens that can be generalized to the American adolescent population. Data revealed that most teenagers hold to the religious views from their upbringing. Even though one's worldview is continually shaped over time, the predominant worldview of the adolescents who have grown up over the past five years has not significantly changed (Smith & Snell, 2009). Those adolescents are now college students whose ages currently range from 18-22. Undergraduate college students are only removed from their religious upbringings to some extent. According to Smith and Denton's nationally representative study, college-aged Christians most likely grew up adhering to an MTD or a postmodern worldview without being aware of it. This affects one's mental schemas, how one makes sense of religious information, and how one handles religious cognitive dissonance. This finding is significant for the present research because it shows that an individual who professes to be a Christian may or may not adhere to a fundamental Christian worldview.

Fundamental Christianity. Faith in Jesus Christ as personal Savior and obedience to doctrinal aspects of the Bible are foundationally essential to Christianity (Nasel & Haynes, 2005). In a study conducted by McFarland and Warren Jr. (1992), Christian fundamentalism was assessed by asking participants if they were professing Christians and if they adhered to the belief that the Bible is infallible and absolute in its authority. Christian spirituality and religiosity also need to be defined to have a clearer

understanding of what the researcher means when referring to and spiritual gifts and religious beliefs.

Hodge (2003) conceptualized spirituality as an intrinsic phenomenon that encompasses an individual's intimate bond with God, Transcendence, or Ultimate Reality, exhibited by one's behaviors and beliefs. From a Christian worldview, Transcendence or Ultimate Reality is solely represented by the God revealed in the Bible. The concept of spirituality is not to be confused with religiosity. Although spirituality and religion are distinct constructs (Allport & Ross, 1967; Hodge; Nasel & Haynes, 2005), the broad construct of spirituality encompasses religiosity (Nasel & Haynes, 2005). *Christian spirituality* is an individual's personal relationship with the God of the Bible whereas *Christian religiosity* is operationally defined as a shared collection of viewpoints, customs, and practices in accordance with the Bible toward existential perception of transcendent actuality (Hodge). Both Christian spirituality and religiosity are necessary concepts to grasp because the present study assessed adherence levels towards beliefs about speaking in tongues, a religious practice unique to the Christian faith.

Speaking in Tongues

The issue of speaking in tongues. Within Christianity, specific doctrinal beliefs are fervently debated (Bertone, 2003; Strauss, 1997). One of these beliefs regards the issue of speaking in tongues, which addresses the relevancy and manifestation of speaking in tongues as a spiritual gift in the church today. In the Bible, the Apostle Paul addressed the Corinthians about usage of tongues in the church. More specifically, in 1 Corinthians 14 Paul writes about *glossolalia*, a Greek word meaning speaking in tongues

(Bertone; Heller-Roazen, 2002). Glossolalia—*speaking in tongues*—refers to flowing incoherent verbal utterances that are of no known human language. Although glossolalia has a definite meaning, Christians differ in their beliefs about its current significance.

The essence of the tongues debate is that some Christians believe speaking in tongues is a Holy language while some believe tongue speaking is meaningless. The debate about speaking in tongues usually includes, but is not limited to, one's understanding of what it means to speak in tongues, whether or not a Christian can still receive the spiritual gift of speaking in tongues, how tongues ought to be practiced, and whether or not speaking in tongues edifies other Christians. Although many Christians have never been exposed to the issue of tongues or know little about it, their stances on the tongues issue are usually firm and unwavering if they are knowledgeable about the subject. The issue of speaking in tongues is so hotly debated that it causes many Christians to join church congregations that hold to a specific doctrinal stance on this issue. Glossolalia-supportive beliefs are typically held within the Pentecostal/Charismatic church (e.g. Assemblies of God) and glossolalia-opposing beliefs are not held within the Reformed church (e.g. Presbyterian, Baptist). An in-depth look at both sides of the tongues debate is necessary for this study.

Pro-tongue beliefs. Some Christians believe that speaking in tongues is a spiritual gift that continues to be manifested by the Holy Spirit through Christians within the church today. According to Pentecostal doctrine, speaking in tongues refers to a heavenly language of verbal utterances which the Holy Spirit uses for self-edification, prophesy, and communication to God on behalf of a Christian in a way that is not limited by human words and semantics (Bertone, 2003; Heller-Roazen, 2002). Heller-Roazen stated “the

mechanisms of reference and signification, faltering, give way to a speech that quite literally expresses nothing” (p. 95) in any known human language. Yet this type of nothingness speech holds meaning that human words cannot define. The Holy Spirit communicates the utterances of the Christian’s heart that the mouth cannot coherently express (Bertone; Heller-Roazen). Referencing Romans 8:26, Bertone argued that “Paul’s point [about speaking in tongues] is simply the emotional alignment of the [Holy Spirit] praying through the believer in his or her ‘weakness,’ which is characteristic of the present age and is also expressive of the Spirit who ‘comes to our aid’” (p. 57). This is understood by pro-tongue Christians as the purest form of prayer (communication with God) because only God knows and understands the glossolalic groanings of the Holy Spirit and the intentions of the human heart (Bertone). “[Speaking in tongues] must be the experience of the Spirit connecting with the human spirit, where the individual senses emotional alignment between himself or herself and the Spirit in communication with God” (p. 60). “When believers turn to God for assistance, God responds in the supernatural by actually taking part in the weakness itself and praying on behalf of the believer.” Romans 8:26 states, “the Spirit helps us in our weakness.” Therefore, pro-tongues Christians believe that speaking in tongues is not only still a relevant religious practice within the Christian faith but it is a necessity.

