

AN INSTRUMENT VALIDATION FOR A THREE-DIMENSIONAL WORLDVIEW
SURVEY AMONG UNDERGRADUATE CHRISTIAN UNIVERSITY STUDENTS
USING PRINCIPAL COMPONENTS ANALYSIS

by

Kathy Lynn Morales

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

This quantitative study examined the structure, validity, and reliability of the *Three-Dimensional Worldview Survey-Form C (3DWS-Form C)* for potential use in postsecondary Christian institutions. This instrument delineates from other worldview instruments in that it purports to measure three components of a person's worldview: propositions, behaviors, and heart-orientation. Principal components analysis (PCA) was used to examine the underlying component structure and construct validity of the instrument. Cronbach's alpha and the Spearman-Brown prophecy formula were used to assess the internal consistency and reliability of the instrument. Participants were first-year university students attending a large Christian university in Virginia. Results of the study indicated the presence of a three-component structure, although item loadings were not consistent with previous research.

DEDICATION

This dissertation is dedicated my parents, K.C. and Sharyn. Your unwavering faith in my abilities has been a constant source of encouragement. Thank you for always exhorting me to walk with God and fulfill His calling on my life. Without your support I never would have pursued a doctoral degree, and without your prayers I never would have completed it. I love you more than the all the grains of sand.

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CHAPTER ONE: INTRODUCTION

Christian universities across America acknowledge the importance of students developing a committed biblical worldview during their college years. In fact, effective faith integration and training of the Christian mind are prevalent topics among well-known American Christian colleges and universities. For example, Liberty University, the largest Christian university in the world (Liberty, 2013a), states on its website, “The seamless integration of faith and academics is a critical component of an excellent, well-rounded education from a Biblical Worldview” (Liberty, 2013b, p. 1). Regent University, another highly respected Christian university (Regent, 2013a), declares on its website, “*Transforming the Christian Mind* is the University's general education core curriculum and forms the general curricular Christian liberal arts foundation in each undergraduate degree program” (Regent, 2013b, p. 1). Biola University, a venerable Christian university, declares, “Our business is to inspire students’ learning so that they are empowered to think and practice from a Christian worldview in their fields of service” (Biola, 2011a, p. 1). Last, The Master’s College, known for its commitment to assist students in living lives of lasting commitment to Christ, resolves “to assist all students in developing a biblical worldview in which the principles and norms derived from the Word of God are applied to the whole of life” (The Master’s College, 2011, p. 1).

Because the aforementioned postsecondary Christian institutions understand the importance of training students to think and act biblically, they are proactively integrating faith and academics in all disciplines. According to Liberty University’s (2013b) website, Faith Learning Integration is described as the following:

Faith Learning Integration identifies how God's brilliant design is found across all disciplines and how its identification helps reveal the very nature of God, man, creation,

purpose, redemption, salvation, and order. Faith Learning Integration is a necessary ingredient of a student's search for truth, reason, and morality, as well as the student's academic, social, and spiritual development. (p. 1)

Although the aforesaid universities have respectable spiritual formation objectives for their students, they have limited holistic, validated instruments that are capable of measuring their objectives. The purpose of this research was to examine the structure, validity, and reliability of the *Three Dimensional Worldview Survey Form C (3DWS-Form C)* (Appendix A) for use in Christian higher education institutions. The remainder of this introductory chapter includes: (a) the gap in the literature, (b) the background for the research, (c) the problem and purpose statements, (d) the significance of the study, (e) the research questions and hypotheses, (f) identification of the factors, (g) definitions, and (h) a research summary.

Gap in the Literature

Electronic databases such as Academic Search Complete and ERIC produce a respectable amount of peer-reviewed literature for keyword searches such as Christian universities, spiritual formation, spiritual development, religiosity, religious development, and worldview development. However, searches that investigate three-dimensional worldview-measuring instruments used in Christian postsecondary institutions indicated a lack of empirical research. As this study examines the structure, validity, and reliability of the *3DWS-Form C* for potential use in higher education, a gap in the literature will be filled.

Background

The worldviews of twenty-first century university students have been influenced by their varying ideological and demographic backgrounds; today's college campuses represent a diverse population possessing a plethora of worldviews (Coll & Draves, 2008). Even Christian colleges

cannot assume their students possess a committed biblical worldview (Watson, 2007). This phenomenon occurs because students are arriving on college campuses possessing a worldview that has been significantly molded by a postmodern and relativistic culture (Watson, 2007).

Peer-reviewed literature has demonstrated that students are not graduating from Christian high schools with a committed biblical worldview (Iselin & Meteyar, 2010). Consequently, for Christian postsecondary institutions to assume their incoming students will both think and act Christian is illogical. Watson (2007) found that one aim of Christian postsecondary educators was to assist students in establishing a framework of beliefs that undergirded every facet of life. Many of these professors were dedicated to fostering students' spiritual formation and encouraging them to develop a committed biblical worldview (Watson, 2007; Woodson, 2010). This endeavor can be more easily realized if faculty members accurately identify students' worldview presuppositions before instruction begins. With this understanding, professors who have the opportunity can align curricula and classroom instruction to more effectively promote an expected worldview (Woodson, 2010).

As Christian educators discuss their goal of assisting students in faith development and worldview formation, a valid and reliable instrument to measure their efforts is necessary. However, as of 2013, only a few valid and reliable worldview instruments exist. The following are worldview surveys currently in use: (a) "*PEERS* (Politics, Economics, Education, Religion, and Social Issues) *Test*, (Nehemiah Institute, Inc., 2012), (b) *PEERS II Test II: Christianity and Culture Assessment* (Nehemiah Institute, Inc., 2006), (c) *Worldview Weekend Test* (Howse, n.d.), (d) *Creationist Worldview Test* (Deckard, 1998), and (e) *Biblical Life Outlook Scale* (Bryant, 2008)" (Schultz, 2013, pp. 20-21). The objective of these instruments is to attempt to measure one or two dimensions of a person's worldview identified as either propositional statements and

or behaviors. However, recent worldview literature has indicated that a person's worldview has three dimensions: propositional statements, behavioral aspects, and heart-orientation (Naugle, 2004; Schultz, 2013).

The third dimension of worldview, heart-orientation, is the most recently added component to worldview literature (Schultz, 2013). This dimension identifies the possible contradictions between peoples' professed beliefs and their actions (Brown, 2004; Naugle, 2002; Sire, 2004). According to Schultz (2013), the three dimensions of worldview—propositional, behavioral, and heart-orientation—work together impeccably to provide the most holistic evaluation of a person's worldview. As of 2013, there is not a validated worldview instrument that measures all three dimensions. In fact, searches in electronic databases such as ERIC and Academic Search Complete reported only a few validated worldview instruments, none of which claimed to measure three dimensions of a person's biblical worldview.

To fill the gap in the literature, Schultz (2013) developed the *Three Dimensional Worldview Survey (3DWS)* (Appendix B) as partial fulfillment of a Doctor of Education degree from Regent University. The *3DWS* was intended for k-12 students and developed to enable educators to identify students' worldview orientation and assist them in measuring the outcomes of their worldview shaping efforts.

In 2012, permission was sought from the survey developer to test the *3DWS* with postsecondary Christian students. After suggesting a few revisions in terminology, the survey developer granted approval for testing the instrument on the new population and identified the revised, postsecondary version as the *Three Dimensional Worldview Survey –Form C (3DWS-Form C)* (Appendix A). Two faculty members with terminal degrees and expertise in Christian higher education approved the survey's new name and terminology revisions.

This study has three notable benefits for Christian institutions of higher education. First, it adds to the literature concerning worldview-measuring instruments. Next, this research has the potential to provide Christian universities with a valid and reliable three-dimensional instrument that measures the success of their worldview shaping endeavors. Last, Christian faculty will be able to correctly assess their incoming students' worldview presuppositions and thus have the opportunity to align curricula and pedagogical practices to promote an expected outcome.

A theoretical framework is a necessary foundation for academic research. The theoretical framework that supported this research was Fowler's (1981) Faith Development Theory (FDT), which is comprised of seven levels or stages of faith that overview the development of personal faith as one matures (Green & Hoffman, 1989). Fowler's (1981) definition of faith is neither fundamentally religious nor meant to be connected or compared to religious beliefs. The FDT intended to describe common stages of faith and the transitions that divide them (Fowler, 1981; Green & Hoffman, 1989). Fowler's universal definition of faith is a theological concern for Christians and one of the chief criticisms of Fowler's FDT (Heywood, 2008). Fowler was accused repeatedly by theologians for disregarding the distinguishing characteristic of the Christian faith, that faith must be placed solely in Jesus Christ for forgiveness of sins (Avery 1990; McDargh, 2001; Nelson & Aleshire, 1986).

This study assessed one aspect of Fowler's (1981) FDT—the hypothesis that a person's behavior is indicative of what that person believes to be truth. The FDT claims that a person's faith development can be evaluated by observing everyday behaviors (Fowler, 2004). Fowler's (1981) FDT is discussed at length in Chapter Two and supports this research as one component of the *3DWS-Form C* is measured by a person's behaviors.

Different from a theoretical framework is a conceptual framework. The conceptual framework for this research was the factor structure of the *3DWS-Form C*. The three underlying components of the *3DWS-Form C* were identified as: propositional, behavioral, and heart-orientation.

Problem Statement

The problem is that Christian universities do not have a three-dimensional, validated instrument to measure their worldview shaping endeavors. Even though Schultz (2013) developed the *3DWS* and conducted a pilot test using 52 high school students, the instrument was never validated using an undergraduate population. Such validation is necessary before widespread adoption in higher education can be authorized.

Purpose Statement

The purpose of this quantitative study was to examine the structure, validity, and reliability of the *Three-Dimensional Worldview Survey-Form C (3DWS-Form C)* for potential use in postsecondary Christian institutions. This instrument is dissimilar from other worldview instruments in that it purports to measure three components of a person's worldview: propositions, behaviors, and heart-orientation. A principal components analysis (PCA) was used to examine both the underlying factor structure and construct validity of the instrument. This research examined the underlying factor structure for the purpose of determining if the instrument's originally proposed three components could be retained. Internal consistency reliability was tested using Cronbach's alpha and the Spearman-Brown prophecy formula. Participants included 427 first-year university students attending a Christian university in Virginia.

Significance of the Study

The implications of this study have practical, empirical, and theoretical significance. If validated, this research will authorize use of the first valid and reliable three-dimensional worldview-measuring instrument for use in Christian colleges and universities. It will allow postsecondary Christian institutions the opportunity to measure the propositional statements, behaviors, and heart-orientation of their students as related to worldview. The validation of this instrument would assist educators in effectively aligning their instructional content to promote an expected worldview and aid postsecondary Christian institutions in determining if they are meeting spiritual formation objectives.

Empirically, this study will significantly add to the literature regarding whether or not a three-dimensional worldview instrument is statistically valid and reliable. Empirical evidence for this research was obtained through direct observations and data was analyzed quantitatively using multiple research analyses.

Finally, this study has theoretical implications. This research tested Fowler's (1981) FDT's claim that young adults in the Individuative-Reflective stage of faith (stage four) can have personal faith-based convictions.

Questions and Hypotheses

RQ1: What is the underlying factor structure of the three-dimensional worldview survey used in this study? Is the structure of the scale in this study using an undergraduate student sample consistent with previous research?

RQ2: Is the three-dimensional worldview survey a valid instrument for measuring propositional beliefs, behavioral patterns, and heart-orientation in Christian college students?

RQ3: Does the three-dimensional worldview survey have good internal reliability?

The following are the research hypotheses:

H₁: There is a specific underlying factor structure of the three-dimensional worldview survey. The underlying factor structure is consistent with previous research.

H₂: The three-dimensional worldview survey is a valid instrument for measuring propositional beliefs, behavioral patterns, and heart-orientation in Christian college students.

H₃: The three-dimensional worldview survey shows good internal reliability.

Alternately, the following are the null hypotheses:

H₀₁: There is no underlying specific factor structure of the three-dimensional worldview survey. The underlying factor structure is not consistent with previous research.

H₀₂: The three-dimensional worldview survey is not a valid instrument for measuring propositional beliefs, behavioral patterns, and heart-orientation in Christian college students.

H₀₃: The three-dimensional worldview survey does not show good internal reliability.

Identification of Factors

The *3DWS-Form C* instrument has three components or dimensions that attempted to measure propositions, behaviors, and heart-orientation. Schultz (2013) considered all three of these components necessary to accurately measure worldview.

Propositional statements are not value neutral and are statements that express what someone believes to be true (Schultz, 2013). According to Gushee (2002), propositional statements are personal convictions that are foundational to support one's beliefs about God and

reality. However, propositional statements are part of a narrow and limited worldview definition as they only focus on a person's perception of God and reality (Schultz, 2013).

The behavioral dimension of the *3DWS-Form C* describes a person's behavior (Schultz, 2013). Iselin and Meteyard (2010) suggested students' presuppositions dictate their actions and thus make the behavioral aspect of their worldview a visible component. Also, literature has demonstrated that peoples' behavior is a result of their personal convictions regarding truth and reality (Valk, 2007).

The heart-orientation dimension of the *3DWS-Form C* intended to illuminate the motivation for people's propositional statements and behaviors. Schultz (2013) proposed a person's heart-orientation is the primary cause for one's beliefs and actions. According to Evans (2010), one's worldview is determined at the heart level; this is where a person defines reality and cultivates a belief and value system.

Because the word "heart" has a biblical connotation, researchers Iselin and Meteyard (2010) elected to use the operational definition of heart as stated in *Strong's Exhaustive Concordance of the Bible* (2007)—the heart of a person is the origin of a person's thinking and personality.

Definitions

Several key terms, including worldview, biblical worldview, dimensions of worldview, and aspects of worldview, must be defined for clarity and consistency throughout the remainder of this research.

Worldview

According to Glazner and Talbert (2005), a worldview is the foundation of a person's understanding of reality; a worldview defines what is true and real. Another definition of

worldview is how people choose to perceive the world (Brandon, 2009). As Brandon (2009) stated, a worldview is “. . . a holistic personal explanation of the human experience constructed on previous knowledge and understanding and informed by our daily life” (p. 181).

Evans (2010) believed that altering a person’s worldview is difficult, but not impossible; people can and do change over time. Psychologists would not dedicate years of their lives helping people learn new behavioral patterns if they did not think people could learn new patterns of thinking and behavior (Ochs, 2009).

Naugle (2002), Pearcey (2004), and Sire (2004) investigated the theological and philosophical aspects of worldview. Based on extensive worldview research, Schultz (2013) constructed the *3DWS* on Sire’s (2004) revised definition of worldview. Sire’s (2004) revised definition is as follows:

A worldview is a commitment, a fundamental orientation of the heart, that can be expressed as a story or in a set of presuppositions (assumptions which may be true, partially true or entirely false) that we hold (consciously or subconsciously, consistently or inconsistently) about the basic constitution of reality, and that provides the foundation on which we live and move and have our being. (p. 122)

Biblical Worldview

A biblical worldview begins when a person accepts by faith the inerrancy of scripture (2 Tim. 3:16). This includes the Genesis account of creation (Gen. 1:1-27), the fall of man (Gen. 3:6), and God’s plan for redemption (Gen. 3:15) (Pearcey, 2004). According to Watson (2007), a biblical worldview uses scripture “to assist us in developing a framework of conviction that can be applied to various settings. Scripture is to guide the conscious development of our thinking about life and practice” (p. 361).

Pearcey (2004) proposed that if Christians do not actively cultivate a biblical worldview, they will absorb the value system of the culture in which they live. Therefore, if Christians desire to cultivate and maintain a biblical worldview, the continual examination of their propositional beliefs is imperative if their values and beliefs are to be in alignment with biblical principles (2 Cor. 13:5).

Dimensions of Worldview

Based on Sire's (2004) aforementioned definition of worldview, three components comprise a person's worldview: propositions, behaviors, and heart-orientation (Schultz, 2013). According to Schultz (2013), these dimensions were developed by Naugle (2002) and Sire (2004) and were additionally used by Wood (2008) and Bryant (2008) to support the three dimensions of worldview. When assessing students' worldview, all three of these dimensions were speculated to be necessary for a holistic worldview evaluation. Presently, existing instruments that purport to measure worldview origins are primarily propositional and do not include behavioral or heart-orientation dimensions (Schultz, 2013).

Research Summary

This quantitative study employed multiple research analyses to determine the underlying factor structure, validity, and reliability of the *3DWS-Form C*. Principal components analysis (PCA) examined the underlying factor structure and construct validity of the *3DWS-Form C*; internal consistency and reliability were tested using Cronbach's alpha and the Spearman-Brown prophecy formula. A minimum of 300 first-year university students was the target population for this study.

CHAPTER TWO: REVIEW OF THE LITERATURE

A wide spectrum of worldviews exists at both state-sponsored and faith-based postsecondary schools. In fact, diversity on campuses is becoming increasingly manifest and professors can no longer assume students attending a Christian university possess a committed biblical worldview (Bryant & Craft, 2010; Watson, 2007). Recent literature has demonstrated that Christian students across America possess worldviews ranging from an unshakable biblical worldview to an unyielding humanistic worldview (Bryant, 2011b).

Introduction

Educational leaders and faculty at Christian colleges and universities have recognized the importance of assisting students in attaining a steadfast biblical worldview before they graduate (Biola, 2011a; Liberty, 2013b; Regent, 2013a; The Master's, 2011). Consequently, these institutions and educators purposed to be more effective at faith integration across all disciplines (Biola, 2011a; Brandon, 2009; Liberty, 2013b). The problem is that few validated worldview-measuring instruments exist, and not one of these instruments can accurately measure three dimensions of a person's worldview. Searches in electronic databases such as ERIC, Education Research Complete, and Academic Search Complete reported no three-dimensional worldview-measuring instruments available for specific use in higher education when the following key words were searched: worldview-measuring, three-dimensional, and higher education. Therefore, this research examined the structure, validity, and reliability of the *Three-Dimensional Worldview Survey-Form C (3DWS-Form C)* to provide a three-dimensional worldview assessment for Christian colleges and universities. The *3DWS-Form C* was designed to measure three dimensions of a person's worldview: propositions, behaviors, and heart-orientation. Multiple research analyses were used to examine the structure, validity, and

reliability of the *3DWS-Form C*. Participants were 427 first-year residential students enrolled in biblical worldview courses at a large Christian university in Virginia.

Chapter Overview

Chapter two will present the theoretical framework for this research and provide a discussion of recent literature on the following topics: the changing mission of institutions of higher learning in America, the spiritual formation process of college-aged students, hindrances to students' spiritual development on college campuses, and faculty's role in assisting spiritual growth in students. This chapter will conclude with a summary of current literature, a discussion of what makes this research distinct from other worldview studies, and an explanation of how this instrument validation contributes to the field of Christian postsecondary education.

Theoretical Framework

James Fowler's (1981) Faith Development Theory (FDT) was used as the theoretical framework for this study. The following is an overview of Fowler's (1981) stages of faith theory, followed by a discussion of how the FDT frames this research.

Fowler's (1981) FDT was built upon the developmental research of Piaget's levels of cognitive development, Kohlberg's stages of moral reasoning, and several others as it theorized to identify an overarching developmental pattern that is shared by different forms of faith (Fowler, 2004; Jones, 2004; McDargh, 2001). As stated by Fowler (2004), FDT "offers a characterization of faith that combines a phenomenological account of what faith *does*, with a conceptual model of what faith *is*" (p. 412).