Anti-tongue beliefs. There are also Christians who do not believe in a modern-day manifestation of the same tongues Paul had written in his letter to the Corinthians (Friesen, 2009). Friesen argues that current Pentecostal beliefs about speaking in tongues can be attributed to Charles Parham, founder of the Apostolic Faith Movement in Topeka, Kansas. Friesen revealed that the Pentecostal doctrine of *Spirit baptism*, which

refers to speaking in tongues as an initial evidence of a Christian being sealed as a member of the Bride of Christ, is not really doctrine at all. Pentecostal beliefs about speaking in tongues are largely based on Parham's flawed hermeneutical interpretation of Acts 2 in the Bible. Thus, the belief that speaking in tongues as a currently manifested spiritual gift lacks much validity. Some argue that Christians who speak in tongues accomplish nothing more than just feeling good about one's own spirituality. It is an emotional state that is confused with a real encounter with the Holy Spirit.

Considering both viewpoints on the issue of tongues, how does a Christian adjust his or her faith-based beliefs when these beliefs are challenged? For this study, it is necessary to investigate previous empirical studies and literature that have analyzed how individuals handle belief-disconfirming information and how Christians, more specifically, handle dissonant cognitions about personal religious beliefs.

The Influence of Cognitive Dissonance

Information credibility. A crucial influencing factor on one's religious beliefs is the credibility of the source of dissonant information. When a dissonant opinion or fact is presented by communicators of varying levels of credibility, how apt is an individual to change his or her opinion on a topic? In a past experiment (Aronson et al., 1963), the influencing source took the form of a persuasive document about poetry evaluation. All subjects were told to rank order nine stanzas of poetry from best to worst. Participants then read a persuasive document about poetry with the author's credibility and level of opinion discrepancy differing amongst six conditions of high credibility and mild credibility. All subjects were then asked to re-rank the same nine stanzas. Subjects were then assessed on their level of opinion change through analysis of the poetry stanza

reevaluations. The results of this study revealed that in the highly credible communicator condition, as the level of discrepancy increased so did participants' opinion change. In the mildly credible condition, subjects' opinion change significantly decreased from moderate-level discrepancy to high-level discrepancy conditions. Communicator credibility is positively correlated with opinion change. In a highly credible communicator condition it is easier to change one's cognitions, while in a low credibility condition it is easier to discount the communicator. This finding may have reasonable implications in regards to one's religious beliefs or opinions being formed by sources of perceived credibility.

For instance, ABC News—a prominent, highly-respected news source providing worldwide breaking news and constant information about culturally relevant topics—is an example of a credible communicator. According to the notion presented in the 1963 study (Aronson et al.), the chances that remarks from ABC News being accepted as valid and reliable would be significantly higher in comparison to information presented by a non-prestigious news agency, much less a blogger or individual without a well-known reputation for providing accurate information about a subject matter. Dissonance theory suggests a source with perfect credibility cannot be discounted at all and vice versa—a source with no credibility becomes fully discounted regardless of argument validity.

Selective exposure and selective avoidance. Another phenomenon worth noting is that once an individual has formed his or her religious beliefs, he or she typically fills his or her mind only with information that satisfies his or her stance on that belief (Barlett, Drew, Fahle & Watts, 1974). This behavior has been conceptualized as selective exposure. *Selective exposure* implies that individuals usually choose to associate

themselves only with other things that are in agreement with them or similar in belief.

The selective exposure hypothesis predicts that individuals desire information that supports currently held beliefs and repel information that causes dissonance or antagonizes one's way of thinking (Barlett et al.).

Does the selective exposure hypothesis have validity? A field experiment was performed to determine if people of different political parties favored their respective party's presidential candidate through a direct mail measure (Barlett et al., 1974).

Preceding the 1972 election, envelopes containing voter information about either Nixon (Republican candidate) or McGovern (Democrat candidate) were randomly assigned to homes who are registered Republicans or Democrats, creating four experimental conditions. The two consonant conditions involved mailing participants voter information about their political party affiliation. The two dissonant conditions involved mailing participants opposing party information. The purpose of this was to determine if voters would, as predicted by the selective exposure hypothesis, only open envelopes containing their affiliated government party's information. Data were collected by asking participants to fill out a postcard from inside the envelope and return it in the mail. The mail response-rate was used to test the effect of selective exposure.

Democrats and Republicans who received mail supporting their personal political party's candidate responded significantly more than those who received mail from the opposing party. The two consonant conditions responded nearly two times more than the two dissonant conditions. This study shows people's preference to use information that supports strongly held beliefs or opinions. Although political beliefs are not religious beliefs, both are typically viewed as important life decisions or associations, having

significant social implications. Political beliefs and religious beliefs are also similar in the sense that self-justification may play an integral role in one's drive to defend his or her viewpoint. Besides, political party affiliation to some is just as important as religious orientation.

In the next study, selective exposure and selective avoidance were examined in a study of religious beliefs. A study done by McFarland and Warren (1992) revealed that Christian participants of intrinsic and quest religious orientations demonstrated selective exposure to belief-confirming information and selective avoidance of belief-disconfirming information. *Intrinsic orientation* referred to a "deep and selfless commitment" to Christianity (McFarland & Warren Jr., p. 163) and *quest orientation* referred to "open-minded truth seeking" (p. 172). The McFarland and Warren study consisted of a Christian fundamentalist sample group ($n=102$), meaning that each individual adhered to a Christian identity and adhered to the belief that the Bible is infallible and absolute in its authority. Participants were exposed to authors, titles, and abstracts of 24 articles and then had to rate if they wanted to read or did not want to read each article. Six articles dealt with Christian fundamentalist beliefs, six articles dealt with beliefs opposite to Christian fundamentalism, and the other twelve articles addressed non-religious topics (providing a control for examining participants' interest in any type of religious information). Significant findings revealed that the intrinsic group sought belief-supportive information and the quest group highly desired to read belief-opposing information. This study shows that Christians are not immune to succumbing to selective exposure and avoidance of faith-based information.

Religious beliefs and self-justification. The Batson (1975) study assessed individuals' adherence to a personal religious belief after being presented with disconfirming information to that belief. Batson hypothesized that upon being presented with disconfirming information, the individual would react according to the rationalizing model. The rationalizing model states that when contradiction to one's personal religious beliefs is presented and acknowledged, the participant will adhere more firmly to his or her pre-existing beliefs. Batson created a disconfirmation story that portrayed "new evidence" that dispelled the validity of the Christian faith, claiming that Jesus was merely a man and he never rose from the grave. This study analyzed differences between Christians and nonbelievers' acceptance of the veracity of a disconfirmation story.

Twenty-four percent of subjects accepted the disconfirming story as truth. Christians who accepted the story as truth subsequently intensified their adherence to the Christian faith. There was a significant increase in self-report scores measuring intensity of adherence to their originally stated beliefs (Batson, 1975). This study conveyed that the rationalizing process had been assumed during all previous research studies assessing cognitive dissonance theory. Firmly held convictions had not been previously tested and interaction with friends who embrace the same beliefs as the participants has always been prohibited as a means of implementing control. The methodology of the Batson study was *quasi-experimental*, meaning it was limited in its ability to make causal inferences and generalize results to everyday life.

A 1997 study (Burriss, Harmon-Jones & Tarpley) addressed the issue of dissonance reduction and build on Batson's (1975) research, providing thorough groundwork to construct a more suitable experiment for intriguing data collection. The

1997 study analyzed the *negative affect* that follows cognitive dissonance and how one copes with it. Negative affect refers to the subsequent discomfoting feeling experienced as a result of cognitive dissonance. Cognitive dissonance theory assumes that when dissonance is encountered a negative affect results, causing one to pursue some method of reducing that negative affect. The primary research questions of this study asked the following: does reduction of negative affect result from dissonance reduction when a disconfirming belief is presented? Additionally, does appealing to transcendent thoughts provide an effective means for negative affect reduction?

It was hypothesized that dissonance reduction may take the form of clinging to *transcendent concepts*—thoughts beyond the universe or material existence. Validating transcendent explanations for a dissonant cognition would reduce negative affect. Participants were randomly assigned to one of two conditions: opportunity for transcendent explanations or no opportunity for transcendent explanations. All participants were instructed to read an article dealing with the death of an innocent child from a Christian home, threatening the belief that a loving God really exists. The article's purpose was to stir up dissonant thoughts in the minds of participants. A self-report assessment that measured negative affect was utilized at the end of both conditions. Analysis of the data revealed a significant negative correlation between acceptance of transcendent explanations for a dissonant cognition and subsequent negative affect. The dissonance-producing article evoked significantly more negative affect, i.e. feelings of agitation and discomfort, in the no-transcendence opportunity condition. The agitation negative affect was significantly lower in the religious-affirmation condition in comparison to both the no-affirmation condition and distraction condition. Individuals

tend to reduce dissonance and negative affect by affirming prior beliefs. Cognitive dissonance plays a crucial role in determining or modifying beliefs about God.

Not only do individuals self-justify beliefs through spiritual cognitions but also through compromise. The Mahaffy (1996) study sought to identify if lesbians were experiencing or had experienced cognitive dissonance between their personal Christian beliefs and their homosexuality, and, if so, what dissonance was experienced and how did they resolve the dissonance? A convenience sample of 163 lesbians voluntarily participated in the study. Data were collected through use of open-ended self-report measures assessing whether or not cognitive dissonance between sexual orientation and Christian beliefs was experienced at any time in their lives. The self-report measure also assessed how the individual coped during time of dissonance. Data revealed that close to three-fourths of respondents reported one of two coded-forms of dissonance: intrinsic and extrinsic dissonance. *Intrinsic dissonance* referred to an internal lack of resolve between one's personal Christian beliefs and homosexuality. *Extrinsic dissonance* referred to one's homosexuality conflicting with people's perceptions and standards for a Christian way of life.

The dissonance that participants experienced caused fifty-eight percent of respondents to alter their religious beliefs so that they could justify their homosexual lifestyles while holding to a Christian identity. This portion of subjects compromised their religious views to maintain a Christian identity as well as a lesbian sexual identity. This further illustrates individuals' reluctance to changing behavior in a way that does not satisfy the religious dissonant cognition. If this were not the case then these Christian lesbians would have departed from the lesbian lifestyle and fully conformed to a biblical

conviction of sexual orientation. The data from the study revealed that the majority of lesbian participants subsequently remained grounded in both their homosexual and Christian identities, thus further supporting the concept of self-justification after experiencing some form of religious cognitive dissonance.

Self-justification is a predominant motivator and coping mechanism. In dealing with religious beliefs and experiencing cognitive dissonance it is easy to see the role that self-justification plays as a coping mechanism. People do everything within their power, whether consciously or unconsciously, to justify their existing beliefs and reduce cognitive dissonance.