The FDT was conceptualized and developed by Fowler at the Harvard Divinity School in the late 1960s and early 1970s. The baseline data for the development and validation of the FDT

was obtained over three years as Fowler conducted and analyzed student interviews on the topic of faith development.

Fowler's (1981) structural and developmental model of faith has been used since the 1980s as the dominant model for faith development research (Jones, 2004). Fowler (1981) also proposed that faith is neither necessarily religious nor a form of belief. Instead, Fowler (1981) described faith as the way a person understands life—a dynamic system of values and commitments that influence one's choices. Fowler declared that faith is universal and that everyone is driven by faith in something (1981). According to Fowler (2004), faith appears to have recognizable patterns of advancement that can be observed in one's developing cognitive, emotional, and moral responses.

According to Jones (2004), numerous evangelical educators have repeatedly questioned the compatibility of Fowler's definition of faith with biblical faith, where the object of one's faith must be exclusively in Jesus Christ for remission of sins. Fowler (2004) acknowledged that many evangelicals withstand implementing this theory because Fowler defined faith in a structural and functional form that accepts the faith of many traditions and even secular philosophies. In fact, some Christian educators have extracted different aspects of Fowler's (1981) theory, as the universal definition of faith made adapting the complete theory problematic in Christian settings.

Nevertheless, Fowler (2004) suggested that the scaffolding the FDT offers is helpful in influencing educational goals that are foundational to faith development. Fowler (2004) posited that educators who accept and implement the FDT have a more comprehensive understanding of how to effectively teach students of various ages at different stages of faith. Fowler also asserted that understanding the FDT encourages educators to strategically aim their pedagogical practices

at their intended audience for maximum teaching effectiveness (2004). The essentials of religious instruction such as biblical teaching and Bible study should never be ignored when embracing the FDT (Fowler, 2004). Fowler (2004) also strongly emphasized the FDT should never be considered as the primary goal of religious education; it is simply used “to precipitate and encourage stage advancement” (p. 417). Finally, Fowler (2004) reminded educators that moving from one stage of faith to the next is not necessarily a goal, but is a byproduct of teaching and the student’s practices of faith.

The FDT was selected as the theoretical framework for this research for two reasons. First, Fowler’s (1981) theory attempted to aptly describe the general phenomenon of faith development during the adolescent and young adult years, which is the target population for this research. Second, the FDT suggested that universal faith must be measured on a behavioral scale, which is one of the three hypothesized components of this study. Fowler (2004) advocated that when evaluating faith development, one must be committed to observing a person’s commitments in everyday life; therefore, the researcher is investigating a hypothesized link between survey responses of a propositional nature and coinciding behavioral traits. Fowler’s (1981) FDT postulated that a person’s behavior will reflect what a person believes; this claim of the FDT supported the hypothesized behavioral component of this study.

Review of the Literature

This literature review will examine the changing purposes of Christian higher education institutions in America. It will also discuss factors that positively influence college students’ faith development and factors that negatively affect college students’ faith development.

Higher Education Institutions in Colonial America

From the 17th to the 21st century, a notable shift occurred in the mission and objectives of America's institutions of higher learning (Hartley, 2004; Nieli, 2007). Prior to America declaring itself to be a sovereign nation in 1776, colonial colleges were founded by individuals or groups associated with Protestant Christian denominations (Nieli, 2007; Stewart, Kocet, & Lobdell, 2011). The purpose of these nearly homogeneous Protestant Christian institutions was primarily to train Christian ministers and promote an educated civil leadership. The following are the nine Colonial Colleges in the order they were founded: Harvard, 1636; William and Mary, 1697; Yale College, 1701; College of New Jersey (Princeton), 1747; King's College (Columbia College), 1754; College of Philadelphia (University of Pennsylvania), 1755; College of Rhode Island (Brown University), 1764; Queen's College (Rutgers University), 1766; and Dartmouth College, 1769 (The Order, n.d.).

Nearly all Colonial Colleges had a religious focus that believed in the inerrancy of scripture and the power of prayer. These institutions graduated students who knew God and were committed to making Him known. For example, a Harvard University recognized student organization, the Harvard Graduate Christian Community (HGCC), stated that Harvard College was founded principally for the purpose of training Christian ministers (Harvard Graduate, 2012). The following are "Rules and Precepts" (original spelling retained below) that were adopted in 1646.

Let every Student be plainly instructed, and earnestly pressed to consider well, the maine end of his life and studies is, to know God and Jesus Christ which is eternal life (John 17:3) and therefore to lay Christ in the bottome, as the only foundation of all sound knowledge and Learning. And seeing the Lord only giveth wisdome, Let every one

seriously set himself by prayer in secret to seeke it of him (Prov. 2:3). Every one shall so exercise himselfe in reading the Scriptures twice a day, that he shall be ready to give such an account of his proficiency therein, both in Theoreticall observations of Language and Logick, and in practical and spiritual truths, as his Tutor shall require, according to his ability; seeing the entrance of the word giveth light, it giveth understanding to the simple (Psalm 119:130). (Harvard Graduate, 2012, p. 1)

As of 2012, Harvard College's website stated it does not have a formal mission statement for its undergraduates, graduates, other academic bodies, or research centers. However, in 1997, the Dean of Harvard College, Lewis, affirmed the following about the mission of Harvard:

Harvard strives to create knowledge, to open the minds of students to that knowledge, . . . The support the College provides to students is a foundation upon which self-reliance and habits of lifelong learning are built: Harvard expects that the scholarship and collegiality it fosters in its students will lead them in their later lives to advance knowledge, to promote understanding, and to serve society. (Harvard, 2012, p. 1)

Upon comparing and contrasting Harvard College's 1646 statement and its 2012 statement, inconsistencies are observable. First, the 1646 statement decreed that eternal life is found in Jesus Christ, and He is the foundation to all learning and knowledge (Harvard Graduate, 2012). These principles were omitted in the 2012 statement that advances the importance of self-reliance (Harvard, 2012b). Also, Harvard's original mission avowed that the chief end of man, learning, and life is to know God and Jesus Christ (Harvard Graduate, 2012). This foundational precept is wholly absent in the present-day statement, where Harvard stated students will be prepared for their futures based on their own "scholarship and collegiality" that was fostered at the College (Harvard, 2012b).

In addition to Harvard College's original mission statement being altered, the motto and shield accepted in 1646 have also been amended. Harvard's first motto was, "Veritas Christo et Ecclesiae" which is Latin for "Truth for Christ and the Church" (Harvard Graduate, 2012, p. 1). According to Purdom (2011), somewhere along the way Harvard's motto was changed to simply "Truth," signifying that truth is neither dependent upon nor originates with Jesus Christ.

Harvard's shield has also been redrawn from the original shield established in 1692. The shield adopted in 1692 portrayed three books; the top two faced upwards and the bottom one faced downwards. The book facing down was drawn to communicate that reason is limited; the books facing up were drawn to remind students they need God's revelation (Harvard Graduate, 2012). Harvard's 2012 shield also pictures three books that are all facing up, symbolizing man's reasoning is limitless, and God's revelation is unnecessary (Purdom, 2011). American colleges and universities such as Harvard have recanted from teaching students to think biblically (Phil. 4:8-10) and deny self (Luke 9:23-24); they now unashamedly encourage students to think worldly (2 Cor. 10:5) and exalt self (2 Tim. 3:2). For example, whereas students were exhorted in 1646 to deny their flesh twice a day and study the scriptures in order to be ready to give an account of their faith. In 2012, Harvard communicated to students that God's revelation is unnecessary and students' success in life is wholly dependent upon their "scholarship and collegiality" (Harvard, 2012b, p. 1). Students' self-reliance was commended and recognized to be the foundation for students' ability to further knowledge and advance understanding.

Shift in Objectives in Higher Education

The purposes of higher education in the United States have shifted radically from Colonial times to the 21st century (Hartley, 2004). For example, as previously discussed, the Colonial Colleges that were founded for primarily Christ-centered purposes now pride

themselves on being national leading research universities (Brown University, 2012; Columbia University, 2012; Dartmouth University, 2012; Harvard University, 2012a; Princeton University, 2012; Rutgers University, 2012; University of Pennsylvania, 2012; William & Mary College, 2012; Yale University, 2013a). According to Smith, the Dean for Research at Princeton University, American universities are indispensable “in driving the research engine of our nation . . .” (Princeton University, 2012, p. 1). This is contrasted with the 1702 vision for Yale University that suggested students are to be instructed “in the Arts and Sciences [and] through the blessing of Almighty God” . . . for the purpose of both “Church and Civil State employment” (Yale University, 2013b, p. 1).

During the 1900s, other notable shifts occurred within the walls of higher education. These changes were observed in the mission statements of the institutions and in selected curricula (Hartley, 2004). For the first time in the history of higher education, religion was no longer foundational to classroom instruction, and the Church’s influence was no longer visible in institutions’ missions and governance. As speculated by Hartley (2004), the secularization of American higher education institutions was a complex and unhurried process that began in the 1860s and was accomplished by the 1940s.

Throughout the 18th and early 19th centuries, the primary goal of higher education institutions was to entrust the religious, moral, and intellectual components of Christianity to the next generation of students (Nieli, 2007). However, beginning in the early 20th century, most large American universities altered their mission statements to reflect their desire to become a respected research institution (Hartley, 2004). The aim of these universities is no longer to equip the next generation of Christian leaders for the work of the ministry but to excel in research endeavors (Nieli, 2007).

Internal and Moral Conflicts in Higher Education

Despite centuries of Protestant ascendancy, internal and moral conflicts reside between pressing research expectations and the liberal arts education imagined by early-American religious leaders (Nieli, 2007). Twenty-first century faith-based universities face an identity dilemma and must decide to either maintain their religious identity or endeavor to be known as distinguished research institutions (Marsden, 1994; Mathias, 2008). Very few institutions, if any, have exalted Christ in every college department and still managed to appease accrediting agencies and maintain enrollment. Nevertheless, religious scholars have urged these faith-based universities not to succumb to worldly pressure and mimic secular institutions, but to rejoice in their religious heritage—proclaiming it rather than denying it (Marsden, 1994).

Two landmark works have explored the secularization of faith-based institutions and challenged university leaders to protect their university's faith identity: *The Soul of the American University* by Marsden (1994) and *The Dying of the Light* by Burtchaell (1998). Additionally, Marsden (1997) issued a call along with Noll (1994) for faith-based university leaders to reject the anti-intellectualism label of recent decades (Matthias, 2008). Matthias (2008) suggested that the Christian faith and academic excellence do not have to be mutually exclusive.

Spiritual Objectives of Christian Universities

The Council for Christian Colleges and Universities (CCCCU) is an international coalition of Christian colleges and universities that strives to be intentionally Christ-centered (Abelman & Dalessandro, 2009). The CCCU reported that out of more than 4,000 degree-granting higher education institutions in America, approximately 900 identify themselves as “religiously affiliated”; however, only 102 are intentionally Christ-centered institutions that have qualified for CCCU membership (CCCCU, 2008). The primary distinguishing characteristic of CCCU

members is their Christ-centered mission statement that is deep-seated in “historic Christian faith” (Abelman & Dalessandro, 2009).

Recent literature has demonstrated that promoting spiritual growth is a chief aim of Christian universities (Adler, 2007; Bryant, 2011a; Iselin & Meteyard, 2010; Rhea, 2011; Valk, 2007). Other goals demonstrated in the literature include: developing the whole person (Stewart et al., 2011), teaching all to the glory of God (Rhea, 2011), training students to think and act biblically (Iselin & Meteyard, 2010; Rhea, 2011; Wolf, 2011), equipping students to thrive in a pagan culture (Rhea, 2011), and teaching truth from a biblical perspective (Brandon, 2009; Rhea, 2011). Additionally, according to Salleh, Ahamd, and Kumar (2009), higher education at every level must reexamine its foundation to ensure that spirituality is upholding the rest of the curricula. These researchers asserted that the spiritual foundation of higher education is essential to a moral society (Salleh et al., 2009).

One area to be considered when studying a university’s effectiveness in faith integration is the culture of a campus. The majority of Christian colleges and universities have endeavored to establish a culture on their campuses that integrates academic excellence and faith development (Brandon, 2009; Schaeffer, 2004). These establishments have differentiated themselves from their secular counterparts by focusing on spiritual growth and theological knowledge. They attempt to offer a superior campus culture and a more holistic approach to education (Sandin, 1982).

Another area to observe when evaluating a university’s success at faith integration is its mission statement. The mission statements of faith-based Christian postsecondary institutions reveal an expectation for students and faculty to live a devoted life to Christ and to impact their culture by serving others in a Christ-like manner (Schaeffer, 2004). According to Holland

(1999) and Hughes and Adrian (1997), most Christian university and college mission statements maintain distinct components such as serving others and educating students about their Christian heritage.

Spiritual Objectives Challenges in Higher Education

Even though Christian universities have developed solid methodological and pedagogical approaches to faith integration, challenges still exist for successful implementation (Kanitz, 2005). Some of the more recurring challenges of promoting faith development on campuses include the attitudes of students, the influences of the culture, and the worldview orientation commitment of the faculty.

Challenges presented by students. Research has indicated a contrasting spiritual disposition among college students (Bryant, 2011b). Whereas Hartley (2004) stated that young adults have possibly never been more engaged with religious practices on campuses, Bryant and Craft (2010) reported that most Christian university students are apathetic about spiritual matters and have learned to compartmentalize their faith in academic settings. However, even if students have mastered privatizing their faith, they still arrive on campus needing godly wisdom (Rhea, 2011) and arrive seeking religious exploration (Bryant & Craft, 2010). College freshmen are emerging adults searching for answers to explain the pain and suffering they have observed in the world (Adler, 2007; Radecke, 2007; Rhea, 2011).

Frye (2007) affirmed that students arrive on campus with various levels of acceptance at the thought of discussing spiritual matters in the classroom; some students come to college ready to actively engage in new ideas about their faith and investigate alternate paradigms for comprehending spiritual beliefs. However, Frye (2007) also reported that other students remain steadfast in their faith and have no interest in discussing or analyzing competing belief systems.

Phenomenological research conducted by Frye investigated the impact of university classroom environments where religious beliefs were questioned, challenged, and debated. The results indicated that when critical thinking intersects spiritual issues and when spiritual beliefs are challenged in the classroom, strong emotional responses are common (Frye, 2007).

Research has also demonstrated that some students arrive on campus with a predetermined expectation of how their faith might be challenged by faculty and classmates (Frye, 2007). Findings from Frye's (2007) study indicated that students who had not anticipated their faith being confronted at college experienced a stronger reaction and impact; however, students who had emotionally and mentally prepared for such encounters reported a less severe effect on their beliefs.

As discussed by Smith (1977), the Anglo-Saxon origin of belief means, "to hold dear, to prize, . . . to be loyal, to value highly" (pp. 41-42). Frye (2007) expressed that in American Sign Language, the sign for "believe" involves the signs for thought and marriage; "the image is a thought to which one is married!" (p. 13). The strong attachment to one's beliefs is the foundational reason students exhibit such fervent emotion when their presuppositions are challenged. Frye (2007) asserted, "One does not merely hold a belief; the belief in many senses holds the believer" (p. 13).

Challenges presented by the culture. As 21st century North American college students are exceptionally engaged in and affected by their culture, students often find possessing and maintaining a different worldview than the cultural norm difficult (Evans, 2010). An unrelenting cultural message continually bombards this generation with a self-seeking agenda that has promoted self and mocked God (Rhea, 2011). This is consistent with biblical teaching stated in 2 Timothy 3:1-2, "But know this, that in the last days perilous times will come: for men will be

lovers of themselves . . .” (KJV). As the current generation of university students rejects God’s love, His plan for salvation, and His Word, they lose the moral compass necessary to navigate this life. Current research conducted by Vanhoozer, Anderson, and Sleasman (2007) indicated that despite the influences of the Church and Christian universities, most students have defined their sense of reality and truth by the culture.

The Internet. Various communication technologies such as the Internet and You Tube are types of cultural influences that have shaped the minds of college-aged students (Beaudoin, 2009). Beaudoin (2009) stated, “The Internet has become the principal window through which college students, . . . view the world” [Abstract] (p. 55). This is concerning in an era of user generated media (UGM) where anyone can post inaccurate information that rapidly is accepted as truth. Even media experts have lamented that because of UGM, the Internet is used to perpetually promote unrealistic images that people accept as reality (Beaudoin, 2009). In this participatory and omnipresent media culture, anyone’s opinions can be published and disseminated to millions of readers or viewers 24 hours a day (Beaudoin, 2009). For a generation that accepts the catchphrase “seeing is believing,” continual bombardment of inaccurate information presented as truth can have dire moral and spiritual consequences.

Competing worldviews. As America has increasingly disregarded its religious heritage and has a diminished fear of God, competing worldviews within its borders are now increasingly protected and even prized. President Obama’s (2006) Keynote Address stated, “Whatever we once were, we are no longer a Christian nation—at least, not just. We are also a Jewish nation, a Muslim nation, a Buddhist nation, and a Hindu nation, and a nation of nonbelievers” (p. 1). Consequently, university students are encountering a myriad of disparate worldviews on their campuses to an even greater degree than previous generations (Bryant, 2011b; Wuthnow, 2007).

Adler's (2007) research suggested that a number of higher education professors believe that moral conflicts are good on a college campus. Adler (2007) further stated that argumentation and debate are the means by which knowledge is communicated and advanced. He also proposed that three groups of students exist on today's campuses that partake in these debates: "the rational atheists, the theistic religionists, and the postmodernists who deny the possibility of any permanent value system" (Adler, 2007, p. 22).

Various and competing worldviews have affected students' spiritual development, and the pluralism among the student body has affected students' spiritual formation (Bryant & Craft, 2010; Thiessen, 2007). College and university students are incessantly being exposed to secular humanism (Adler, 2007), postmodernism (Rhea, 2011; Thiessen, 2007), relativism (Thiessen, 2007), positivism (Rhea, 2011; Salleh et al., 2009), modern liberalism (Thiessen, 2007), naturalism (Speck, 2005; Wolf, 2011), materialism (Salleh et al., 2009), and a general focus on self-exaltation and entitlement (Salleh et al., 2009). Since the literature has indicated that one's beliefs affect one's actions (Spaulding, 2009; Valk, 2007), students must be cognizant of both the articulated and the unspoken worldviews their classmates have embraced (Bryant & Craft, 2010).

Peers hold a significant influence on the developing spiritual formation of university students, and the student body, even on faith-based campuses, can possess diverse worldviews (Bryant & Craft, 2010; Thiessen, 2007). This is one reason Christian parents weigh the benefits of paying higher tuition and sending their children to colleges and universities that teach from a biblical worldview across all disciplines and encourage students to think and act Christianly (Railsback, 2006).

Challenges presented by faculty. Since the beginning of the 21st century, Protestant postsecondary institutions have tried a variety of approaches to integrate faith successfully into their academics. Nevertheless, whatever strategies have been implemented, theorists agree that the most indispensable factor in successful faith integration is a committed faculty (Matthias, 2008).