Application of Research to Present Study

Instead of analyzing the differences between Christians and Non-Christians like the Batson (1975) study, the study conducted for this paper examined how cognitive dissonance affects Christian fundamentalists' beliefs about a specific doctrine, speaking in tongues. Participants were grouped as pro-tongue Christians or anti-tongue Christians according to their responses on a survey about speaking in tongues. Differences between each group's survey scores were analyzed before and after religious dissonant information were presented. This presented opportunities to examine how college-age Christians reduce religious-oriented cognitive dissonance. In light of past research, H1: it was hypothesized that belief-disconfirming information toward personal beliefs about speaking in tongues would cause Christian college students to self-justify pre-existing beliefs, adhering to or more strongly adhering to pre-existing beliefs about speaking in tongues. H2: In the pro-tongue message conditions it was hypothesized that the pro-tongue belief group would experience higher change towards belief in tongues than the

anti-tongue group. H3: In the anti-tongue message conditions it was hypothesized that the anti-tongue belief group would experience larger change towards disbelief in tongues than pro-tongue belief group.

Method

Participants

This study was conducted using a non-probability convenience sample (N = 52) consisting of fundamentalist Christians at a mid-sized evangelical Christian University in the southeastern United States. The sample included male and female, undergraduate, residential students over 18 years of age who are currently enrolled in at least one psychology course. These students were notified about the opportunity to participate in the experiment via email. This email informed students of the nature of the study in an ambiguous manner (i.e. spiritual gifts research) as a means of preventing students from guessing the true purpose and hypotheses of the study. As incentives for their participation, students were offered a *psychology activity*—a psychology-related event that the University’s psychology department requires all who are enrolled in a psychology class to participate in for course credit—and a chance of winning a \$20 Wal-Mart gift card on the day of the study. Data representing 17 of the original 69 participants were not included in the experimental analysis because they did not fulfill several requirements: completion of a demographics page (n=6), being a professing Christian (n=1), believing in the infallibility and absolute authority of the Bible (n=5), completion of all ten items on the preliminary TS (n=2), completion of all ten items on the post-video TS (n=3). (The final sample group’s demographics can be viewed at Appendix G).

Materials

Preliminary tongues survey. The Tongues Survey (TS) is a 10-item self-report measure that assessed participants' pre-existing beliefs about the issue of speaking in tongues (see Appendix D). This was coupled with a demographics page (see Appendix C). The TS uses a 6-point Likert scale ranging from Strongly Agree to Strongly Disagree with no neutral point so that indifferent Christians were forced to choose an inclination. The TS contained 10 items assessing one's perceptions about the relevancy and manifestation of tongues in Christians today, including one's belief about tongues and understanding of what it means to speak in tongues. Items were based on recurring themes addressed within the literature review (Bertone, 2003; Friesen, 2009; Heller-Roazen, 2002; Strauss, 1997). Participants' responses to the first survey item—"I believe the spiritual gift of speaking in tongues is still active and being properly manifested today amongst Christians"—acted as the first of two factors in this experiment, enabling the researcher to form pro-tongue and anti-tongue participant groups because of participants' pre-existing beliefs. The TS produced a Cronbach's alpha of $\alpha = .93$.

Video clip. This is approximately a 7-minute ABC News video report entitled "The Science of Speaking in Tongues" (Mabrey, 2008). The video objectively reports the findings of an empirical laboratory study conducted by Dr. Newberg at the University of Pennsylvania, who looked for a physiological explanation for speaking in tongues. Dr. Newberg examined the relationship between faith and science by studying CT scans of brain activity during times of normal English prayer as well as prayer in tongues of eight Americans who speak in tongues. Data revealed that the frontal lobe activity in participants' brains was significantly lower when praying in tongues versus praying in

English. This study did not prove or disprove the validity of speaking in tongues. This study originally aired on July 11, 2008.

Post-video tongues survey. The TS was administered again as a post-video self-report measure. This assessed participants' beliefs and attitudes about tongues after watching the video clip and reading either an attached belief-confirming cover page or belief-disconfirming cover page.

Pro-tongues cover page. The pro-tongue cover page contained scripture references and quotes from the video clip that supported pro-tongue beliefs (see Appendix F). This was given to participants before receiving the post-video TS. Participants were instructed not to turn the page until they read the content thoroughly. Two of the four participant groups were issued the pro-tongues cover page: pro-tongue Christians (belief-affirming condition) and anti-tongue Christians (belief-disconfirming condition).

Anti-tongues cover page. The anti-tongues cover page contained scripture references and quotes from the video clip that supported anti-tongue beliefs (see Appendix E). This was given to participants before receiving the post-video TS. Participants were instructed not to turn the page until they read the content thoroughly. Two of the four participant groups were issued the pro-tongues cover page: pro-tongue Christians (belief-disconfirming condition) and anti-tongue Christians (belief-affirming condition).

Procedure

An email was sent to all students currently enrolled in at least one psychology course, inviting them to participate in this study (Appendix A). On the day of the study,

as participants were entering the designated classroom they were each assigned an identification number for confidentiality purposes and given an informed consent form that needed to be initialed. The informed consent form described the conditions and requirements of the study (Appendix B). Students were provided with adhesive labels stating their identification number so they would not forget it. Students were instructed to take a seat and wait for further instructions.

At the designated start-time of the study the classroom doors were closed, which had signs on them stating that entrance was no longer permitted due to potential disruption of an experiment in progress. The researcher informed the participants that the study had officially begun and that no communication was permitted amongst participants under any circumstances. All technological devices (e.g. cell phones, iPods) were turned off at this point.

All participants were then asked to complete the TS. Participants were instructed to record their identification numbers on the survey and demographics page. The completed demographics page and TS were collected by an assistant. The researcher then informed the participants that a 7-minute ABC News video report about speaking in tongues is about to be played and that they are to watch attentively. While the video was playing, the researcher and assistant categorized all completed surveys according to participants' responses on item #1, grouping participants into two categories—pro-tongue Christians and anti-tongue Christians. These categories were represented by two piles of TS documents. These two piles were then counted and split in half, forming two piles of pro-tongue surveys and two piles of anti-tongue surveys. These piles represented each of the four groups for the experiment: pro-tongue Christians receiving a belief-

disconfirming cover page (pro-dissonance group), pro-tongue Christians receiving a belief-affirming cover page (pro-affirmation group), anti-tongue Christians receiving a belief-disconfirming cover page (anti-dissonance group), and anti-tongue Christians receiving belief-affirming cover page (anti-affirmation group).

As soon as the video had finished, the researcher returned to the front of the room to distribute one of the two possible cover pages to each participant, followed by a post-video TS. The researcher did not inform participants about the forming of experimental conditions or pro-tongue/anti-tongue categories until the experiment was over. Instead, the researcher called out identification numbers of participants from each of the four stacks of preliminary TS documents one group at a time to walk to the front of the room and receive their respective cover pages and post-video TSs. The co-facilitator distributed the proper documents to one group as the researcher called out the identification numbers of the next group. Upon receiving a cover page and TS, participants sat at their original seats to continue contemplating the cover page information and complete the post-video TS. Participants were instructed to read all of the content on their respective cover pages before taking the survey. The researcher also reminded all participants to record their identification numbers at the top right corner of both the cover page and survey.

Upon completion and collection of post-video questionnaires and cover pages, the researcher explained the purposes of the study and gave a brief methodological overview. Participants were then dismissed.

Results

A *TS change score*—the difference between a participant's preliminary TS score and post-video TS score—was calculated for each participant. This change score

measured how much participants' beliefs about speaking in tongues changed as a result of the experiment. A positive TS change score suggests an inclination towards pro-tongue beliefs and a negative TS change score suggests an inclination towards anti-tongue beliefs. The TS change scores were examined for skewness.

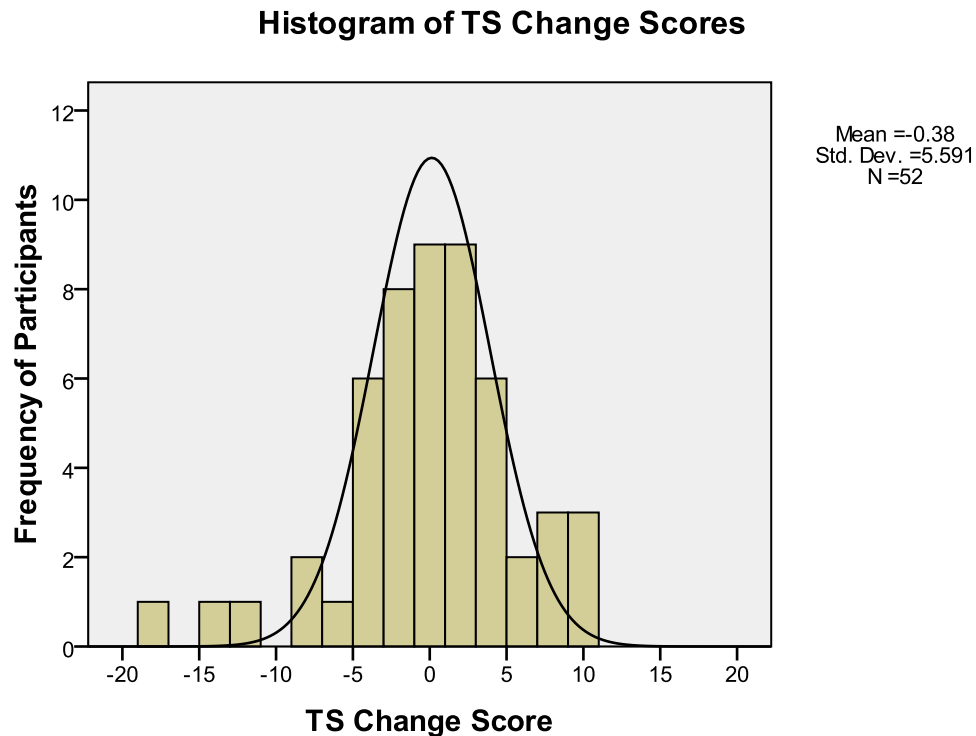


Figure 1. Histogram of participants' TS change scores

The histogram's departure from normality was not judged serious enough to require the use of nonparametric statistics. The mean TS change score of -0.38 and standard deviation (SD) of 5.59 are the appropriate summary statistics to describe the TS change scores.