According to Wineland (2005) and Watson (2007), Christian professors are called to embrace their call to teach as a ministry and take their work seriously. They are called by God to not only teach students what to believe, but also to live out their faith in front of the students (Wineland, 2005). However, before faculty can have a convincing influence on their students' worldview development, they must first be able to identify and understand their own worldview (Kanitz, 2005).

Christian faculty must also make an uncompromising commitment to communicate their worldview to their students. This commitment is imperative since modern teacher education training has downplayed the importance of teachers' identity and worldview orientation (Glanzer & Talbert, 2005). In fact, public school educators are instructed to only teach common information and basic skills without allowing their worldview to impede instruction (Glanzer & Talbert, 2005). As argued by Speck (2005), "Spirituality is tolerated as long as it remains a private concern" (p. 7). Lindholm (2004) added, "the structure and culture of academia [have] encouraged faculty to act as if their most deeply held values and beliefs are irrelevant to their work" (p. 13). Nevertheless, Bible college educators must be devoted to sharing their faith and assisting their students in developing a biblical or theistic worldview regardless of the consequences (Watson, 2007).

Just as Christian professors have unlimited potential to be an integral part of students' faith development, they can also be a hindrance in the spiritual growth process. This dynamic occurs when Christian professors have marginal or even non-Christian worldviews or have never been trained to think biblically about every facet of life (Adler, 2007). Brummelen (1993) demonstrated that Christian teacher programs impart pedagogical strategies and tactics that are often contrary to a biblical worldview. Watson (2007) asserted that Christian teacher programs have the Bible as the core, but other subjects are instructed in the same manner as secular institutions. This dualism is dangerous and a biblical worldview must permeate all curricula.

A lack of consistent worldview instruction can be another stumbling block to students' faith development. Moreover, competing faculty worldviews can be confusing to impressionable and young adults, even causing them to doubt their faith (Bryant & Craft, 2010; Thiessen, 2007). According to Iselin and Meteyard (2010), the focus on faith integration at Christian institutions frequently "perpetuates rather than challenges dualistic compartmentalization of head and heart, . . . which can be an impediment to an embodied Christian worldview" (p. 35). Subsequently, faith integration is rarely effective when faculty members do not view all of life through the lens of scripture and thus hold a committed biblical worldview.

Faculty can impose additional challenges to students' spiritual development and faith learning integration. For example, some Christian professors possess a biblical worldview but have been influenced by academia to view faith as anti-intellectual (Speck, 2005). Other professors do not view their faith as anti-intellectual but have chosen to privatize their faith in the classroom (Cooling, 2010; Glanzer & Talbert, 2005; Speck, 2005). Yet, other Christian professors are fearful of sharing their faith (Glanzer & Talbert, 2005; Speck, 2005), because their fear of man (Pro. 29:25) is greater than their fear of God (Pro. 9:10). Finally, others are afraid of

being accused of proselytizing students (Speck, 2005). Despite the many reasons Christian professors are not effectually sharing their faith, most sincerely desire to disciple their students; although, they have never received any practical faith integration instruction (Wolf, 2011). Being mandated to use textbooks purchased from secular publishers (Cox, Hameloth, & Talbot, 2007; Watson, 2007) and written with a humanistic bias, Christian educators have an increasing need to master successful faith integration practices in every subject area they teach (Watson, 2007).

University Students' Spiritual Formation

Spiritual formation is a term used by Christian colleges and universities when describing the process of discipleship (Rhea, 2011). This is a commonly used term because the majority of Christian universities make students' spiritual growth their principal aim (Azusa Pacific University, 2011; Biola University, 2011b; Liberty University, 2013a; Rhea, 2011).

Fowler's FDT does not suggest people mature through a succession of worldviews or belief systems (2000). Rather, Fowler (2000) stated that the purpose of FDT was to "identify and communicate differences in the styles, the operations of knowing and valuing, that constitute the action, the way of being, that is faith" (p. 40).

Fowler's (2000) six stages described the structural features of faith by using formal terms that assisted in interpreting, construing, and responding to the observable manifestations of faith. The following is an overview of the six stages of the FDT.

Stage one, Intuitive-Projective Faith, spans approximately ages two to nine years of age. In this stage, children begin to imitate their mother's facial and vocal expressions and form profound and abiding images that support their worlds (Fowler, 1981).

The second stage occurs around 10 years of age and is called Mythic-Literal Faith. During this stage, children can recognize perspectives other than their own, and they also develop a sense of fair-mindedness based on reciprocity (Fowler, 1981).

The third stage, Synthetic-Conventional Faith, begins to be noticeable in early adolescence. This stage is marked by self-consciousness and cognitive development, along with the use of abstract concepts and ideals (Fowler, 1981).

The fourth stage, Individuative-Reflective Faith, is observed when people enter their early twenties and begin to critically examine their beliefs and identity. In this stage, people begin to analytically adopt their beliefs and elevate them to become matters of unambiguous commitment and responsibility (Fowler, 1981).

The fifth stage, Conjunctive Faith, is manifested at midlife and beyond. It is a point when people begin to realize the limits of logic and accept life's paradoxes (Fowler, 1981).

The final stage, Universalizing Faith, describes the decentration and emptying of self. This stage is observable when people's affections are no longer drawn to finite ambitions and they live to fully serve others without any worries or doubts (Fowler, 1981).

According to Hartley (2004), college-age students are most likely transitioning from Fowler's (2000) third stage (Synthetic-Conventional Faith) to fourth stage (Individuative-Reflective Faith) as they shift and ground the orientation of self during the late adolescent years. Fowler (2000) emphasized that transitions between stages of faith are not to be viewed as moving up a ladder and claimed that this is a faulty premise for two reasons. First, transitions between stages consist of complex and differentiated modes of valuing and knowing and are therefore not to be viewed with a higher or lower mentality. Next, the stair analogy is flawed because it promotes the view that faith stage transitions are self-initiated rather than being

understood as a self-reaction to considerable internal confrontations (Fowler, 2000). As previously discussed, college students are most likely encountering various faiths and competing worldviews that are different from their own during their years on campus (Bryant, 2011b). Fowler's (1981) construct indicated that the tendency for students to change their religious beliefs and convictions during the late adolescence and young adulthood periods should not be unexpected (Hartley, 2004). According to Fowler (1981), most college students are developmentally transitioning between an orthodoxly assumed faith received from their family and culture (stage three) to a more adult faith (stage four) that is individually formed as students explore and question their identity and faith (Hartley, 2004). During this transitional time, students' spiritual formation includes both an honest examination of their faith and identity alongside an increasing constancy between who they are and how they behave.

Willard (2002) defined spiritual formation as "the Spirit-driven process of forming the inner world of the human self in such a way that it becomes like the inner being of Christ himself" (p. 22). Willard believed that spiritual transformation began with the thoughts and mind, which is consistent with biblical teaching (Rhea, 2011; Spaulding, 2009; Valk, 2007). This foundational principal is observed in Proverbs 23:7, "As he thinketh in his heart, so is he . . ." (KJV), which indicates that one's thinking determines one's behavior (Spaulding, 2009; Valk, 2007). Consequently, a major purpose of Christian education is to train students to think biblically as part of the spiritual development process (Yount, 2010).

University Students' Spirituality and Religiosity

The terms "religiosity" and "spirituality" have become buzzwords on most Christian and state-sponsored campuses as students are increasingly open to discussing spiritual matters (Bryant & Craft, 2010; Hartley, 2004). Even though these words are often used interchangeably,

they have different connotations. For instance, when researching “spirituality” in electronic databases such as Academic Search Complete and ERIC, the literature produced numerous and varied definitions for the term. Most definitions were vague and uncommitted to any one faith; for example, spirituality was defined by Speck (2005) as “the connectedness beyond transcendence” (p. 66). Less ambiguous than the definition of spirituality was the definition of “religiosity” that Reimer (2010) defined as simply “church attendance and devotionism” (p. 401). According to Beck (1986) as cited by Speck (2005), one does not need to have a religious affiliation to experience spirituality; however, most religious people would identify themselves as somewhat spiritual.

Christians may view themselves as “religious” or “spiritual,” but one can never assume these descriptors automatically refer to Believers any more than they refer to those of other faiths or even atheists. Nevertheless, people of all faiths struggle spiritually whether they are either pursuing God or rejecting Him (Josh. 24:15; 1 Cor. 10:13).

University Students’ Spiritual Struggles

Spiritual struggles refer to “experiences of tension, strain, and conflict about spiritual matters within oneself, with others, and with God” (Pargament, 2008, p. 33). University students’ spiritual struggles have many origins, but most are associated with seemingly perplexing life circumstances that cause students to doubt their current belief and value system (Bryant & Astin, 2008; Pargament, 2008).

As discussed by Newbiggin (1995), doubt is an inescapable aspect of life. The world is full of ideas that will challenge one’s thinking and test one’s beliefs. According to Puffer (2008), doubt is common to mankind and is a contributing variable to students’ spiritual identity formation; therefore, spiritual struggles that include doubt are considered a normal and natural

part of college life. However, the manner in which students respond to the moral and ethical dilemmas they encounter in college will determine whether they move forward in their spiritual development, stagnate, or digress.

Whether students attend a secular or devoutly religious university, the college years, at some point, often cause them to reflect on the pain, grief, and death in this world (Bryant & Astin, 2008). As students encounter these disheartening aspects of life, perhaps for the first time away from home, they are faced with the challenge of assessing these difficulties and understanding them in light of their worldview. Depending on the strength of their Christian faith, students might not be able to reconcile God's goodness and the evil in the world without some level of spiritual struggle.

Some students experience spiritual struggles because they are young in the Christian faith. Others struggle as a result of poor choices they have made. Nevertheless, external conflicts in students' lives identify internal spiritual struggles (Bryant & Astin, 2008). Research has demonstrated that students who believe God is love, for them, and their protector, are more likely to persevere in their faith development unaffected by life's greatest trials (Bryant & Astin, 2008). These students claim they trust God's plan is perfect (Rom. 8:28); therefore, they are able to rest in His sovereignty and enjoy His peace (Jhn. 14:27), even when they do not understand their circumstances (Pro. 3:5).

According to Chickering and Reisser (1993), several developmental frameworks such as Fowler's (1981) FDT assume that spiritual struggles or "crises" are both essential and instrumental in advancing maturation and personal growth. This position is in alignment with scripture, which teaches that all Christians will fall into various trials, but they should be

encouraged “knowing that the testing of your faith produces patience. But let patience have its perfect work, that you may be perfect and complete, lacking nothing” (Jas. 1:2-4; NKJV).

Erikson (1968) asserted that crises do not necessarily indicate a tragedy or complete disbanding of the self, but are actually a point of transition and a precursor to development. However, one can never assume that a crisis of belief will carry students to the next level of spiritual development or draw them closer to God. Students must choose to seek the God of the Bible and obey His Word if they desire to grow spiritually and be more like Jesus (Josh. 24:15; 1 Sam. 15:22). During times of students’ spiritual struggles or crises, however, Holcomb and Nonneman (2004) postulated that professors can offer spiritual and emotional support, but also must give students time and space to reach the next developmental stage. However, research has also demonstrated that without reasonable support, students may entirely renounce their faith (Bryant & Astin, 2008).

Distinctions of a Biblical Worldview

Competing worldviews exist among faculty, students, and staff on a university campus (Bryant, 2011b). From biblical theism to secular humanism, these disparate value systems can easily influence students’ spiritual and worldview development (Bryant, 2011a). The psychological literature has illustrated many definitions of worldview; some are brief, others are more descriptive. For example, Ochs (2009) defined worldview as “the picture we paint of reality” (p. 465). Brandon (2009) defined worldview as “a personal explanation of the human experience constructed on previous knowledge and understanding and informed by our daily life” (p. 181).

Even though worldview definitions vary in breadth and width, all worldviews share some common attributes. The following are some worldview characteristics recorded in the literature

that are shared by all worldview orientations: a worldview can change (Ochs, 2009; Wolf, 2011), a worldview is a matter of the heart (Wineland, 2005), a worldview is a commitment (Cooling, 2010; Evans, 2010), a worldview affects behavior (Spaulding, 2009; Valk, 2007), a worldview affects decision-making (Wolf, 2011), and every person has a worldview (Wolf, 2011). Though Sire (2004) did not list or outline these worldview dimensions in this manner, they are consistent with his writings and teachings.

As a worldview describes how one views all of life, a biblical worldview is a framework that enables one to view all of life through the lens of scripture using the mind of Christ (1 Cor. 2:16). As stated by Walsh and Middleton (1984), a biblical worldview is “the worldview of the Scriptures” (p. 149). Most Christian professors have agreed that assisting students in developing a scriptural worldview is a worthy goal. However, these professors also agreed that accomplishing this task is considerably difficult (Kanitz, 2005). Therefore, there is a need for more effective faith integration training in higher education.

Call for Improving Faith Integration

Higher education Christian faculty members desire to be more effective in discipling students in the Christian faith, and there is a surging demand to improve faith integration practices on Christian college and university campuses (Kanitz, 2005; Rhea, 2011; Wolf, 2011). Courses that teach practical faith learning integration strategies are sorely needed (Rhea, 2011; Wolf, 2011), as well as opportunities for faculty to apply these pedagogical practices across all disciplines (Rhea, 2011).

Because of many Christian faculty members’ desire to foster students’ spiritual development, a renewed call exists to develop the Christian mind alongside academic coursework (Wolf, 2011). Faith integration does not merely imply merging faith and

knowledge; faith must precede knowledge and God's Word must be preeminent in all academic disciplines (Watson, 2007). Poe (2004) stated, "just add Jesus and stir" (p. 14) is not an acceptable practice in Christian education; it is labeled as a misguided attempt at discipling students. Jesus must be the very foundation of all coursework and classroom instruction—not something added at the last minute or merely sprinkled on top of secular humanistic curricula (Wolf, 2011).

Yount (2012) identified "Evangelical Holy Water" as another imprudent attempt at effectively using scripture in faith learning integration (p. 54). Yount (2012) claimed this "unthoughtful sprinkling of random verses at the beginning of classes, meetings, or discussions in order to sanctify them in some way" (p. 54) will not achieve true faith learning integration because nothing is integrated when it is simply sprinkled on top. Yount suggested that a more effective approach to faith learning integration is to make a practical connection between scripture and all course content, while purposefully weaving biblical truths throughout class discussions (2012).

Bryant and Astin (2008) illustrated that because professors have so many chances to help students reach the next stage in their spiritual maturity, mentorship opportunities abound in higher education. Watching students move from one level of faith development to the next is both a blessing and a privilege. According to Rhea (2011), a need exists for university educators to teach truth by teaching Jesus and devoting time and energy to training students to think biblically and with the mind of Christ (Wolf, 2011). Yount (2012) stressed the importance of using scripture as steel in Christian education:

Scripture is totally sufficient to do everything it is intended to do, but it should not be used to artificially limit our study of other fields that prove helpful to Kingdom work. So we embrace Scripture as the structural steel of Christian Education. (p. 56)

Faculty's Role in Students' Spiritual Formation

As previously discussed, it is possible for faculty to impede the spiritual formation process among college students. This can occur by faculty either not sharing their faith with students because of the fear of man (Pro. 29:25) or because faculty have privatized their faith and thus do not let it affect every subject they teach (1 Cor. 10:31). The literature has demonstrated Christian faculty are indeed both privatizing their faith (Cooling, 2010; Glanzer & Talbert, 2005; Speck, 2005) and being fearful of sharing their foundational beliefs (Glanzer & Talbert, 2005; Speck, 2005). These professors are exhorted in the literature to teach their courses unashamedly from a theistic worldview (Watson, 2007).

Teaching from a biblical worldview with the aim of developing Christ-centered men and women is a foundational objective in many Christian higher education institutions (Biola University, 2011; Liberty University, 2013b). For example, Lutheran colleges are exhorted to counter emerging worldviews in the classroom by declaring the Gospel of Jesus Christ (Brandon, 2009). Brandon (2009) stated that this approach to evangelism reveals to students that an unshakeable, unchangeable worldview does exist, and this worldview is founded on biblical teachings and principles.

Also, when not fearful of sharing their faith, Christian university professors have enormous potential to develop mentoring relationships with students, and some Christian universities clearly delineate how they want their professors to influence their students. For example, to encourage this aspect of teaching at Azusa Pacific University, the administration

included a section in its “Institutional Values” document that defines the faculty’s role as servants of God who “share our faith unashamedly and disciple other Christians . . . ” (n.d., p. 4).

Mentoring relationships develop frequently with college students as students recurrently encounter existential dilemmas and spiritual challenges while away from home. Sometimes students just need the reassurance that their spiritual struggles are part of the normal developmental process of life; sometimes they need to understand they are not alone in their trials (Deut. 31:6; 1 Cor. 10:13). The professor who is mature in the Christian faith understands how to pray for students and offers biblical guidance without interfering with the developmental process (Bryant & Astin, 2008).

Watson suggested that faculty have the opportunity to advance spiritual development among students by aligning their course content and assignments to promote an expected worldview (2007). They can also create supplementary faith integration resources that will communicate to students that they do not personally support the worldview portrayed in the textbook. According to Watson (2007), Christian faculty must commit to express their worldview orientation in their syllabi, in their lectures, and in all personal communication. Christian professors are ultimately responsible to God for what they teach their students (1 Pet. 4:17).

Christian professors must also be willing to make changes to their pedagogical approaches if a misalignment between their biblical worldview and their secular classroom methodologies is discovered (Watson, 2007). Faculty can also seek out faith integration training outside of the institution if their school does not provide appropriate assistance or necessary resources (Wolf, 2011).

Employing one or all of these approaches can increase faculty's ability to impart a biblical worldview across all disciplines. When professors are committed to students' faith development and joyfully live out what they profess to be true, students will quickly observe that the Bible is relevant and applicable to all of life and is not just a historic book to be debated in literature class.

Limited Empirical Research on Worldview Assessments

As of 2013, electronic database searches in Academic Search Complete, Religion and Philosophy Collection, and ERIC reported only several peer-reviewed research articles (Brock, 2010; Webb & Whitmer, 2001) when the following key words were searched: university, college, worldview, and measuring. Of these journal articles, not one study was similar to the proposed research or included a construct similar to the *3DWS-Form C*.

In the first search result, Webb and Whitmer (2001) described their quantitative research that surveyed 167 undergraduate students from a Christian university for the purpose of evaluating a possible link between worldview assumptions and childhood physical and emotional abuse. One instrument used in this research was the Worldview Assumption Scale that was developed by Janoff-Bulman (1989). This worldview-measuring instrument was designed to examine the relationship between cognitive schema and traumatic events. A factor analysis was conducted on the eight-factor scale and results indicated a reliability factor of .65 (Webb & Whitmer, 2001). Nevertheless, the Worldview Assumption Scale is not a holistic worldview-measuring instrument and is disparate in structure and purpose from the *3DWS-Form C*.