Two independent samples *t* tests were used to assess whether mean TS change scores were significantly altered by the message conditions. For the first comparison it was hypothesized that within the pro-tongue message conditions, the pro-tongue belief group would have higher TS change scores towards belief in tongues than anti-tongue

participants. The assumption of homogeneity of variance was assessed by the Levene test, $F(24) = 2.861, p = .104$; this indicated no significant violation of the equal variance assumption; therefore, equal variances were assumed for this t test. The mean TS change score of the anti-tongue dissonance group was significantly higher than the pro-tongue affirmation group, $t(24) = -2.81, p = .01$. The mean TS change score for the anti-tongue dissonance group ($M = 4.06, SD = 4.14$) was over 4 points higher than the mean TS change score for the pro-tongue affirmation group ($M = -0.10, SD = 2.73$). These findings did not support the hypothesis because the pro-tongue affirmation group did not have a mean TS change score that was higher towards pro-tongue belief than the anti-tongue dissonance group. This finding also shows that while the anti-tongue group was influenced by the cover page the pro-tongue group was not, having virtually no effect at all.

Within the anti-tongue cover page condition it was hypothesized that the anti-affirmation group would have larger TS change scores towards disbelief in tongues than pro-dissonance group. The Levene test, $F(24) = .106, p = .747$ indicated no significant violation of the equal variance assumption; therefore, equal variances were assumed for this t test as well. The mean TS change score of the anti-affirmation group was not significantly higher than the pro-dissonance group, $t(24) = -.706, ns$. While the comparison did not prove to be statistically significant, the mean TS change score for the anti-affirmation group ($M = -4.38, SD = 5.85$) was higher towards anti-tongue belief than the mean TS change score for the pro-dissonance group ($M = -2.72, SD = 5.36$). This finding supported the hypothesis because the outcome was in the right direction despite not being significant.

An interesting feature of the above results was that both message conditions seemed to change the beliefs of anti-tongue participants more than pro-tongue participants. For example, in the pro-tongue message condition there was a significant effect on the anti-tongue group's TS change scores but no significant impact on the pro-tongue group. The impact of the message conditions depended on the individual's prior belief, indicative of an interaction between the cover sheet and belief factors. To test if this interaction was in fact significant, a two-way analysis of variance (ANOVA) was implemented.

A 2 x 2 factorial ANOVA was conducted since this experiment incorporated two independent variables (IVs)—the prior belief conditions and message conditions—and measured one dependent variable (DV)—TS change scores—that produced normally distributed data. This analysis was performed to assess whether TS change scores could be predicted from the interaction between two factors: a participant's prior belief and message condition. A factorial ANOVA incorporates a single omnibus test—the *F* test—which examines all the possible comparisons of the study as one set, thus helping eliminate possibility of making a Type I error (Warner, 2008). As seen in Table 1, the factorial ANOVA revealed that there was a significant interaction between prior beliefs and message conditions on TS change scores, $F(1,48)=4.50, p<.05$.

Table 1

Factorial ANOVA Summary of Group Differences Between TS Scores

<i>Variable and source</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	
Corrected Model	542.98	3	181.00	8.26***	.34
Intercept	28.64	1	28.64	1.31	.03
Pre-existing belief	18.36	1	18.36	.84	.02
Cover page	356.55	1	356.55	16.28***	.25
Interaction: Pre-existing belief and Cover page	98.58	1	98.58	4.50*	.09
Error	1051.32	48	21.90		
Total	1602.00	52			
Corrected Total	1594.31	51			

a. R Squared = .341 (Adjusted R Squared = .299)

b. * $p < .05$. *** $p < .001$.

Interestingly, this significant interaction revealed how susceptible to influence the anti-tongue belief groups were to belief-disconfirming and belief-affirming information in comparison to pro-tongue belief groups. Message conditions had more of an impact on the anti-tongue belief groups versus the pro-tongue belief groups. The implications of this non-predicted result will be further examined in the discussion. As seen in Figure 2, the pro-tongue belief groups seemed to hold to their prior beliefs more firmly than anti-tongue belief groups.



Figure 2. Mean TS change scores of pre-existing belief and cover page groups.

Table 2

Table of Means of TS Change Scores for the 2 x 2 Factorial ANOVA Data

Factor	B1 (Pro-tongue Message)	B2 (Anti-tongue Message)
A1 (Pro-tongue belief)	-1	-2.7
A2 (Anti-tongue belief)	4.1	-4.4

* $p < .05$. ** $p < .01$.

Discussion

It was hypothesized that belief-disconfirming information would cause both pro-tongue and anti-tongue participant groups to not change or more firmly adhere to their prior beliefs than the belief-affirming conditions. In this case the null hypothesis was accepted, predicting no significant change in beliefs about tongues in both dissonance conditions. Surprisingly, this predicted effect of dissonance was not supported. This may have occurred due to participants' lack of familiarity with and certainty about the issue of speaking in tongues. The literature review revealed that firmly held religious beliefs typically do not change when cognitive dissonance is experienced. Therefore, this study's sample may not have held to strong convictions about the matter.

The firmer the religious belief the more difficult it is to sway an individual from that belief. Figure 2 had suggested that pro-tongue Christians have a stronger adherence level to their belief about speaking in tongues than the anti-tongue Christians. If it is assumed that pro-tongue belief groups have firmer convictions about the issue of tongues than the anti-tongue belief groups, what may be seen here is that pro-tongue fundamental Christians have firmer stances on the issue of speaking in tongues in comparison to anti-tongue fundamental Christians. While this speculation is plausible, this study cannot provide sufficient supporting data due to the size and demographics of the sample group utilized. Future research will need to address this issue.

The means plots (not shown in the results section) for all preliminary and post-video TS items showed that on every item both pro-dissonance and pro-affirmation groups scored higher than both anti-tongue groups, suggesting that the prior belief grouping method was useful in predicting the rest of the responses of each participant.