The second study identified in this electronic database search examined Brock's (2010) transformative learning in the development of adult education. This quantitative study of 256 undergraduate business school students was aimed at investigating the theoretical description of

how students change their worldviews as posited by Mezirow's Transformational Learning Theory popularized in the 1970s (Mercer, 2006). Mezirow (1994) theorized that people move through 10 steps when they ascertain a new perception of their world. This theory was not originally developed for religious education; however, according to Brock (2010) it has many parallels with the chief aim of religious education, which is to transform people's thinking and behavior to be in alignment with biblical principles. Even though Brock's (2010) research did use a validated and piloted instrument, The Learning Activities Survey Questionnaire, this instrument was not specific to worldview assessment nor was it multi-dimensional in what it attempted to measure. Therefore, Brock's (2010) study also was found to be dissimilar to the aims of this research and even indirectly identified the need for a validated, holistic, worldview-measuring instrument to be available for use among the college-aged population.

Religious Status Inventory (RSInv-S10)

Having more in common with the proposed research than the studies by Brock (2010), Webb and Whitmer (2001) and Janoff-Bulman (1989) were studies directly related to spiritual assessment. One such study conducted by Francis and Pocock (2007) collected data from a sample of 226 students who attended theological colleges, seminaries, and Bible schools in the United Kingdom. The participants were assessed on their religious maturity by being asked to complete the 160-item Religious Status Inventory. This instrument contained eight 20-item scales aimed at assessing "awareness of God, acceptance of God's grace and steadfast love; being repentant and responsible; knowing God's leadership and direction; involvement in organized religion; experiencing fellowship; being ethical, and affirming openness in faith" (Francis & Pocock, 2007, p. 185). The data were used to create brief ten-item forms of the eight scales of the instrument. Francis and Pocock (2007) reported that short scales are commendable

and more reliable than longer instruments because they are easier to complete and possess a more pointed operationalization of the underlying constructs. This instrument only measures one dimension—propositional statements—unlike the *3DWS-Form C*, which attempts to measure a person’s worldview across three dimensions.

Spiritual Assessment Inventory (SAI)

Another spiritual assessment measuring tool, the *Spiritual Assessment Inventory* (SAI) was developed by Hall (1996) for the purpose of assessing “two dimensions of spiritual development: Awareness of God and Quality of Relationship with God” [Abstract] (Hall & Edwards, 2002, p. 341). However, this instrument only claims to measure two dimensions of spiritual development and thus differs considerably from the *3DWS-Form C* in design and purpose.

Faith Styles Assessments

One criticism of Fowler’s FDT has been its lacking psychometric properties due to the lengthy interviews required to assess one’s stage of faith (Batson, Schoenrade, & Ventis, 1993). In response to this criticism, several authors have used Fowler’s framework to develop instruments to assess faith development. Barnes, Doyle, and Johnson (1989) developed a nine-item scale that emphasized what they identified as faith styles. This measure emphasized different styles or ways of experiencing faith but made no effort to evaluate sequential movement through any stages. Green and Hoffman (1989) also used Fowler’s research to develop a scale to assess faith styles. This instrument was designed to ask participants to select one particular statement from Fowler’s stages 2-5 to assist in identifying a style of faith experienced by the participant. For both of these scales, initial validity existed but a thorough approach to construct validity has not been attempted. Also, Leak, Loucks, and Bowlin (1999), claimed that little is

known about the interpretation of the scales' scores and suggested that there is room for alternative faith style instruments.

The *3DWS-Form C* is dissimilar to both of these faith style measures. The *3DWS-Form C* does not claim to measure any type of faith style; it measures three hypothesized dimensions of a person's worldview: propositions, behaviors, and heart-orientation.

Assessments in Higher Education

In 2000, the Higher Education Research Institute (HERI) developed the *Your First College Year* (YFCY) survey for use in higher education. The purpose of this survey was to attempt to measure students' academic and personal development over the first year of college (HERI, 2012). This instrument claimed to assist institutions and educators in identifying features of the first year that "encourage student learning, involvement, satisfaction, retention and success, thereby enhancing first-year programs and retention strategies at campuses across the country" (HERI, 2012, p. 1).

Several years later in 2003, the National Center for Postsecondary Improvement (2003) compiled a list of assessment instruments as a resource for state policy-makers who were charged with executing assessment protocol. Although this list was not comprehensive, it detailed higher education's most commonly used instruments in four categories: institutional effectiveness, basic skills, effective development, and major field exams (National Center, 2003). None of these categories included instruments that were designed to measure worldview orientation, thus making all these instruments dissimilar in structure and purpose to the *3DWS-Form C*.

Instruments Specific to Worldview Assessment

The following is a discussion of currently used worldview-measuring instruments. This section identifies the constructs the instruments purport to measure, and validity information is presented if the instruments were professionally validated.

The *PEERS Test*. Research has indicated that Christian educators have struggled to assist students in developing a committed biblical worldview if they were unaware of the students' current presuppositions (Watson, 2007). Consequently, many Christian schools use the *PEERS Test* (Nehemiah Institute, Inc., 2012) as a worldview-measuring instrument when attempting to discover their students' belief and value systems. The Nehemiah Institute (2012) claims the *PEERS Test* is the most widely used worldview assessment (Nehemiah Institute, Inc., 2012).

Developing the *PEERS Test* was a two-year process that ended in 1988, and since that time it has only been modified slightly (Wood, 2008). The *PEERS Test* was designed and field-tested using 70 foundational statements to measure the worldview commitment of its participants. The *PEERS Test* is approximately a 45-55 minute survey and is available in an online or pencil and paper format. It has versions suited for various age levels from elementary students to adults (Nehemiah Institute, Inc., 2012). According to the Nehemiah Institute (2012), the *PEERS Test* attempts to measure a person's worldview assumptions in five categories: "Politics, Economics, Education, Religion, and Social Issues. Each statement is framed to either agree or disagree with a biblical principle" (Nehemiah Institute, Inc., 2012, p. 1). The *PEERS Test* uses a scale of -100 to +100 to evaluate a person's worldview. Individuals' scores are classified into one of four categories: biblical theistic (70-100), moderate Christian (30-69), secular humanist (0-29), and socialist (less than 0) (Smithwick, 2008).

According to Ary, Jacobs, Razavieh, and Sorensen (2006), determining validity of an instrument is the most critical consideration for an instrument developer. This crucial stage of instrument development is indispensable because validity measures the extent to which an instrument measures what it claims to measure.

To validate the *PEERS Test*, the Nehemiah Institute (2012) employed two different validity tests: item discrimination and construct validity. Item discrimination was employed to determine if poor test item construction would hinder the results. It was reported that out of hundreds of randomly administered tests, only one failed the discrimination test (Wood, 2008).

The Nehemiah Institute (2012) also evaluated the construct validity of the *PEERS Test*. Construct validity is concerned with an item measuring what it is intended to measure (Ary et al., 2006). To test this type of validity, the Nehemiah Institute enlisted several groups of people with extremely diverse worldviews: biblical worldview scholars, Humanists, and New Age proponents. Across the spectrum, the *PEERS Test* results demonstrated strong differences among these diverse groups, thus validating the construct validity of the instrument.

Reliability of the *PEERS Test* was also tested by the Nehemiah Institute (2012). The purpose of this test was to examine the degree of consistency that the instrument measures (Rovai, Baker, & Ponton, 2013). The reliability of the *PEERS Test* was examined using a test-retest procedure involving more than 200 participants. This group of individuals took the test two times with a several month break in between. The goal of this test was to examine the results and compare the test-retest scores for consistency (Wood, 2008).

According to the Nehemiah Institute, the *PEERS Test* is the only worldview instrument that has been professionally validated (2012). Ray conducted a professional validity and reliability study on the *PEERS Test* (1995). Ray (1995) enlisted an expert panel of scholars,

which included some with a Christian perspective on life and others who viewed life apart from biblical principles. In this 30-page report on the *PEERS Test*, Ray (1995) testified that the validity and reliability of the instrument were satisfactory for both individual evaluation and research purposes (Nehemiah Institute, 2012). However, this validated instrument only measures propositional statements and is not a similar construct to the *3DWS-Form C*.

The *PEERS-II Test*. A second worldview measuring instrument, the *PEERS-II Test: Christianity and Culture Assessment*, was developed to measure to what extent people view how much influence the Church should have on society (Nehemiah Institute, Inc., 2006). This test consists of 39 items and is measured on a five-point Likert-type scale (strongly agree, tend to agree, neutral, tend to disagree, strongly disagree). Participants' responses fall into one of three categories: Subculture, Counterculture, and Kingdomculture. This instrument is designed to measure a propositional concept of worldview regarding to what extent biblical teaching is thought to affect a culture. Neither instrument validity or reliability studies are available for this worldview measurement survey (Schultz, 2013).

The *Worldview Weekend Test*. The *Worldview Weekend Test* is another worldview survey that solely measures propositional beliefs. This instrument attempts to measure a person's worldview by categorizing propositional statements into eight categories: "law, economics, civil government, religion, social issues, sociology (family issues), education and science" (Howse, n.d., p. 1). The 83-item instrument is measured by a 5-point Likert scale (strongly agree, tend to agree, no opinion, tend to disagree, strongly disagree), and scores are generated for each individual reporting a composite score and subscale ratings for eight categories: "Strong Biblical Worldview Thinker (75%-100%), Moderate Biblical Worldview Thinker (50%-74%), Secular Humanist Worldview Thinker (25%-49%), Socialist Worldview

Thinker (0-24%), or Communist/Marxist/Socialist/Secular Humanist Worldview Thinker (under 0%)” (Howse, n.d., p. 1). The purpose of this instrument is to help survey participants understand their worldview strengths and weaknesses. Neither the instrument’s statistical validity nor its reliability has been evaluated on this one-dimensional worldview-measuring instrument.

The *Creation Worldview Test*. The final worldview assessment, *The Creation Worldview Test* (Deckard, 1998), was designed to examine the extent of a creationist worldview. This 51-item instrument measures participants’ worldview on a five-point Likert scale (strongly agree, tend to agree, neutral, tend to disagree, strongly disagree) and rates subjects’ scores, placing them into three categories: theology, science, and age (Henderson, Deckard, & DeWitt, 2002). According to Deckard and Sobko (1998), the pilot pre-test had a Cronbach’s alpha of .904 and the posttest evaluation was .890. Ray (1995) reported a very good correlation between the *PEERS Test* and the *Creationist Worldview Test*, citing the correlation coefficient (rho) at .798 (Schultz, 2013). Despite the respectable correlation, the *Creation Worldview Test* only measures propositional statements, unlike the *3DWS-Form C*, which attempts to measure three dimensions of a person’s worldview. According to the literature, measuring solely propositional statements is not sufficient to promote an accurate worldview evaluation (Schultz, 2013).

Differences from Previous Worldview Research

Validating the *3DWS-Form C* will provide Christian colleges and universities with a validated, holistic worldview-measuring instrument to assess the effectiveness of their spiritual formation objectives. Since there is no other validated three dimensional worldview instrument available for assessment purposes, this study will significantly add to the literature, as well as

provide a valuable tool for Christian institutions of higher learning to measure their spiritual formation objectives.

Furthering the Field of Christian Education

Validating the *3DWS-Form C* has practical benefits for Christian colleges and universities. For example, when Christian educators observe the results of students' *3DWS-Form C* scores, they will be able to more easily identify the students' present stages of faith. This is crucial as the literature indicated that professors are more effective in communicating course content when they understand the current presuppositions of their students (Hartley, 2004). Finally, by examining students' *3DWS-Form C* survey scores, course developers and textbook authors can more pointedly align educational and spiritual formation objectives to promote an expected outcome.

Summary of the Most Relevant Literature

Studying higher education's organizational objectives since the Colonial Colleges to the 21st century, one can observe noticeable shifts in mission and purpose (Hartley, 2004; Nieli, 2007). The majority of postsecondary institutions are seeking to be known as respected research institutions and many have left their religious heritage behind (Hartley, 2004).

The literature has demonstrated that the spiritual formation of college students can be impeded or encouraged by students' attitudes towards religious instruction (Bryant, 2011b; Frye, 2007), the culture (Beaudoin, 2007; Rhea, 2011), and the faculty (Glanzer & Talbert, 2005; Speck, 2005). Christian professors have considerable opportunities to assist students in their faith development (Wineland, 2005; Watson, 2007). To maximize these opportunities, evangelical professors are exhorted not to privatize their faith or be fearful of sharing their faith in the classroom (Watson, 2007). As Jesus Christ was an undeniably formidable influence in the

world, Christian colleges and universities have unrealized potential to positively influence their students' faith development (Schaeffer, 2004).

CHAPTER THREE: METHODOLOGY

This chapter explains the methodology used in this study. It presents the research questions and hypotheses, research design, participants, setting, instrument, and procedures. Data collection and analysis procedures are presented, in addition to the ethical guidelines followed in this research.

Purpose of the Study

The purpose of this research was to examine the structure, validity and reliability of the *Three-Dimensional Worldview Survey-Form C (3DWS-Form C)* for its potential use in Christian higher education. As of 2013, the *3DWS-Form C* is the only created instrument that purports to measure the following three components of a person's worldview: propositions, behaviors, and heart-orientation. A review of the literature indicated research has been conducted to validate an instrument measuring worldview propositions (Ray, 1995); however, no study has attempted to measure a heart-orientation component of worldview. The ability to measure this hypothesized component has the potential to improve worldview instruction at Christian colleges and universities. As reported by Schultz and Swezey (2011), Protestant Christian schools report difficulty in both defining worldview and identifying an instrument capable of assessing the effectiveness of their worldview instruction. Being able to identify the motivation behind students' worldview, propositional beliefs, and associated behaviors would give educational leaders considerable insight when assessing and refining worldview curriculum and instruction.

Questions and Hypotheses

RQ1: What is the underlying factor structure of the three-dimensional worldview survey used in this study? Is the structure of the scale in this study using an undergraduate student sample, consistent with previous research?

RQ2: Is the three-dimensional worldview survey a valid instrument for measuring propositional beliefs, behavioral patterns, and heart-orientation in Christian college students?

RQ3: Does the three-dimensional worldview survey have good internal reliability?

The following are the research hypotheses:

H₁: There is a specific underlying factor structure of the three-dimensional worldview survey. The underlying factor structure is consistent with previous research.

H₂: The three-dimensional worldview survey is a valid instrument for measuring propositional beliefs, behavioral patterns, and heart-orientation in Christian college students.

H₃: The three-dimensional worldview survey shows good internal reliability.

Alternately, the following are the null hypotheses:

H₀₁: There is no underlying specific factor structure of the three-dimensional worldview survey. The underlying factor structure is not consistent with previous research.

H₀₂: The three-dimensional worldview survey is not a valid instrument for measuring propositional beliefs, behavioral patterns, and heart-orientation in Christian college students.

H₀₃: The three-dimensional worldview survey does not show good internal reliability.

Research Design

The purpose of this study was to examine the structure, validity, and reliability of *3DWS-Form C*. The instrument was subjected to quantitative research analyses to examine the component structure, validity, and reliability for the hypothesized three-component scale. Principal components analysis (PCA) was used to examine the underlying component structure

and construct validity. The Cronbach's alpha coefficient and the Spearman-Brown prophecy formula were used to examine the reliability of the instrument. An expert panel review of the instrument was scheduled, but due to a timing issue, the review was not possible.

Participants

The *3DWS-Form C* was e-mailed to 3,609 potential participants attending a Christian university with 427 useable responses analyzed for this study. The sample for this study was first-year residential students at a large Christian university in Virginia. Convenience sampling was used (Gall et al., 2010), as the researcher had reasonable access to these students. All participants were enrolled in biblical worldview courses, and the survey was administered in the final week of the spring 2013 semester. The study's participants were both male and female and represented a diverse range of ethnicities, socioeconomic regions, socioeconomic statuses based on parental income, and religious affiliations. Of the 427 respondents, 278 (65.1%) were female and 149 (34.9%) were male. The age breakdown of respondents was as follows: 133 (31.1%) age 18, 180 (42.2%) age 19, 42 (9.8%) age 20, 22 (5.2%) age 21, 14 (3.3%) age 22, six (1.4%) age 23, 19 (4.4%) ages 24-29, seven (1.6%) ages 30-39, three (7%) ages 40-49, and one (2%) age 50 or above. The ethnic breakdown of 427 respondents included: 364 (85.2%) Caucasians, 22 (5.25%) African Americans, seven (1.62%) Latinos, 21 (4.9%) Asians, one (.2%) Native American, and 12 (2.8%) others. Religious affiliation of the respondents was 191 (44.7%) Baptist, 156 (36.5%) from non-denominational churches, 19 (4.4%) Assemblies of God, 17 (4.0%) Presbyterian, 11 (2.6%) Methodist, eight (1.9%) Catholic, three (.7%) Lutheran, and 22 (5.2%) preferred not to mention. Of the 427 respondents, 418 (97.9%) identified themselves as a Christian, two (.5%) did not identify themselves as a Christian, five (1.2%) were not sure, and two (.5%) preferred not to mention.

Setting

The research site for this study was a Christian university that maintains a Christ-centered mission statement and a committed biblical worldview. However, since the *3DWS-Form C* was administered via the Internet, the actual study took place online. Participants were asked to access the online and anonymous survey at their convenience using a computer of their choice.

The primary reasons the research site was chosen for this study were its mission statement and worldview commitment. To protect the identity of the research site, no citations were used in this manuscript. The mission statement on the institution's website communicated that a biblical worldview is robustly promoted through purposeful integration of faith and academics.

Requirements for Prospective Students at Research Site

Prospective undergraduate students may apply online at the university's website and submit an online application, an admissions essay, a high school transcript, and either a SAT or an ACT score. The university used in this research does not require students to be Christian or sign a statement of faith; therefore, it cannot be assumed that all students are Protestant Christians.

University Demographic Statistics and Test Scores

According to the university's webpage, the fall 2011 semester had over 12,000 students on campus: 5,640 students were male (47%) and 6,360 students were female (53%). Ethnicity demographics for the campus reported 65% of the students were Caucasian, 21% had not specified, 7% were African American, 3% were Asian, 3% were Hispanic, and < 1% were American Indian. The top five states represented in 2011 were Virginia, Pennsylvania, North Carolina, New York, and Maryland; the top five countries represented were the United States,

Canada, Malaysia, the Bahamas, and Canada. The university's "Stats and Facts" webpage declared that over 900 students from 80 countries attended the university residentially in 2011. The students' average standardized test scores were 1014 on the SAT and 22 on the ACT. Students had a mean high school GPA of 3.21.

Required Courses to Graduate

All students at the research site must complete two consecutive Biblical Worldview courses to fulfill graduation requirements. All new students must complete these courses during their first two full-time semesters on campus, including students who transfer into the university.

The Biblical World View courses at the research site are designed to equip students with a biblical worldview and teach them to apply biblical principles to contemporary issues. Another objective of these courses is to introduce students to Christian responsibilities as related to the church, community life, and Christian service.

Biblical Worldview I is a prerequisite for Biblical Worldview II and aims to assist the students in developing a biblical worldview. This course teaches students how to think critically about contemporary moral philosophies while exposing the fallacies of moral relativism. Biblical Worldview I emphasizes the importance of believing in absolute truth. An objective of this course is to encourage students to maintain their Christian worldview as they serve their community and their church.

Biblical Worldview II is a study of contemporary and moral issues that students encounter during their Christian/Community Service. Students are encouraged to understand all moral issues in the light of a biblical worldview and respond accordingly.

Based on the course descriptions of the biblical worldview courses in which all participants are enrolled, the researcher acknowledges that the study's results could be possibly

affected. This concern will be discussed in both the Limitations and Recommendations for Future Research sections located in chapter five.