Although not central to this study, an interesting finding was that there were a large percentage of students with pro-tongue beliefs (53.8%) at an environment where belief in tongues is not embraced.

Dissonance is a relevant theory to analyze religious beliefs. It is a framework that helps one understand the dynamics of religious beliefs. This study did not endorse any stance on the issue of speaking in tongues.

Limitations and Suggestions for Future Research

This study lacks external validity because a random sample method was not utilized. Selection bias was a result of the convenience sample. Therefore, the convenience sample lacked representativeness in relation to the student population. Statistical power was reduced due to small sample size and unequal groups. Follow up research will need to utilize a much larger sample size with equal groups. The use of close-ended questions may have limited expressiveness and spontaneity of participants' responses. The inclusion of open-ended response items that ask why participants reduced dissonance in ways would provide possible explanations for certain cognitive responses to certain information.

Unfortunately, the researcher did not measure whether or not if the tongues belief was a firm conviction of each participant. This quite possibly was the biggest disappointment about the collected data because the study did not utilize a demographic item or scale that assessed the adherence levels or firmness of convictions of each student towards beliefs about tongues. Future replications of this study should include an additional factor—strength of belief. For example, items used to assess this factor could state: “How certain are you about your beliefs about tongues? Is the issue of speaking in

tongues important to you and your belief system?” With this information, a future study can examine another factorial ANOVA to assess the interaction of prior beliefs and strength of belief in relation to TS change scores.

Although the TS produced a very high coefficient α , the TS was not a standardized scale of psychological measurement. Therefore, if a highly reliable and valid scale that assessed one’s beliefs about speaking in tongues could have been utilized, this study would have held more weight in its findings. Future studies should seek to standardize the TS.

Perhaps the main limitation of this study was that it was only interested in Christian college students, utilizing only a fundamentalist Christian sample group. Future studies should collect data from individuals of varying worldviews and ages to determine how others handle religious cognitive dissonance. The McFarland and Warren (1992) study conveyed the need for more research about the dynamics of selective exposure and avoidance to religious-based information in both religious and non-religious populations. Therefore, future research could focus on correlations between religious orientations and response to cognitive dissonance resulting from challenged beliefs as well as non-Christian populations and their religious orientations.

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Appendix A

E-Mail Invitation

(Subject line): Easy Psyc Activity Tomorrow

Hello psychology students!

I am doing a study on spiritual gifts and would greatly appreciate your participation. *At the end of the study there will be a **drawing to win a \$20 Wal-Mart gift card!** All participants have an equal chance to win.

The experiment will only take a half hour. All you have to do is **watch a 7 minute video** and complete a 10-question **survey** before and after the video. That's it! You are strongly encouraged to participate (*even if you don't need any more psyc activities*) and more than welcome to bring friends who may be interested in participating as well! A maximum of 120 students can participate due to classroom capacity so please come a little early to ensure your spot in the study!

If you are able to participate, please come **tomorrow**:

Date: Thursday, April 15

Time: 5:00pm-5:30pm

Location: CN 1880

You will earn a PSYC activity credit for your participation in this study.

I look forward to seeing many of you tomorrow!

Thanks!

Justin Melvin

****PLEASE DO NOT REPLY TO THIS EMAIL****

***** If you have questions regarding this email please contact Justin Melvin -**

jrmelvin@liberty.edu ***

Appendix B

Informed Consent Agreement Form

We remind you that your participation in this project is strictly voluntary and you may refuse to participate or discontinue participation at any time during the study without penalty. It is anonymous. If you decide to fill out the surveys, no personally identifying information will be collected. Please answer all survey items honestly and accurately. If you have any questions regarding this research can contact Dr. Dennis Jennings at djennings@liberty.edu, Dr. Fred Volk at fvolk@liberty.edu, or the Institutional Review Board Chair, Dr. Fernando Garzon, at fgarzon@liberty.edu.

If you agree to these terms and conditions, please initial below:

_____ I agree to the terms and conditions mentioned above

Appendix C

Demographics Page****Assigned Identification #: _____*****Please circle the answer that best applies to you and fill in the following blanks accordingly.**

1. Are you male or female?
 - a. Male
 - b. Female
2. Please indicate your ethnicity:
 - a. Hispanic
 - b. Asian
 - c. Native American
 - d. African American
 - e. Pacific Islander
 - f. Caucasian
 - g. Other
3. What is your class status?
 - a. Freshman (1st Year)
 - b. Sophomore (2nd Year)
 - c. Junior (3rd Year)
 - d. Senior (4th Year)
 - e. Other
4. What is your age? _____
5. Would you describe yourself as a Christian?
 - a. Yes
 - b. No
6. If you answered "yes" to question 5, what is your denomination? _____
7. Do you believe in the infallibility (incapability of error) and absolute authority of the Bible?
 - a. Yes
 - b. No
 - c. Unsure
8. I have the spiritual gift of speaking in tongues
 - a. Yes
 - b. No

Appendix D

Tongues Survey****Assigned Identification #:** _____**Questionnaire about the religious practice of speaking in tongues*****Please circle the answer that best applies to you for each of the following statements.**