Instrument

The *3DWS-Form C* (Appendix A) was the instrument developed for this study. This instrument was adapted from and is similar to the *3DWS* (Schultz, 2013), with two items (32 and 57) revised for a postsecondary population. The original *3DWS* (Appendix B) was developed for use with secondary students.

3DWS: The Initial Instrument

Schultz's (2013) *Three-Dimensional Worldview Survey (3DWS)* was a 76-item worldview-measuring instrument that aimed to measure three dimensions of a person's worldview: propositions, behaviors, and heart-orientation. The instrument was developed from recent literature aimed toward measuring worldview, including the Bible (Schultz, 2013), and purposed to reveal inconsistencies between students' professed and actual worldviews (Schultz, 2013).

3DWS subscales. The three subscales of the *3DWS* were designed to measure three dimensions of a person's worldview. Likert-type response scales were used to measure the dimensions because of their established reliability in survey research (Creswell, 2007). Propositional items were measured on levels of agreement, behaviors were evaluated by either specified or unspecified frequency, and heart-orientation items were measured by unspecified frequency values and a few levels of agreement response type (Schultz, 2013). For every item, participants were asked to select an answer that best reflected their feelings or perceptions (Schultz, 2013).

Propositional dimension. The items designed to measure propositional statements were designed to measure respondents' comprehensive understandings of worldview. The topics of these questions addressed history, hermeneutics, morality, and theology. For example, item one measures history, "History is a random series of events"; item 28 measures hermeneutics, "The meaning of words depends on each reader's interpretation"; item 12 measures morality, "I am the one who ultimately determines what is right or wrong for me"; and item three measures theology, "Jesus Christ physically rose from the dead" (Schultz, 2013, p. 111). Participants were asked to respond to the following levels of agreement (strongly disagree, disagree, neutral, agree, strongly agree). Out of the 76 items, the following 43 items (57%) assessed the propositional dimension: 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 27, 28, 30, 31, 32, 33, 34, 35, 37, 38, 39, 40, 41, 43, 44, 45, 46, 47, 48, and 75 (Schultz, 2013).

Behavior dimension. The behavior dimension was hypothesized to measure respondents' behaviors in the church; some items in this section required a level of self-disclosure. All of the behavioral items were frequency values that were either specified or unspecified (very rarely, rarely, occasionally, frequently, very frequently) (Schultz, 2013). An example of a behavioral question is item 55—"I question the goodness of God because I know that evil exists" (Schultz, 2013, p. 111). Thirteen items (26%) purported to measured behavior: 29, 49, 50, 51, 52, 61, 62, 64, 67, 70, 71, 73, and 76 (Schultz, 2013).

Heart-orientation dimension. Heart-orientation items were inspired by spiritual maturity literature and were created to examine respondents' attitudes, feelings, and preferences. This dimension was mostly measured by unspecified frequency values (very rarely, rarely, occasionally, frequently, very frequently); yet, a few items were measured by level of agreement-type responses (about 10 hours or less a year, about one-two hours a month, about one hour a

week, about 15-30 minutes a day, more than 30 minutes a day). An example of a heart-orientation question is item 59—“When I see inconsistencies at church between what people say and what they do, I want to stay away from church” (Schultz, 2013, p. 112). Twenty items (17%) were hypothesized to measure heart-orientation: 7, 22, 26, 36, 42, 53, 54, 55, 56, 57, 58, 59, 60, 63, 65, 66, 68, 69, 72, and 74 (Schultz, 2013).

According to Schultz (2013), the instrument “did not separate specific item types into separate parts of the instrument for the three dimensions” (p. 101). Therefore, survey participants were not able to identify which items were attempting to measure specific factors. The *3DWS* was calculated on a numerical scale for each factor, and the scores were scaled so all three factors were equally weighted. For each factor, the minimum score was 19 and the maximum score was 96. For the composite score, a minimum of 57 was possible and the maximum score was 288. Thirty-nine items (1, 4, 5, 8, 9, 10, 12, 13, 14, 17, 18, 19, 22, 23, 24, 25, 27, 28, 30, 31, 32, 33, 35, 36, 37, 38, 39, 42, 43, 44, 48, 54, 55, 57, 58, 59, 64, 65, and 75) were constructed for reverse scoring (Schultz, 2013).

The *3DWS* contained nine demographic and experience questions. These questions were used to identify the following: students’ present age, grade level, sex, race, which parent(s) the student lived with, if the students were eligible for free/reduced lunch, the number of years in a Christian school, the number of semesters completed in any Released Time Bible Education program, and if students considered themselves to be a Christian (Schultz, 2013).

As part of the *3DWS* research, Schultz (2013) created a template (Appendix F) for the purpose of highlighting similarities and differences between three worldview dimensions. This visual aid indicated how well the three factors were balanced and how all three sets of responses compared to a biblical worldview (Schultz, 2013).

The primary purpose of the score report was to assist participants in strengthening their biblical worldview, which is accomplished by highlighting the worldview dimensions with the highest and lowest scores, while also giving an average for the three subscales (Schultz, 2013). Personalized comments for each participant could not be generated because the pilot test was administered in an anonymous format. The score report was designed to exhort the participants in the area of their greatest strength, caution them in their weaknesses, and suggest opportunities for strengthening their biblical worldview based on their lowest factor score (Schultz, 2013).

3DWS: Reliability

A pilot test on the 76-item scale was conducted to assess the internal consistency of the instrument. The Cronbach's alpha composite for the instrument was .919; the propositional subscale was .868; the behavioral subscale was .788; and the heart-orientation subscale was .806. All reliability statistics met the targeted value of .70 (Nunnally, 1978).

3DWS: Face and Content Validity

The *3DWS* was also submitted to a panel of non-expert reviewers to test for face validity and a panel of expert reviewers to assess content validity; this was done after the instrument was pilot tested. The purpose of the non-expert review was to determine the clarity and comprehensibility of the survey items by individuals who did not have any formal training in the study of biblical worldview (Schultz, 2013). According to Litwin (2003), a non-expert panel is used first in the face validity inquiry to assist in identifying any unintentional use of jargon or confusing terminology, which might impede the respondent's understanding of a question and thus response.

The *3DWS* was administered to an expert panel of 11 reviewers, who represented a variety of educational and ministerial expertise. According to Schultz (2013), six of the field

experts were professionally trained in theology, seven were professionally trained in education, five had professional training in ministry, and two were professionally trained in other fields. All were professing Christians and reported a variety of denominational backgrounds. The expert panel evaluated each item for clarity and relevance on a five-point Likert-type scale (one = *very poor*, five= *very good*) and reported that both face validity and content validity were acceptable. The panel was also given the option to comment on each item. The expert panel scored 93% of the items at 4.00 or above (out of 5.00) for clarity, and 99% of the items at 4.00 or above for relevance” (Schultz, 2013, p. 143). As reported by Schultz (2013), “The overall mean score for the experts on clarity and relevance was 4.54 ($SD = .923$, $N = 1763$)” (p. 115).

It was suggested by the expert panel that three items (6, 21, and 33) be omitted and five items (2, 4, 14, 31, and 56) be revised for clarity; it was also recommended that item 31 be reverse scored (Schultz, 2013). Reverse scoring is a commonly used practice in survey research when the purpose is to construct a scale (De Vaus, 2002). This practice was used to evaluate a number of responses in the instrument; the following 37 items were reverse scored: 1, 4, 5, 8, 9, 10, 12, 13, 14, 17, 18, 19, 22, 23, 24, 25, 27, 28, 30, 33, 35, 36, 37, 38, 39, 42, 43, 44, 48, 54, 55, 57, 58, 59, 64, 65, and 75 (Schultz, 2013). Removing the three items suggested by the expert panel, the scale was refined and renamed the *3DWS_{Revised}*. The *3DWS_{Revised}* contained 73 items and retained the original nine demographic and experience questions. Thirty-seven items (49%) were reverse scored; the *3DWS_{Revised}* contained 40 propositional items, 13 behavioral items, and 20 heart-orientation items (Schultz, 2013). The *3DWS_{Revised}* was never administered, as the focus of Schultz’s (2013) research was to develop the scale and not validate it.

The researcher chose not to use the *3DWS_{Revised}* instrument for this study. This decision was made because suggestions for revisions to the *3DWS* were made based on the assumption

that the scale would be used with a secondary population. The researcher concluded that the present study's postsecondary population was markedly dissimilar in age, intelligence, and spiritual maturity from the secondary audience, and thus the revisions might not be necessary. The creator also suggested using the 76-item instrument.

3DWS-Form C: Instrument Used in This Study

The *3DWS-Form C* was developed for this study. Its purpose was to measure three hypothesized worldview components of postsecondary, Christian university students. The *3DWS-Form C* was adapted from the *3DWS* with two items (32 and 57) revised for a postsecondary population. The initially developed *3DWS-Form C* included 76 questions that measured three hypothesized components: propositions, behavior, and heart-orientation. As only the wording of two items was refined from the *3DWS* (Schultz, 2013), the subscales of the *3DWS-Form C* and their purposes were consistent with that of the *3DWS*, which was previously discussed.

Propositional Component

The propositional component contained items that were intended to measure respondents' comprehensive understanding of worldview and evaluated topics such as theology, history, hermeneutics, and morality. Participants were asked to respond by selecting the most appropriate level of agreement (strongly disagree, disagree, neutral, agree, strongly agree) that best reflected their perception or feeling for each item. Out of the 76 items, the following 43 items (57%) were originally intended to measure the propositional dimension: 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 27, 28, 30, 31, 32, 33, 34, 35, 37, 38, 39, 40, 41, 43, 44, 45, 46, 47, 48, and 75.

Behavioral Component

The behavioral component was designed to assess respondents' behaviors in the church, and some items required a level of self-disclosure. This component was measured by either specified or unspecified frequency values (very rarely, rarely, occasionally, frequently, very frequently). Thirteen items (26%) were originally intended to measure behavior: 29, 49, 50, 51, 52, 61, 62, 64, 67, 70, 71, 73, and 76.

Heart-orientation Component

The third component included items that were intended to measure respondents' attitudes, preferences, feelings, and motivations. This component was measured by unspecified frequency values (very rarely, rarely, occasionally, frequently, very frequently), with two items measured by level of agreement type responses (about 10 hours or less a year, about one-two hours a month, about one hour a week, about 15-30 minutes a day, more than 30 minutes a day). Twenty items (17%) were originally intended to measure heart-orientation: 7, 22, 26, 36, 42, 53, 54, 55, 56, 57, 58, 59, 60, 63, 65, 66, 68, 69, 72, and 74. The *3DWS-Form C* contained 37 reverse-scored items (1, 4, 5, 8, 9, 10, 12, 13, 14, 17, 18, 19, 22, 23, 24, 25, 27, 28, 30, 33, 35, 36, 37, 38, 39, 42, 43, 44, 48, 54, 55, 57, 58, 59, 64, 65, and 75) and five demographic questions that identified age, sex, ethnicity, religious affiliation, and if respondents identified themselves as a Christian.

The instrument was tested and refined using PCA including both factor extraction and direct oblimin rotation. In this study, a rotated factor loading of .3 indicated the factor loading was not salient; thus, 29 items were deleted (Tabachnick & Fidell, 2007). This refinement resulted in a 47-item instrument, and the researcher proposed new labels for component one and component three—"non-biblical convictions" and "biblical convictions" respectively.

Component two, labeled “behavior” component, was similar to previous research, although item loadings were not. The final instrument included 20 items (42%) (5, 8, 9, 10, 12, 13, 17, 18, 19, 24, 25, 30, 35, 36, 37, 39, 42, 43, 44, and 48) that assessed non-biblical convictions, 15 items (32%) (49, 51, 52, 53, 56, 60, 61, 62, 66, 67, 69, 71, 72, 73, and 74) that assessed behaviors, and 12 items (26%) (7, 11, 16, 29, 31, 32, 34, 40, 41, 45, 46, and 47) that assessed biblical convictions. A discussion of the components, their labels, and item loadings is presented in chapter five.

Items that inquired about demographics and experience were retained throughout the revision; they were not included in the PCA, and raw scores were used. This instrument is found in Appendix A, and the results of the PCA are reported in chapter four.

Scoring

For items 7, 11, 16, 29, 31, 32, 34, 40, 41, 45, 46, and 47 the following scoring scale was used: strongly agree = 5, agree = 4, neutral = 3, disagree = 2, strongly disagree = 1. For item 49, the following scale was used: about 10 hours or less a year = 1, about 1-2 hours a month = 2, about 1 hour a week = 3, about 15-30 minutes a day = 4, more than 30 minutes a day = 5. For items 51, 52, 53, 56, 60, 61, 62, 66, 67, 69, 71, 72, 73, and 74 the following scale was used: very rarely = 1, rarely = 2, occasionally = 3, frequently = 4, very frequently = 5. Items 5, 8, 9, 10, 12, 13, 17, 18, 19, 24, 25, 30, 35, 36, 37, 39, 42, 43, 44, and 48 were reverse-scored, and the following scale was used: strongly agree = 1, agree = 2, neutral = 3, disagree = 4, strongly disagree = 5.

Based on the 47-item instrument with 427 respondents, the following are the raw scores. The 20 non-biblical convictions items were all reverse-scored; the scale ranged from a maximum of 100 to a minimum of 20. Raw scores for the 15 behaviors items range from a maximum of 75

to a minimum of 15. Raw scores for the 12 biblical convictions items range from a maximum of 60 to a minimum of 12. Items on subscales were added together to obtain the raw score for the entire scale, ranging from a maximum of 235 to a minimum of 47. Student response averages by item for the *3DWS-Form C* are located in Appendix J.

Cronbach's alpha was calculated for the composite scale and subscales to assess internal consistency. Cronbach's alpha was .785 for the total scale, .923 for the non-biblical convictions subscale, .860 for the behaviors subscale, and .647 for the biblical convictions subscale. The biblical convictions subscale reported the only coefficient below the suggested value of .70 (Nunnally, 1978). The alpha of .647 is discussed further in chapter four.

Procedures

Permission to survey participants was sought and granted from the Director and Professor of the Center for Christian Community/Service at the research site. Permission was requested to survey first-year university students enrolled in either Biblical Worldview I or Biblical Worldview II. The director of this university department currently provides oversight for all of the research site's worldview courses and communicated that 3,609 students were enrolled in these two worldview courses during the spring 2013 semester. It was also reported that all prospective participants were first-year undergraduate students.

After receiving IRB approval, a hyperlink to the *3DWS-Form C* was imbedded in the invitation to participate email (Appendix C). This e-mail was sent to the director and professor for the Center for Christian Community/Service, who was asked to forward the e-mail to all faculty members teaching the identified worldview courses. The faculty was asked to forward this e-mail (Appendix C) to all students enrolled in their Biblical Worldview courses and also provide the researcher with the total number of students receiving the e-mail, so the volunteer

rate could be tracked. The invitation to participate e-mail (Appendix C) was addressed to the professors and their students and informed both parties about the research and assured the anonymity of respondents. It communicated to both parties of the importance of this research and encouraged all students over 18 years of age to participate. The contents of this e-mail (Appendix C) included: the purpose of this study, the importance of this research in regards to Christian higher education and worldview assessment, the two-week timeframe the study would be available, the importance of truthful responses, a request from the researcher not to discuss the survey's contents before the end of the two-week period, and a hyperlink to the *3DWS-Form C*.

At the one-week mark, the worldview professors at the research site received a second e-mail (Appendix D) and were asked to forward it to their students. This e-mail reminded students of the importance of taking this survey and emphasized how honest answers were necessary to properly validate the instrument. Students were alerted to the fact that the survey would only be available for seven more days and were invited to complete the survey if they had not yet done so. The hyperlink to the *3DWS-Form C* was also contained in this e-mail. Students finished their semester course within one week of the start of the survey. On the ninth day of data collection, the researcher collected 511 responses with 427 useable surveys, and at the advice of the committee Chair, the researcher closed the survey. A final e-mail (Appendix E) was sent to all worldview professors and subsequently forwarded to students thanking them for their time and participation.

After electronically receiving the results of the *3DWS-Form C* from Survey Monkey, the data were exported from Survey Monkey directly to the researcher's SPSS (version 19) software and statistical analyses commenced.

Data Analysis

The suitability of the data was examined prior to data analysis. The Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's Test of Sphericity (1954) were used to inspect the validity of the sample (Stevens, 1996). Principal components analysis (PCA) was used for the purpose of investigating interrelationships among numerous variables with the intent to describe the variables in relation to their shared underlying dimensions (Gorsuch, 1983; Rovai et al., 2013). Using PCA also permitted the researcher to evaluate the linear components within the data and then determine how specific variables load and contribute to specific components (Stevens, 1996). Principal components analysis was the most appropriate analysis to test this hypothesis because PCA analyzes all the variance among variables; its objective is to use a minimum number of composite variables to justify significant variances in the original set of variables (Pallant, 2010; Rovai et al., 2013; Tabachnick & Fidell, 2007).

With little theoretical foundation, Pedhazur and Schmelkin (1991) suggested when conducting PCA, both the orthogonal and oblique methods be performed, and the latter is to be chosen if the hypothesized factors are found to be correlated. For this study, both methods were completed, and correlation between the hypothesized factors was found; therefore, direct oblimin rotation was chosen for remaining analyses as it allowed for the most interpretable structure. Next, factor extraction, factor rotation, and interpretation were conducted. The scree plot, evaluation of the eigenvalues of the components, and consideration of conceptual understanding of the literature informed the number of components to retain. Cronbach's alpha coefficient and the Spearman-Brown prophecy formula were used to establish the internal consistency reliability of the scale. Using the Spearman-Brown prophecy formula enabled the prediction of the reliability of the instrument after it was reduced to 47 items (Brown, 2001).

Based on a 95% confidence level and a p value of $< .05$, the minimum number of participants is 300 (Tabachnick & Fidell, 2007). A medium effect size of .30 was selected based on Cohen's recommendation (Cohen, 1988), and a statistical power of .80 was deemed appropriate for this study (Cohen, 1992).

Summary

Chapter three explained the methods used in this quantitative study. This chapter presented the study's research questions and hypotheses, followed by the research design, participants, setting, instrument, procedures, and data analysis. Chapter four contains the results of the study using narrative text and tables.

CHAPTER 4: RESULTS

This chapter presents the study's statistical procedures and findings. The purpose of this study was to examine the structure, validity, and reliability of the *Three-Dimensional Worldview Survey-Form C (3DWS-Form C)* to determine if the three hypothesized worldview components (proposition, behavior, and heart-orientation) could be retained. The statistical procedures and findings from this research are discussed.

Research Design

Principal components analysis (PCA) was used to examine the structure and construct validity of the *3DWS-Form C*. Cronbach's alpha and the Spearman-Brown prophecy formula were used to investigate the instrument's internal consistency and reliability.

Principal Components Analysis

In order to investigate the structure and validity of Schultz's (2013) *3DWS*, the suitability of the data was assessed and deemed suitable for PCA. The Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's Test of Sphericity indicated the reliability (Stevens, 1996). The KMO (Appendix H) for the 47-item instrument was .94 and exceeded the .6 value of concern (Kaiser, 1974), which indicated none of the items violated the assumption of no multicollinearity. The Bartlett's Test of Sphericity was significant ($p < 0.05$) and indicated analyzed data are acceptable for PCA as they are approximately multivariate normal.