- 1) I believe the spiritual gift of speaking in tongues is still active and being properly manifested today amongst Christians.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree
- 2) Speaking in tongues is an emotional state where a Christian feels like he or she is encountering God but in reality he or she is only experiencing strong emotions.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree
- 3) I believe the gift of speaking in tongues ended once the canon of the Bible was established.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree
- 4) Speaking in tongues is a real phenomenon in which the Holy Spirit communicates to God on a Christian's behalf even though the Christian is not speaking in any known human language.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree
- 5) Speaking in tongues is uttering meaningless syllables that are a result of human effort.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree
- 6) Today's Christians who speak in tongues are truly speaking in a heavenly language.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree
- 7) Speaking in tongues no longer edifies the church.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree
- 8) If I were to hear someone speak in tongues I would believe that it was a real experience with the Holy Spirit.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree
- 9) I believe if I asked God to receive the gift of speaking in tongues then I would receive it.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree
- 10) A person who speaks in tongues is often responding to a need to feel spiritual rather than conveying a message from the Holy Spirit.
Strongly Disagree Disagree Somewhat Disagree Somewhat Agree Agree Strongly Agree

Appendix E

Post-video Questionnaire Cover Pages

Anti-tongue cover page.

****Assigned Identification #: _____**

DO NOT TURN THE PAGE UNTIL ALL COVER PAGE MATERIAL HAS BEEN THOROUGHLY READ

Scripture to ponder:

1 Corinthians 14:6-9, “⁶Now, brothers, if I come to you and speak in tongues, what good will I be to you, unless I bring you some revelation or knowledge or prophecy or word of instruction? ⁷Even in the case of lifeless things that make sounds, such as the flute or harp, how will anyone know what tune is being played unless there is a distinction in the notes? ⁸Again, if the trumpet does not sound a clear call, who will get ready for battle? ⁹So it is with you. Unless you speak intelligible words with your tongue, how will anyone know what you are saying? You will just be speaking into the air.”

1 Corinthians 14:16-17, “¹⁶If you are praising God with your spirit, how can one who finds himself among those who do not understand say "Amen" to your thanksgiving, since he does not know what you are saying? ¹⁷You may be giving thanks well enough, but the other man is not edified.”

Quotes from the video to ponder:

“...swept up in a rush of ecstatic religious feeling.”

“Is [speaking in tongues] a real phenomenon? Is this really the voice of God speaking through them? That’s a much more problematic question...”—Dr. Newberg

Pastor Jerry Stoltzfoos – “I don’t think faith has anything to be afraid of from science. Science validates faith. So...whatever the facts are...bring it on.” After reflecting on the results of this study, which neither confirmed nor disconfirmed the validity of speaking in tongues, Pastor Jerry Stoltzfoos said, “When you’ve experienced this you really don’t care what anyone else thinks. It’s personal in the first place. It’s something between you and God. So we don’t really care if it’s validated or not.”

Appendix F

Pro-tongue cover page.****Assigned Identification #: _____*****DO NOT TURN THE PAGE UNTIL ALL COVER PAGE MATERIAL HAS BEEN THOROUGHLY READ***Scripture to ponder:

1 Corinthians 14:2—"For anyone who speaks in a tongue does not speak to men but to God. Indeed, no one understands him; he utters mysteries with his spirit."

1 Corinthians 14:4a—"He who speaks in a tongue edifies himself." (Pastor Jerry Stoltzfoos said, "[Speaking in tongues] settles things in your spirit, and it heals you on the inside.")

The frontal lobe activity in subjects' brains fell quiet when praying in tongues. These findings are consistent with 1 Corinthians 14:14, "For if I pray in a tongue, my spirit prays, but my mind is unfruitful."

Quotes from the video to ponder:

"Dr. Newberg remarkably discovered that what's happening to them neurologically looks a lot like what they say is happening to them spiritually."

Dr. Newberg—"When they are actually engaged in this whole very intense spiritual practice ... their frontal lobes tend to go down in activity. ... It is very consistent with the kind of experience they have, because they say that they're not in charge [and that] it's the voice of God, it's the spirit of God that is moving through them."

"Results were even more dramatic in subjects who were scanned without a Nightline crew in the room and who were not speaking in tongues on demand as Pastor Jerry Stoltzfoos had done."

"There is a vast number of people out there that, because they did not experience it personally or they were taught against it, there is no way they have an ability to embrace it," said Stoltzfoos.

Appendix G

Table 4

Frequency Distribution of Student Demographics Characteristics

	f	%	cum %
Gender			
Male	16	30.8	30.8
Female	36	69.2	100.0
Ethnicity			
Hispanic	3	5.8	5.8
Asian	1	1.9	7.7
Native American	2	3.8	11.5
African American	5	9.6	21.2
Caucasian	39	75.0	96.2
Other	2	3.8	100.0
Class Status			
Freshman (1 st Year)	21	40.4	40.4
Sophomore (2 nd Year)	10	19.2	59.6
Junior (3 rd Year)	11	21.2	80.8
Senior (4 th Year)	10	19.2	100.0
Age			
18	9	17.3	17.3
19	19	36.5	53.8
20	11	21.2	75.0
21	4	7.7	82.7
22	7	13.5	96.2
24	1	1.9	98.1
27	1	1.9	100.0
Denomination			
Anglican	1	1.9	1.9
Apostolic	1	1.9	3.8
Baptist	18	34.6	38.5
Evangelical	1	1.9	40.4
Nazarene	2	3.8	44.2
Non-denominational	16	30.8	75.0
Pentecostal	5	9.6	84.6
Reformed	2	3.8	88.5
Southern Baptist	4	7.7	96.2
Wesleyan	2	3.8	100.0
Speaks in Tongues			
Yes	8	15.4	15.4
No	44	84.6	100.0
Total 52			