The PCA analysis was used to examine the following null hypotheses:

H₀₁: There is no underlying specific factor structure of the three-dimensional worldview survey. The underlying factor structure is not consistent with previous research.

H₀₂: The three-dimensional worldview survey is not a valid instrument for measuring propositional beliefs, behavioral patterns, and heart-orientation in Christian college students.

Because of the low correlations, orthogonal and oblique rotations were similar and direct oblimin rotation, a type of oblique rotation, was selected for the remaining analyses. A correlation matrix displays the intercorrelation among items (Appendix I).

The following are the eigenvalues for the 76-item instrument. Eighteen eigenvalues exceeding one were revealed with maximum likelihood extraction explaining 23.07% variance for component one, 7.43% variance for component two, 4.55% variance for component three, 2.56% variance for component four, 2.44% variance for component five, 2.15% variance for component six, 2.08% variance for component seven, 1.91% variance for component eight, 1.81% variance for component nine, 1.68% variance for component 10, 1.63% variance for component 11, 1.58% variance for component 12, 1.50% variance for component 13, 1.47% variance for component 14, 1.47% variance for component 15, 1.40% variance for component 16, 1.38% variance for component 17, and 1.35% variance for component 18. There was a cumulative variance of 61.45% for the 18 components with eigenvalues exceeding one, and a three-component solution explained 35.04% of the variance. Examination of Catell's (1966) scree plot revealed a clear break after the third component (see Figure 1). Scree plot results aligned with prior conceptual beliefs based on the literature and Schultz's (2013) previous research; however, it was not clear if these three components are consistent with the three hypothesized components of the *3DWS*.

Using PCA for 76 items, the best interpretability of factors was observed when three factors were extracted using oblique rotation. Inspection of the communalities table indicated

that only some of the coefficients were greater than the threshold of $> .3$ (Tabachnick & Fidell, 2007). The researcher decided to retain a three-component solution based on Kaiser's (1974) criterion, an inspection of Cattell's (1966) scree plot, and a conceptual understanding of the literature.

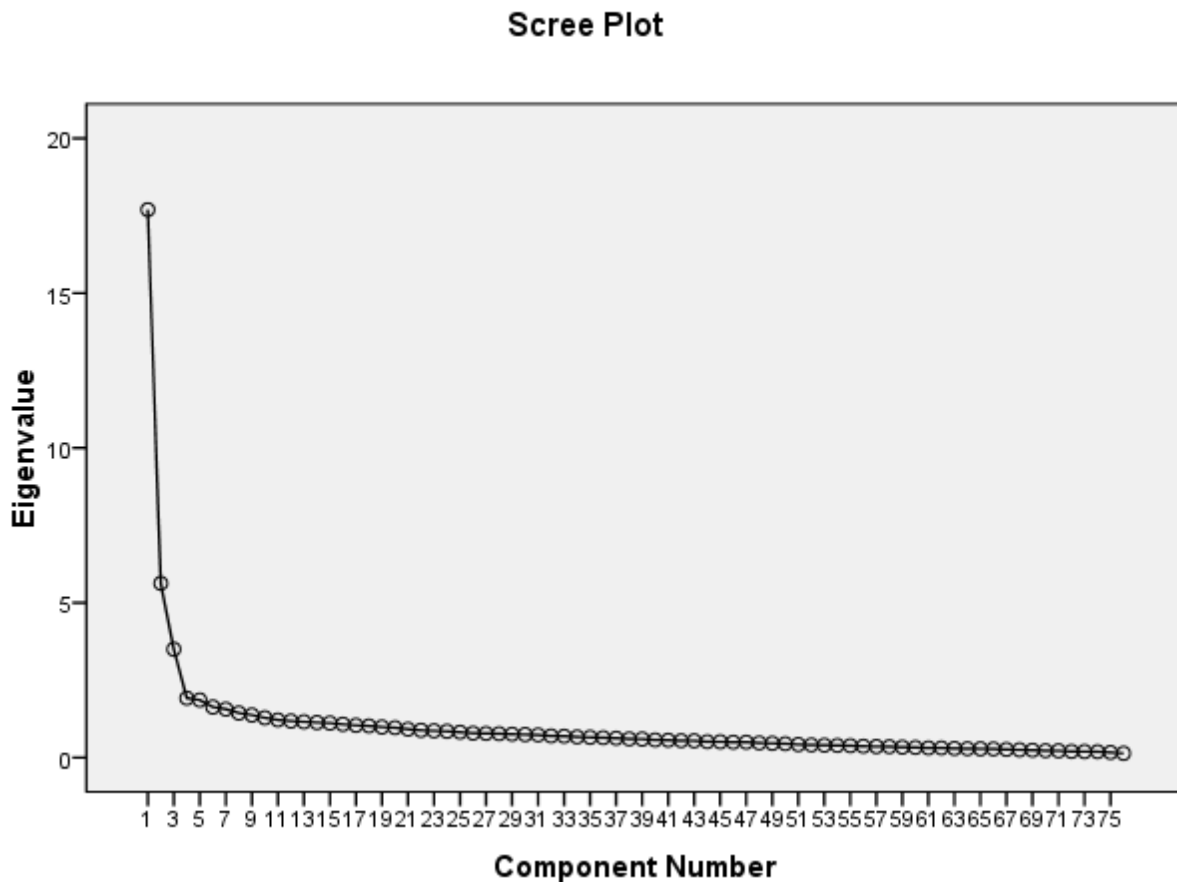


Figure 1. Cattell's Scree Plot.

Using PCA, a three-component solution was forced, and the criterion for item inclusion was a loading of an item $> .3$; thus, 29 items (1, 2, 3, 4, 6, 14, 15, 20, 21, 22, 23, 26, 27, 28, 33, 38, 50, 54, 55, 57, 58, 59, 63, 64, 65, 68, 70, 75, and 76) were removed. The instrument was reduced to 47 items. The three-component solution explained 46.48% of the total variance, with

component one accounting for 30.90%, component two accounting for 9.55%, and component three accounting for 6.04%.

Twenty items (5, 8, 9, 10, 12, 13, 17, 18, 19, 24, 25, 30, 35, 36, 37, 39, 42, 43, 44, and 48) loaded on component one; 15 items (49, 51, 52, 53, 56, 60, 61, 62, 66, 67, 69, 71, 72, 73, and 74) loaded on component two; 12 items (7, 11, 16, 29, 31, 32, 34, 40, 41, 45, 46, and 47) loaded on component three. See the pattern matrix (Table 4.1) with item loadings and communalities. According to Brown (2009), “a loading of .71 or higher can be considered “excellent’, .63 is “very good,” .55 is “good,” .45 is “fair,” and .32 is “poor” (p. 22). Out of the 20 items loaded on component one, 17 reported scores “good” or higher. For component two, 11 out of 15 reported scores of “good” or higher, and for component three, 8 out of 12 items reported scores of “good” or higher. The following is the pattern matrix with item loadings and communalities, the structure matrix listing correlations for the three components, and the component correlation matrix.

Table 4.1

Pattern Matrix

Items	F_1	F_2	F_3	h^2	x	S.D.
Non-biblical Convictions (20 items)						
5. The Holy Spirit is a symbol of God's presence rather than a living being.	.624	-.070	-.088	.377	3.759	.139
8. The best source for determining if something is morally right or wrong is the law of the land.	.664	-.057	-.087	.423	4.241	.901
9. The Bible is more like a good story	.617	.012	.118	.449	4.616	.849

that teaches moral lessons than a historic record of real people and events.

10. A person can earn eternal salvation by being good, for example by doing good things for other people. **.679** -.015 .090 .527 4.771 .649

12. I am the one who ultimately determines what is right or wrong for me **.547** .260 .169 .410 4.426 .910

13. There is no way to decide which of the many competing worldviews is true. **.615** -.112 .154 .549 4.560 .753

17. Muslims, Christians, Jews, and all other people pray to the same God, even though they use different names for their God. **.648** -.108 -.018 .464 4.382 .970

18. Two people could define truth in conflicting ways and both still be correct. **.646** -.051 -.081 .400 4.021 1.154

19. If people will only work hard enough, their cooperation could result in a perfect society. **.741** .427 -.028 .532 4.244 .862

24. A well-run government can solve all problems. **.589** .326 .034 .362 4.321 .782

25. I can tell if something is morally right by whether or not it works in my life. **.619** .034 .370 .369 4.108 .890

30. Most people are basically good.	.636	.012	-.047	.378	3.864	1.073
35. God is important primarily because faith in Him makes us more civilized and psychologically healthy.	.619	.104	-.119	.318	3.564	1.283
36. I would marry someone of another faith if I were in love.	.546	-.174	.168	.515	4.372	.957
37. Every woman should have a right to abort her fetus.	.448	.012	.197	.308	4.724	.688
39. I believe that when I die I will go to Heaven because I have been a good person.	.769	.045	.014	.581	4.508	.776
42. I feel that no one has the right to tell me what to do.	.417	-.259	.082	.359	4.056	.857
43. The devil is a symbol of evil rather than a living being.	.714	.029	.077	.548	4.384	.943
44. I believe that when I die I will go to Heaven because I have been going to church pretty much all my life.	.723	.382	.087	.585	4.600	.647
48. The standard for truth is when I feel it to be true in my heart.	.676	-.026	.062	.508	4.227	.953
Behaviors (15 items)						
49. I read or study the Bible [frequency multiple choice response].	.066	-.459	.172	.338	3.295	.975

51. I work with other Christian believers for the purpose of introducing un-churched people to Jesus Christ.	.028	.627	.062	.356	3.035	.902
52. My interactions with non-Christians are likely to demonstrate that I am a Christian.	-.150	.562	-.057	.427	2.103	.771
53. I enjoy talking with one or more of my friends about spiritual things.	-.123	.669	-.025	.530	1.871	.877
56. In everyday activities, for example, doing homework, I deepen my relationship with God.	.087	.683	-.017	.447	2.848	.918
60. When I make decisions, the biggest factor is how it will affect my relationship with God.	.011	.637	-.092	.458	2.218	.905
61. I stand up for what is right even if my friends don't join me.	-.130	.570	.074	.350	1.923	.736
62. When I have questions about how I should live my life, I look for answers in the Bible.	-.225	.652	-.060	.612	2.016	.881
66. I find the Bible is relevant to my daily life.	-.166	.535	-.282	.611	1.567	.794
67. In my prayers, I actively seek to discover the will of God.	.014	.548	-.282	.452	1.705	.840

69. I enjoy participating in a worship service with other believers.	-.059	.560	-.232	.474	1.632	.838
71. I think about passages I read in the Bible.	-.094	.728	.016	.570	1.974	.854
72. I enjoy being with other believers, whether or not we are doing religious activities.	-.299	.483	-.151	.531	1.475	.729
73. I spend time thinking about the sermon after I have left the church building.	-.013	.678	.073	.429	2.347	.860
74. I do without things I want in order to give sacrificially to the work of God.	.219	.701	.114	.414	2.958	.858
Biblical Convictions (12 Items)						
7. Jesus Christ is important in my life today.	-.172	-.362	.595	.569	4.822	.486
11. God created everything.	-.038	.013	.588	.323	4.862	.472
16. Every life has value, whether unborn, disabled, sickly, or in any other way limited.	.099	-.019	.532	.346	4.906	.330
29. I have made a personal commitment to Jesus Christ.	-.044	-.180	.747	.671	4.833	.452
31. God is a personal being.	-.111	.009	-.502	.315	1.304	.706
32. Everything belongs to God: for	.013	.080	-.595	.393	1.408	.691

example, my computer, my phone, my clothes.

34. The best source for determining if something is morally right or wrong is the Bible.	.025	.059	.802	.625	4.764	.546
40. God is actively involved in the universe today.	.648	-.107	.759	.649	4.794	.499
41. The Bible is true in all its teachings.	.038	-.019	.758	.614	4.820	.497
45. God is one God who exists in three persons: Father, Son, and Holy Spirit.	-.033	.029	.766	.549	.487	.437
46. God holds all human beings accountable for their behavior.	.026	.134	.700	.444	4.700	.620
47. When Jesus Christ was on earth, He lived a sinless life.	.206	.134	.521	.391	4.808	5.70

Below is the structure matrix (Table 4.2). This matrix differs from the pattern matrix in that shared variance is not disregarded. The pattern matrix above is preferable for interpretative reasons, because it reports information about the unique contribution of a variable to a component (Field, 2013). The structure matrix below is included because this matrix represents the correlations between the components and the variables.

Table 4.2

Structure Matrix for PCA with Oblimin Rotation of Three-Component Solution

Item	Structure Matrix
------	------------------

	Component		
	1	2	3
05	.608	-.223	.201
07	.187	-.555	.673
08	.646	-.224	.214
09	.662	-.224	.370
10	.721	-.259	.379
11	.203	-.218	.567
12	.621	-.246	.401
13	.713	-.363	.457
16	.326	-.268	.581
17	.674	-.298	.297
18	.628	-.215	.210
19	.729	-.211	.280
24	.601	-.188	.277
25	.607	-.153	.239
29	.322	-.475	.803
30	.613	-.163	.213
31	-.323	.250	-.552
32	-.260	.321	-.623
34	.342	-.280	.789
35	.538	-.036	.096
36	.669	-.410	.468

37	.526	-.206	.379
39	.761	-.195	.316
40	.341	-.418	.800
41	.360	-.344	.782
42	.530	-.419	.362
43	.737	-.221	.363
44	.761	-.262	.391
45	.278	-.277	.740
46	.277	-.163	.655
47	.417	-.256	.597
48	.710	-.258	.355
49	.278	-.550	.389
51	-.137	.593	-.185
52	-.345	.631	-.351
53	-.337	.717	-.352
56	-.129	.664	-.263
60	-.222	.672	-.351
61	-.273	.579	-.215
62	-.449	.745	-.423
66	-.447	.702	-.572
67	-.249	.639	-.452
69	-.311	.658	-.450
71	-.309	.750	-.323

72	-.509	.636	-.475
73	-.190	.652	-.213
74	.053	.588	-.084

After item loadings were identified, items were examined to determine underlying constructs. This allowed the researcher to examine underlying constructs to identify subscales and evaluate consistency with proposed subscales (Tabachnick & Fidell, 2007). Component one was identified as ‘non-biblical convictions.’ Component two was identified as ‘behaviors.’ Component three was identified as ‘biblical convictions.’ The ‘non-biblical convictions’ component had 20 items (42%), the ‘behaviors component’ had 15 items (32%), and the ‘biblical convictions’ component had 12 items (26%). Chapter five contains suggestions for refining the instrument that were based on the underlying constructs and the proposed scales.

Table 4.3

Component Correlation Matrix

Component	1	2	3
1	1.000	-.305	.417
2	-.305	1.000	-.413
3	.417	-.413	1.000

The component correlation matrix suggests oblimin rotation afforded information that was not present with Varimax rotation (see Table 4.3). It also indicated that component two is negatively correlated with both components one and three.

Cronbach's alpha and the Spearman-Brown prophecy formula were used to test the third hypothesis:

H₀₃: The three-dimensional worldview survey does not show good internal reliability.

The Cronbach's alpha of .785 and the Spearman-Brown coefficient of .694 established the internal reliability of the instrument. Subscale one, 'non-biblical convictions,' was .923 ($M = 85.74$, $SD = 11.913$). Subscale two, 'behaviors,' was .860 ($M = 32.97$, $SD = 7.419$). Subscale three, 'biblical convictions,' was .647 ($M = 50.89$, $SD = 2.909$), which was the only alpha below the targeted value of .70 (Nunnally, 1978). This low statistic is of little concern as the literature indicated satisfactory levels of reliability are dependent upon the intended use of the measure (Brown, 2001). For example, .70 will suffice for basic research, however .80 is still insufficient in applied settings (Nunnally, 1978). To more precisely identify the Cronbach's alpha scale, George and Mallery (2003) provided the following rule of thumb: "> .9 – Excellent, .8 – Good, > .7 – Acceptable, > .6 – Questionable, > .5 – Poor, and < .5 – Unacceptable" (p. 231). Therefore, even though the Cronbach's alpha for the 'biblical conviction' component was not 'excellent' (.647), George and Mallery (2003) would not rate it as 'poor' or 'unacceptable.' Also, as fewer items produce lower alphas (Brown, 2001), the lower score was not surprising considering the 'biblical convictions' component only had 12 items.

Summary

This chapter reported the findings of the study. The research design was stated, followed by tables presenting the statistical findings. Chapter five will discuss these findings as related to the assumptions of the study.

CHAPTER 5: DISCUSSION

This chapter will present a discussion of the findings. Included is the statement of the problem, a summary of the methodology, findings and discussion for each research question, suggestions for refining the scale, theoretical and practical implications, recommendations for future research, and biblical integration.

Statement of the Problem

The problem is that postsecondary Christian universities are limited by the availability of validated instruments that purport to measure students' worldviews. This research was conducted to determine if the *Three-Dimensional Worldview Survey-Form C (3DWS-Form C)* measured a hypothesized heart-orientation dimension of worldview and if this instrument is valid and reliable for use in Christian postsecondary institutions.

Review of Methodology

The researcher administered the *3DWS-Form C* in an online and anonymous format and received 427 useable responses from first-year college students at a large Christian university in Virginia. Principal components analysis (PCA) was conducted to test the null hypotheses for Research Questions One and Two. Research Question Three was evaluated with Cronbach's alpha and the Spearman-Brown prophecy formula.

Proposed Components

Based on item loadings and underlying constructs, the researcher labeled the three components 'non-biblical convictions,' 'behaviors,' and 'biblical convictions.' Component 1, 'non-biblical convictions,' contained 20 reverse-scored items that were measured by levels of agreement (strongly disagree, disagree, neutral, agree, strongly agree). All items appeared to measure propositional statements inconsistent with biblical convictions; however, they did

demonstrate presuppositions consistent with moral relativism and humanism. For example, moral relativism is observed in item 48, “The standard for truth is when I feel it to be true in my heart”; and item 25, “I can tell if something is morally right by whether or not it works in my life.” Humanism is noted in item 42, “I feel that no one has the right to tell me what to do”; item 12, “I am the one who ultimately determines what is right or wrong for me,” and item 39, “I believe that when I die I will go to Heaven because I have been a good person.” All item loadings on component one, ‘non-biblical convictions,’ represent convictions contradictory to biblical teaching.

Component 2 contained 15 items and was labeled ‘behavioral.’ This component was consistent with Schultz’s (2013) research, although item loadings were not. As reported in the literature, behaviors are a component of worldview and indicative of beliefs (Kim, McCalman, & Fisher, 2012; Pianalto, 2011). Every item in the ‘behaviors’ component was measured by levels of frequency (very rarely, rarely, occasionally, frequently, very frequently) or (about 10 hours or less a year, about one-two hours a month, about one hour a week, about 15-30 minutes a day, more than 30 minutes a day). All item responses demonstrated some frequency of behavior. For example, item 51, “I work with other Christian believers for the purpose of introducing un-churched people to Jesus Christ”; item 56, “In everyday activities, for example, doing homework, I deepen my relationship with God”; and item 53, “I enjoy talking with one or more of my friends about spiritual things.”

Component 3 contained 12 items and was identified as ‘biblical convictions’ by the researcher. All items in the ‘biblical convictions’ component were rated with levels of agreement (strongly disagree, disagree, neutral, agree strongly agree) and were reverse-scored. Examples of ‘biblical convictions’ items included item 41, “The Bible is true in all its

teachings”; item 34, “The best source for determining if something is morally right or wrong is the Bible”; and item 45, “God is one God who exists in three persons: Father, Son, and Holy Spirit.”

These component labels assist in identifying convictions associated with worldview presuppositions. The first and third components (‘non-biblical convictions’ and ‘biblical convictions’) could also be considered a conscious or subconscious motivational impetus for all decision-making. According to Pianalto (2011), convictions are moral beliefs that reflect a person’s chief commitments and play a significant role in a person’s decision-making process. Convictions are firmly held beliefs and not easily altered; they are resilient and motivating beliefs (Pianalto, 2001).

The second component, ‘behaviors,’ is also a component of worldview. Literature has indicated that people with strong convictions do not fear debating controversial issues because their convictions compel them to speak (Pianalto, 2011). This phenomenon was observed in item 61, “I stand up for what is right even if my friends don’t join me,” and item 52, “My interactions with non-Christians are likely to demonstrate that I am a Christian.”

Convictions are a part of worldview and influence the way people see their lives, the world, and the future. Biblical convictions are faith-based convictions that are derived from and based on a commitment to the Bible. The Bible is accepted to be the Word of God, and therefore, the final authority on every area of life. Kim et al. (2012) stated that every worldview has some foundation that is accepted by faith. Whether people place their faith in the God of the Bible, themselves, or some aspect of the universe, they maintain convictions consistent with the object of their faith.

Findings and Discussion

The first hypothesis contained two similar questions and both hypotheses were examined with PCA.

H₀₁: There is no specific underlying factor structure of the three-dimensional worldview survey. The underlying factor structure is not consistent with previous research.

Principal components analysis was chosen to establish the linear components within the data and determine how variables contributed to a specific component (Stevens, 1996). It was also selected to reduce a larger number of variables down to fewer variables (Tabachnick & Fidell, 2007). For this research, a three-component solution was indicated based on Kaiser's criterion, Catell's scree plot, and a conceptual understanding of the literature. Direct oblimin rotation enabled the most interpretable factor structure.

The PCA demonstrated a three-component solution is consistent with Schultz's (2013) previous research. It also indicated the instrument has good construct validity. However, even though components appeared to be somewhat consistent with previous research, item loadings were not. To refine the instrument, 29 items below the $> .3$ threshold on the communalities table were removed, and the instrument was reduced to 47 items. Component 1 had 20 items, component 2 had 15 items, and component 3 had 12 items. Of the 20 items loaded on component one, 18 (5, 8, 9, 10, 12, 13, 17, 18, 19, 24, 25, 30, 35, 37, 39, 43, 44, and 48) were hypothesized to load onto a "propositional" component. Of the 15 items loaded on component two, 8 (49, 51, 52, 61, 62, 67, 71, and 73) were hypothesized to load onto a "behavior" component. Of the 12 items loaded on component 3, only item 7, "Jesus Christ is important in my life today" was speculated to load on a "heart-orientation" component; 10 items (11, 16, 31, 32, 34, 40, 41, 45, 46, and 47) were hypothesized to be propositional, and one item (29) was

speculated to be behavioral. Components were named by item loadings and subscale constructs. Component one was identified as ‘non-biblical convictions,’ component two was identified as ‘behaviors,’ and component three was identified as ‘biblical convictions.’”

One noteworthy difference between the ‘non-biblical convictions’ and ‘biblical convictions’ components was the use of reverse scoring. Therefore, the researcher investigated this phenomenon. Upon closer examination, it was detected that every item loading on the ‘non-biblical convictions’ component was reverse-scored and appeared to measure some form of propositional statement rated by levels of agreement (strongly disagree to strongly agree). Items comprising the ‘biblical conviction’ component were not reverse-scored but also appeared to measure propositions using the same level of agreement scale (strongly disagree to strongly agree). Regarding component two, ‘behaviors,’ all items were straightforwardly scored and rated by levels of frequency (very rarely to very frequently). There was no conclusive evidence to determine why all reverse-scored items loaded onto the ‘non-biblical convictions’ component; however, two independent studies reported reverse-scored items might hinder the performance of a scale.

First, a study by Rodebaugh, Woods, and Heimberg (2007) investigated whether reverse-scored items on the Social Interaction Anxiety Scale (SIAS) should be removed to improve the performance of the scale. Results indicated that removing the reverse-scored items generally aided rather than impeded the SIAS’s total performance score (Rodebaugh et al., 2007).

Second, a study by Rodebaugh, Heimberg, Brown, Fernandez, Blanco, Schneier, and Liebowitz (2011) examined the validity of the SIAS and the Brief Fear of Negative Evaluation scale. They reported that reverse-scored items decreased the overall validity of the scales.

Regarding the present study, the researcher cannot conclude the reverse-scored items are problematic. It is only suggested that additional research be conducted to assess whether or not the reverse-scored items contribute to the *3DWS-Form C's* ability to measure worldview components. If eliminating the reverse-scored items does not diminish the effectiveness of the scale or allows for more interpretability of the components, then removing them should be considered (Rodebaugh et al., 2007). Based on the aforementioned findings, the researcher's recommendations for rejecting or failing to reject the three null hypotheses of this study are stated below.

Research Hypothesis One

H₀₁: There is no specific underlying factor structure of the three-dimensional worldview survey. The underlying factor structure is not consistent with previous research.

Based on the findings, the researcher rejected the first null hypothesis. A three-component structure is present, and the underlying factor structure appears similar to previous research.

Research Hypothesis Two

H₀₂: The three-dimensional worldview survey is not a valid instrument for measuring propositional beliefs, behavioral patterns, and heart-orientation in Christian college students.

Based on the results, the researcher rejected the second null hypothesis. Principal components analysis demonstrated that the *3DWS-Form C* has good construct validity. However, even though components were similar to previous research, item loadings were not.

Research Hypothesis Three

H₀₃: The three-dimensional worldview survey does not show good internal reliability.

The researcher rejected the third null hypothesis on the basis of the study's reliability statistics. The Cronbach's alpha composite for the instrument was .785; component 1 was .923; component 2 was .860, and component 3 was .647. The alpha for component 3 was the only one that did not meet the suggested value of .70 (Nunnally, 1978). The Spearman-Brown coefficient of .694 also established the internal reliability of the instrument.

Suggestions for Refining the *3DWS-Form C*

Based on findings, several suggestions are offered to refine the instrument. The first suggestion is to consider and quantify how the component of "heart-orientation" can be accurately measured. For instance, which types of survey questions would lead respondents to disclose the motivation behind their behaviors and worldview presuppositions? The second suggestion is to further examine the practice of reverse scoring and its affect on overall validity. Because current research has demonstrated that some scales perform better without the use of reverse-scored items (Rodebaugh et al., 2007; Rodebaugh et al., 2011), further investigation is warranted to assess if reverse-scored items are negatively affecting the total performance of the *3DWS-Form C*.

Implications and Discussion

Theoretical Implications

Fowler's Faith Development Theory (FDT) has been the most significant model of religious/spiritual development within the last 30 years; it has influenced developmental psychology, religious education, and pastoral care (Parker, 2006). Nevertheless, as the FDT is

not specific to or descriptive of specific faiths, the literature has indicated that this theory is not wholly adequate to assess faith development in a distinctly Christian context (Heywood, 2008; Parker, 2006).

In fact, the literature has demonstrated the FDT is continually met with substantial criticism and a myriad of questions exist that challenge its insufficiency in Christian circles (Heywood, 2008; Parker, 2006; Streib, 2001). As presented by Heywood (2008), the FDT has irreconcilable flaws and consequently is a ‘paradigm reaching the end of its life’ (p. 270). Heywood (2008) and Parker (2011) also claimed that implementing FDT in Christian education and counseling would be problematic due to Fowler’s (1981) universal definition of faith.

Fowler (1981) defined faith as the “universal quality of human meaning-making” (p. 31), and according to Coyle (2011), Fowler interprets faith as the underlying meaning-making process for all people, regardless of their spiritual beliefs. Fowler (1981) posited that faith occurs when individuals place personal trust and loyalty in one or more center of values, such as family, religion, money, and power. This is problematic for Christian counseling and education not only because Christianity requires a person’s faith to be placed solely in Jesus Christ, but also because Christianity is a “content-requisite faith” (Jones, 2004, p. 352). For example, Christian faith is dependent upon the existence of God, the premise that God raised Jesus from the dead, the conviction that Jesus is the Messiah, and other doctrines, which are absent in the FDT (Jones, 2004). Embracing non-biblical doctrines or simultaneously practicing other faiths is viewed in Scripture as idolatry (Avery, 1990), which God specifically denounced in Exodus 20:3, “You shall have no other gods before Me.”

Pluralism is another concern with the FDT in Christian circles. According to Heywood (2008), the FDT “is both implicitly and explicitly pluralistic” (p. 27); pluralism is the only

logical outcome of the FDT. The Bible contrasts those who place their faith in family, religion, money, and power, and those who place their faith in the God of the Bible. For example, Psalm 20:7 stated, “Some trust in chariots and some in horses: but we (Christians) trust in the name of the LORD our God” (Psa. 20:7; NIV). First Chronicles 16:26 declared, “For all the gods of the people are idols” (KJV).

Based on the FDT’s structural approach that eliminates God, the grace of God, and the power of the Holy Spirit, Fowler’s (1981) understanding of the Christian faith is incomplete (Heywood, 2008). This is repeatedly observed in the FDT as Fowler (1981) continually attempted to include a monotheistic faith, such as Christianity, in a universal setting.

In Luke 11:23 Jesus testified, “He who is not with Me is against Me, and he who does not gather with Me scatters.” Jesus also declared, “I am the way, the truth, and the life. No one comes to the Father except through Me” (John 14:6, NKJV). There is no room in these verses to interpret Christianity as a universal or a pluralistic faith. If Fowler truly believed Jesus’ claim, “I am the way, the truth, and the life: no man cometh unto the Father, but by Me” (John 14:6), he would be passionate about leading people of all faiths to the cross of Christ and salvation through the blood of Jesus Christ. Instead, his FDT is built upon a universal definition of “faith” and encourages a false eternal hope while presenting a deceptive assessment of one’s spiritual life.

The universal acceptance of Fowler’s (1981) FDT is only an acceptable academic exercise to assess one’s faith development as long as that faith is not Christianity or another content-requisite faith. However, some components of the FDT may be extracted from the theory without doctrinal resistance to support specific characteristics of the Christian faith. For example, Fowler’s (1981) assertion that peoples’ behaviors are dependent upon their beliefs is consistent with the biblical principle: “For as he thinketh in his heart, so is he” (Pro. 23:7, KJV).

This component of the FDT was used in this research to support the hypothesized behavioral dimension of a person's worldview.

As previously discussed by Fowler (1981), Spaulding, (2009), and Valk (2007), a person's behavior is theorized to reflect that person's beliefs. The Bible teaches that God has never revoked man's free will so that man may choose Him over the competing philosophies of this world. In Joshua 24:14, the people were commanded to "choose this day" whom they would serve. This indicates that God would not force these people to turn from their idolatry, even though 2 Peter 3:9 states that God is "not willing that any should perish but that all should come to repentance." As was declared in times past, serving multiple gods or having various faiths was not and is not an option for people who profess Christianity. Hence, the necessity of professing Jesus Christ as Lord to the exclusion of all other gods/faiths makes Christianity and the entirety of the FDT incompatible in a Christian context.

Finally, because Fowler's (1981) FDT was not developed specifically for the Christian faith, criticisms of his theory when used in a Christian context were not unanticipated. Although a primary criticism of the FDT was Fowler's (1981) universal definition of "faith" (Heywood, 2008), one aspect of universalism is consistent with Christianity: the universal sinfulness of man. According to the Bible, "All have sinned and fall short of the glory of God" (Rom. 3:23), and ". . . the wages of sin is death, but the gift of God is eternal life in Christ Jesus our Lord" (Rom 6:23). Understanding that the Christian faith cannot be categorized as a universal faith is of paramount importance for Christians when deciding which, if any, facet of the FDT can be successfully implemented in Christian settings.

To address all the criticisms of the FDT in this manuscript is not possible, nor is it the focus of this research. However, specific concerns with the FDT as related to the validation of the *3DWS-Form C* will be addressed below, as well as how this research has informed the FDT.

As discussed in chapter one, the FDT was chosen as the theoretical framework for this research for two reasons. First, Fowler's (1981) theory attempted to aptly describe the general phenomenon of faith development during the adolescent and young adult years, which was the target population for this research. Second, the FDT suggested that faith must be measured on a behavioral scale. Fowler (2004) advocated that when evaluating faith development, one must be committed to observing a person's commitments in everyday life. Fowler's (1981) FDT hypothesized that a person's behavior will indicate what that person believes to be true.

Since one purpose of this study was to measure a hypothesized worldview behavior component of Christian university students, this study is distinctly Christian and has theoretical implications. First, the study's findings demonstrated that 18-19 year olds are capable of possessing theological convictions consistent with Scripture. This is observed in items with high loadings on component one such as: "The best source for determining if something is morally right or wrong is the Bible" (item 34), "The Bible is true in all its teachings" (item 41), and "God is one God who exists in three persons: Father, Son, and Holy Spirit" (item 45). Fowler's (1981) Individuative-Reflective, stage four, faith theorized that faith-based convictions are observable in the lives of people beginning in their early twenties. Findings from this study indicated that respondents' propositional convictions were consistent with Fowler's (1981) stage four description. According to Fowler (1981), preceding stage four young adults may have had an uncritical acceptance of varying belief systems but now possess the ability to use logical reasoning when defining their own value system. However, during stage four young adults begin

to assume responsibility for their own values, beliefs, commitments, attitudes, and lifestyles (Fowler, 1981). The first Biblical Worldview course the participants were enrolled in or had completed at the time of the study was developed to teach students how to think critically about contemporary moral philosophies while exposing the fallacies of moral relativism. This course also emphasized the importance of believing absolute truth exists. This objective appeared to be realized as several items (29, 34, 40, 41, 45, and 46) had “excellent” loadings on component three and thus demonstrated some students do believe in absolute truth.

Next, component two demonstrated 16 out of 47 items had some sort of behavioral focus. As Fowler’s (1981) theory speculated, behavior is a manifestation of what one believes, which might account for the seven out of 16 “excellent” and “very good” item loadings on this component. Although knowing if respondents actually behave consistently with their responses is impossible, realizing that they are aware of biblically appropriate behavior is reassuring. In the second Biblical Worldview class students were encouraged to understand all moral issues in light of a biblical worldview and respond accordingly. Again, with a number of respectable item loadings on a behavioral type component, the biblical worldview instruction at the research site appeared to be successful in accomplishing its spiritual formation objectives.

Practical Implications

Any validated worldview instrument is potentially valuable to Christian colleges and universities. As educators more fully understand the worldview presuppositions of their incoming students, they can more effectively structure their classes and develop curricula to promote an expected outcome (Hartley, 2004). Educators and textbook developers can more pointedly align educational and spiritual formation objectives to accomplish their organization’s mission.

Assumptions and Limitations

The following are the assumptions and limitations associated with this study. The assumptions are in alignment with the study that developed the *3DWS* in 2010.

Assumptions

This research was constructed on four assumptions. First, the researcher assumed the truth of historical Protestant Evangelical Christianity, including the inerrancy of the Bible. Next, the researcher assumed the possibility of measuring, to some degree, worldview. The researcher also assumed the sample of undergraduate Christian university students answered each item truthfully. Finally, the researcher assumed participants could comprehend the survey items, and the terminology used in the *3DWS-Form C* was not a hindrance to their understanding.

Limitations

Several limitations existed within this study. Predominantly was the limitation of researcher bias. According to Sire (2004), worldview is dependent upon who defines it. Even though the researcher had no control over the questions in the survey, the interpretation of the results and recommendations for future research was affected by the researcher's protestant evangelical Christianity. The researcher's background consists of participating over 22 years in a mainline non-denominational church with the last 16 years as a senior pastor's wife. The researcher is a biblical counselor, Bible teacher, and retreat/conference speaker. Additionally, the researcher has been involved in Christian education for the last 17 years and Christian higher education for the last 3 years.

Instrumentation limitations included non-ignorable and non-response (Gall et al., 2010). The researcher addressed the non-ignorable limitation by requiring a response for every item when creating the online version of the *3DWS-Form C* in Survey Monkey. However, the

researcher had no control over non-response. An option to exit the survey was available for students who did not desire to finish, and the researcher retained no record of responses or participation.

The generalizability of the results (Rovai et al., 2013) was another limitation. The target population for this research was first-year students attending a Christian university and enrolled in a biblical worldview course during the spring 2013 semester. Therefore, results are only generalizable to a similar population (Gall et al., 2010).

The content of the biblical worldview courses was another limitation of this study. Students were exposed to the tenets of a committed biblical worldview for the entire semester and thus had time to reconsider the worldview presuppositions they possessed at the beginning of the year. This is a limitation as the instructional content of the worldview courses might have prevented findings from capturing the worldview presuppositions of students prior to worldview instruction.

A self-report bias by participants may have been another limitation of this study, as some respondents could have been self-deceived regarding their worldview presuppositions and unable to answer accurately. The researcher had no control over or ability to minimize this limitation.

Untruthful answers by respondents may have been another limitation of this study. To minimize this limitation, the researcher conducted the study in an online and anonymous format as suggested in the literature (Wright & Schwager, 2008). Other limitations may have included various intervening factors such as participants' intelligence, attitude, or authority-pleasing responses limitations (Schultz, 2013).

Recommendations for Further Research

To gain a clearer understanding of Christian university students' worldview presuppositions, the researcher suggests a longitudinal study for Christian universities that uses a similar instrument to measure the worldview commitment of first semester freshmen and last semester seniors. If a university claims it is sending its students out into the world with a committed biblical worldview, a study of this nature is a prerequisite to making that claim.

Researching how to accurately identify and measure the hypothesized heart-orientation component of worldview is another recommendation for future research. It is necessary to confirm which types of questions will lead respondents to disclose the motivation behind their behavior.

Another recommendation is to confirm which component items measure. Since statistics indicated the scale could be improved if 29 items were removed, there is reason to believe that many questions were not easily understood or measured more than one component.

Further research might also include studying the advantages and disadvantages of reverse scoring. This investigation could assess the possible impact of reverse-scored items on total scores and subscales in addition to exploring the reverse-scored items' ability to either positively or negatively affect the validity of worldview instruments.

The researcher's next suggestion is to administer a worldview survey to students who have never been exposed to worldview instruction and who are in their first semester of college. Results from this study were mostly consistent with students who had completed either one or two semesters of biblical worldview instruction at a Christian university. It was impossible to discern how much spiritual growth occurred in this sample of students from the beginning of the fall semester to the end of the spring semester while being enrolled in a biblical worldview

course. Finally, investigating the worldview commitment of first-year students enrolled in various academic disciplines at a Christian university would fill a gap in the literature.

Conclusion

The purpose of this study was to examine the structure, validity, and reliability of the *3DWS-Form C*. Results indicated a three-factor structure was present in the 47-item instrument, and the underlying factor structure appeared similar to previous research. Principal components analysis demonstrated the *3DWS-Form C* had good construct validity, and components were similar to previous research; although, item loadings were not. Cronbach's alpha and the Spearman-Brown prophecy formula indicated good internal reliability for the 47-item instrument. Further investigation is warranted in the areas of identifying and measuring the hypothesized heart-orientation component of worldview, as well as the impact of reverse-scored items on worldview instruments.

REFERENCES

- Abelman, R., & Dalessandro, A. (2009). Institutional vision in Christian higher education: a comparison of ACCU, ELCA, and CCCU institutions. *Journal Of Research On Christian Education, 18*(1), 84-119.
- Adler, N. (2007). Faith and reason on campus. *Liberal Education, 93*(2), 20-27.
- Ary, D., Jacobs, L. C., Razavieh, A., & Sorensen, C. (2006). *Introduction to research in education* (7th ed.). Belmont, CA: Thomson Higher Education.
- Avery, W. O., (1990). A Lutheran examines James W. Fowler. *Religious Education, 85*(1), 69-83.
- Azusa Pacific University. (2012). Program goals. Retrieved from <http://www.apu.edu/aps/mlosonline/about/goals/>
- Barnes, M., Doyle, D., & Johnson, B. (1989). The formulation of a Fowler scale: An empirical assessment among Catholics. *Review of Religious Research, 30*, 412-420.
- Bartlett, M. S. (1954). A note on the multiplying factors for various chi square approximations. *Journal of the Royal Statistical Society, 16*(Series B), 296-8.
- Batson, D. D., Schoenrade, P. A., & Ventis, L. W. (1993). *Religion and the individual*. New York: Oxford University Press.
- Beaudoin, B. (2009). How the Internet influences our worldview of ethnic representation. *International Journal Of Diversity In Organisations, Communities & Nations, 9*(4), 55-69.
- Biola University. (2011a). Mission, Vision, & Values. Retrieved from <http://www.biola.edu/about/mission/>

- Biola University. (2011b). University goals. Retrieved from <https://www.biola.edu/about/mission/goals/>
- Brandon, K. J. (2009). Know my voice: Emerging worldviews and the mission of Lutheran Christian higher education. *Lutheran Education, 142*(3), 181-190.
- Brock, S. E. (2010). Measuring the importance of precursor steps to transformative learning. *Adult Education Quarterly, 60*(2), 122-142.
- Brown, J. D. (2001). Can we use the Spearman-Brown prophecy formula to defend low reliability? *Shiken: JALT Testing & Evaluation SIG Newsletter, 4*(3), 7-11.
- Brown, J. D. (2009). Choosing the right type of rotation in PCA and EFA. *Shiken: JALT Testing & Evaluation SIG Newsletter, 13*(3), 20-25.
- Brown University. (2012). About Brown university. Retrieved from <http://www.brown.edu/about>
- Brown, W. E. (2004). *Thinking worldviewishly* [Electronic version]. Cedarville Torch, 26(1), 4-7.
- Bryant, A. (2011a). Ecumenical worldview development by gender, race, and worldview: A multiple-group analysis of model invariance. *Research In Higher Education, 52*(5), 460-479. doi:10.1007/s11162-010-9206-z
- Bryant, A. (2011b). The impact of campus context, college encounters, and religious/spiritual struggle on ecumenical worldview development. *Research In Higher Education, 52*(5), 441-459.
- Bryant, A. N., & Astin, H. S. (2008). The correlates of spiritual struggle during the college years. *Journal Of Higher Education, 79*(1), 1-27.

- Bryant, A. N., & Craft, C. M. (2010). The challenge and promise of pluralism: Dimensions of spiritual climate and diversity at a Lutheran College. *Christian Higher Education, 9*(5), 396-422.
- Burtchaell, J. T. (1998). *The dying of the light: The disengagement of colleges and universities from their Christian churches*. Grand Rapids, MI: Eerdmans.
- Catell, R. B. (1966). "The scree test for the number of factors." *Multivariate Behavioral Research, 1*, 245-276.
- Chickering, A. W., & Reisser, L. (1993). *Education and identity* (2nd ed.). San Francisco: Jossey-Bass.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cohen, J. (1992). Statistical power analysis. *Current directions in psychological science, 1*(3), 98-101.
- Coll, J. E., & Draves, P. R. (2008). An examination of the relationship between optimism and worldview among university students. *College Student Journal, 42*(2), 395-401.
- Columbia University (2012). History. Retrieved from <http://www.columbia.edu/history>
- Cooling, T. (2010). Transforming faith: Teaching as a Christian vocation in a secular, worldview-diverse culture. *Journal of Education & Christian Belief, 14*(1), 19-32.
- Council for Christian Colleges & Universities (CCCU). (2008). Membership and Application. Retrieved from www.cccu.org
- Cox, W. F., Hameloth, N. J., & Talbot, D. P. (2007). Biblical fidelity of Christian school textbooks. *Journal of Research on Christian Education, 16*, 181-210.

- Coyle, A. (2011). Critical responses to faith development theory: A useful agenda for change? *Archive for the Psychology of Religion*, 33(3), 412-420.
- Dartmouth. (2012). About research at Dartmouth. Retrieved from <http://www.dartmouth.edu/home/research/about.html>
- De Vaus, D. (2002). *Survey's in social research* (5th ed.). London: Routledge.
- Deckard, S. (1998). *Creation Worldview Test* (Version CWT-01). Lexington, KY: Nehemiah Institute, Inc.
- Deckard, S. & Sobko G. M. (1998). *Toward the development of an instrument for measuring a Christian creationist worldview*. Retrieved from <http://static.icr.org/i/pdf/technical/Toward-the-Development-of-an-Instrument-for-Measuring-a-Christian-Creationist-Worldview.pdf>
- Evans, A. (2010). Matters of the heart: Orality, story and cultural transformation-the critical role of storytelling in affecting worldview. *Missiology*, 38(2), 185-199.
- Field, A. (2013). *Discovering statistics using SPSS* (3rd ed.). Thousand Oaks, CA: SAGE Publications Inc.
- Fowler, J. W. (2000). *Becoming adult, becoming Christian: Adult development & Christian faith*. San Francisco, CA: Jossey-Bass.
- Fowler, J. W. (1981). *Stages of faith: The psychology of human development and the quest for meaning*. New york, NY: Harper Collins.
- Fowler, J. W. (2004). Faith development at 30: Naming the challenges of faith in a new millennium. *Religious Education*, 99(4), 405-421.

- Francis, L. J., & Pocock, N. (2007). Assessing religious maturity: The development of a short form of the Religious Status Inventory (RSInv-S10). *Journal Of Empirical Theology*, 20(2), 179-199.
- Frye, S. (2007). Religious education and faith challenges in the college classroom. *Adult Learning*, 18(1/2), 12-14.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2010). *Educational research: An introduction* (8th ed.). New York, NY: Allyn & Bacon.
- George, D. & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference* (4th ed.). Boston, MA: Allyn and Bacon.
- Glazner, P. L., & Talbert, T. (2005). The impact and implications of faith or worldview in the classroom. *Journal of Research in Character Education*, 3(1), 25-42.
- Gorsuch, R. L. (1983). *Factor analysis*. Hillsdale, NJ: Lawrence Erlbaum.
- Green, C. W., & Hoffman, C. L. (1989). Stages of faith and perceptions of similar and dissimilar others. *Review of Religious Research*, 30(3), 246-254.
- Gushee, D. P. (2002). Christian worldview, ethics, and culture. In D. S. Dockery, & G. A. Thornbury (Eds.), *Shaping a Christian worldview: The foundations of Christian higher education* (pp. 109-126). Nashville, TN: Broadman & Holman Publishers.
- Hall, T. W., & Edwards, K. J. (1996). The initial development and factor analysis of the spiritual assessment inventory. *Journal of Psychology and Theology*, 24, 233–246.
- Hall, T. W., & Edwards, K. J. (2002). The spiritual assessment inventory: A theistic model and measure for assessing spiritual development. *Journal for the Scientific Study of Religion*, 41, 341–357.

- Hartley, H. (2004). How college Affects students' religious faith and practice: A review of research. *College Student Affairs Journal*, 23(2), 111-129.
- Harvard Graduate Christian Community. (2012). About our shield and logo. Retrieved from <http://www.hcs.harvard.edu/~gsascf/shield.html>
- Harvard University. (2012a). About Harvard. Retrieved from <http://www.harvard.edu/about-harvard>
- Harvard University. (2012b). Frequently asked questions. Retrieved from <http://www.harvard.edu/faqs/mission-statement>
- Henderson, T., Deckard, S., & DeWitt, D. A. (2003, April). *Impact of a young-earth creationist apologetics course on student worldview creation*. Retrieved from <http://www.answersingenesis.org/ti/v17/il/apologetics.asp>
- Heywood, D. (2008). Faith development theory: A case for paradigm change. *Journal of Beliefs and Values*, 29(3), 263-272.
- Higher Education Research Institute (HERI). (2012). Your first year college survey. Retrieved from <http://www.heri.ucla.edu/yfcyoverview.php>
- Holcomb, G. L., & Nonneman, A. J. (2004). Faithful change: Exploring and assessing faith development in Christian liberal arts undergraduates. In J. C. Dalton, T. R. Russell, & S. Kline (Eds.). *Assessing character outcomes in college* (New Directions for Institutional Research No. 122, pp. 93-103. San Francisco: Jossey-Bass.
- Holland, B. A. (1999). From murky to meaningful: The role of mission in institutional change. In R. G. Bringle, R. Games, and E. A. Malloy (Eds.), *Colleges and universities as citizens* (pp. 48-73). Needham, MA: Allyn and Bacon.
- Howse, B. S. (n.d.). *Worldview Weekend*. Retrieved from www.worldviewweekend.com

- Hughes, R. T., & Adrian, W. B. (1997). (Eds.) *Models for Christian higher education: Strategies for survival and success in the twenty-first century*. Grand Rapids, MI: William B. Eerdmans.
- Iselin, D., & Meteyard, J. D. (2010). The “Beyond in the midst”: An incarnational response to the dynamic dance of Christian worldview, faith and learning. *Journal of Education & Christian Belief, 14*(1), 33-46.
- Janoff-Bulman, R. (1989). Assumptive worlds and the trace of traumatic events: Applications of the schema construct. *Social Cognition, 7*(2), 113-36.
- Jones, T. (2004). The basis of James W. Fowler’s understanding of faith in the research of Wilfred Cantwell Smith: An examination from an evangelical perspective. *Religious Education, 99*(4), 345-357.
- Kaiser, H. (1974). An index of factorial simplicity. *Psychometrika, 39*, 31-6.
- Kanitz, L. (2005). Improving Christian worldview pedagogy: Going beyond mere Christianity. *Christian Higher Education, 4*(2), 99-108.
- Kim, D., McCalman, D., & Fisher, D. (2012). The sacred/secular divide and the Christian worldview. *J Bus Ethics, 109*, 203-208.
- Leak, G. K., Loucks, A. A., & Bowlin, P. (1999). Development and initial validation of an objective measure of faith development. *The International Journal for the Psychology of Religion, 9*(2), 105-124.
- Liberty University. (2013a). About LU. Retrieved from <https://www.liberty.edu/aboutliberty/>
- Liberty University. (2013b). Faith learning integration. Retrieved from <http://www.liberty.edu/academics/cte/index.cfm?PID=25719>

- Lindholm, J. (2004). The role of faculty in college students' spirituality. *Journal of College and Character, 1*(no. page nos.). [e-journal].
- Litwin, M. S. (2003). *How to assess and interpret survey psychometrics* (2nd ed.). (A. Fink, Ed.) Thousand Oaks, CA: Sage Publications.
- Marsden, G. M. (1994). *The soul of the American university: From Protestant establishment to established nonbelief*. New York: Oxford University Press.
- Marsden, G. M. (1997). *The outrageous idea of Christian scholarship*. New York: Oxford University Press.
- Matthias, L. R. (2008). Professors who walk humbly with their God: Exemplars in the integration of faith and learning at Wheaton College. *Journal of Education & Christian Belief, 12*(2), 145-157.
- McDargh, J. (2001). Faith development theory and the postmodern problem of foundation. *The International Journal for the Psychology of Religion, 11*(3), 185-199.
- Mercer, J. A. (2006). Transformational adult learning in congregations. *Journal of Adult Theological Education, 3*(2), 163-178.
- Mezirow, J. (1994). Understanding transformation theory. *Adult Education Quarterly Summer, 46*, 222-232.
- National Center for Postsecondary Improvement. (2003). Inventory of Higher Education Assessment Instruments. Retrieved from http://www.stanford.edu/group/ncpi/unspecified/assessment_states/instruments.html#institutionalEffectiveness
- Naugle, D. K. (2002). *Worldview: The history of a concept*. Grand Rapids, MI: William B. Eerdmans Publishing Company.

- Nehemiah Institute, Inc. (2006). *PEERS-II Test: Christianity and culture assessment*.
Lexington, KY: Nehemiah Institute, Inc.
- Nehemiah Institute, Inc. (2012). *PEERS Testing*. Retrieved from
<http://www.nehemiahinstitute.com/peers.php>
- Nelson, C. E., & Aleshire, D. (1986). *Research in faith development*. In C. Dykstra & S. Parks (Eds.). *Faith Development and Fowler* (pp. 180-201). Birmingham, AL: Religious Education Press.
- Newbigin, L. (1995). *Proper confidence: Faith, doubt, and certainty in Christian discipleship*. Grand Rapids, MI: William Eerdmans Publishing Company.
- Nieli, R. K. (2007). From Christian gentleman to bewildered seeker: The transformation of American higher education. *Academic Questions*, 20(4), 311-331.
- Noll, M. A. (1994). *The scandal of the evangelical mind*. Grand Rapids, MI: Eerdmans
- Nunnally, J. O. (1978). *Psychometric theory*. New York: McGraw-Hill.
- Obama, Barack. (28 June 2006). “ ‘Call to Renewal’ Keynote Address.” Retrieved from
<http://www.factcheck.org/2008/08/obama-and-the-christian-nation-quote/>
- Ochs, C. (2009). Co-creating my worldview. *Cross Currents*, 59(4), 457-466.
- Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS 4th edition*. [Kindle version]. Berkshire, England: Open University Press.
- Parker, S. (2006). Measuring faith development. *Journal of Psychology and Theology*, 34(4), 337-348.
- Parker, S. (2011). Spirituality in counseling: A faith development perspective. *Journal of Counseling and Development*, 89(1), 112.

- Pargament, K. I. (2008). Spiritual struggles as a fork in the road to growth or decline. *Plain Views*, 4(24), 1-85.
- Pearcey, N. R. (2004). *Total truth*. Wheaton, Ill.: Crossway Books.
- Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design, & analysis: An integrated approach*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc. Publishers.
- Pianalto, M. (2011). Moral conviction. *Journal of Applied Philosophy*, 28(4), 381-395.
- Poe, H. L. (2004). *Christianity in the academy*. Grand Rapids, MI: Baker Academy.
- Princeton University. (2012). About Princeton: An overview. Retrieved from <http://www.princeton.edu/main/about/>
- Puffer, K. (2008). Religious doubt and identity formation: Salient predictors of adolescent religious doubt. *Journal of Psychology & Theology*, 36(4), 270-284.
- Purdom, G. (2011). "Harvard: Truth no longer truth for Christ and the Church." *Answers Outreach*. Retrieved from <http://blogs.answersingenesis.org/blogs/georgia-purdom/2011/10/11/harvard-no-longer-truth-for-christ-and-the-church/>
- Radecke, M. W. (2007). Service-learning and faith formation. *Journal of College & Character*, 8(5), 1-28.
- Railsback, G. (2006). Faith commitment of born-again students at secular and evangelical colleges. *Journal Of Research On Christian Education*, 15(1), 39-60.
- Ray, B. D. (1995). An evaluation of the validity and reliability of the PEERS Test. Lexington: Nehemiah Institute, Inc.
- Regent University. (2013a). A transformational and holistic approach to learning and life. Retrieved from <http://www.regent.edu/acad/undergrad/academics/>

- Regent University. (2013b). General education: Core curriculum requirements. Retrieved from http://www.regent.edu/acad/undergrad/academics/degree/general_education/
- Reimer, S. (2010). Higher education and theological liberalism: Revisiting the old issue. *Sociology of Religion, 71*(4), 393-408.
- Rhea, R. (2011). Exploring spiritual formation in the Christian academy: The dialects of church, culture, and the larger integrative task. *Journal Of Psychology & Theology, 39*(1), 3-15.
- Rodebaugh, R. L., Heimberg, R. G., Brown, P. J., Fernandez, K. C., Blanco, C. Schneier, F. R., & Liebowitz, M. R. (2011). More reasons to be straightforward: Findings and norms for two scales relevant to social anxiety. *Journal of Anxiety Disorders, 25*(5), 623-630.
- Rodebaugh, T. L., Woods, C. M., & Heimberg, R. G. (2007). The reverse of social anxiety is not always the opposite: The reverse-scored items of the social interaction anxiety scale do not belong. *Behavior Therapy, 18*(2), 192-206.
- Rovai, A. P., Baker, J. D., & Ponton, M. K. (2013). *Social science research design and statistics: A practitioner's guide to research methods and SPSS analysis*. [Kindle edition]. Chesapeake, VA: Watertree Press, LLC.
- Rutgers. (2012). Who we are. Retrieved from <http://www.rutgers.edu/about-rutgers/who-we-are>
- Salleh, A., Ahamd, A., & Kumar, N. (2009). (Re)Integrating spirituality into higher education. *Journal Of US-China Public Administration, 6*(5), 61-69.
- Sandin, R. T. (1982). The search for excellence: The Christian college in an age of educational competition. Macon, GA: Mercer University Press.
- Schaeffer, R. (2004). Service-learning in Christian higher education: Bringing our mission to life. *Christian Higher Education, 3*(2), 127-145.

- Schultz, K. (2013). *Developing an instrument for assessing student biblical worldview in Christian K-12 education*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3534997)
- Schultz, K. G., & Swezey, J. A. ([2011, April 11]). [A Three-Dimensional Concept of Worldview.] Paper presented at the 2011 annual meeting of the American Educational Research Association. Retrieved from the AERA Online Paper Repository.
- Sire, J. W. (2004). *Naming the elephant: Worldview as a concept*. Downer's Grove, IL: InterVarsity Press.
- Smith, W. C. (1977). *Belief and history*. Charlottesville, VA: University Press of Virginia.
- Smithwick, D. (2008). *Where are we going?* Retrieved from <http://www.nehemiahinstitute.com/articles/index.php/index.php?action=show&id=35>
- Spaulding, M. (2009). Perceptions of academic honesty in online vs. face-to-face classrooms. *Journal of Interactive Online Learning*, 8(3), 183-198.
- Speck, B. W. (2005). What is spirituality? *New Directions For Teaching & Learning*, (104), 3-13.
- Stevens, J. (1996). *Applied multivariate statistics for the social sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Stewart, D. L., Kocet, M. M., Lobdell, S. (2011). The multifaith campus: Transforming colleges and universities for spiritual engagement. *About Campus*, 16(1), 10-18.
- Streib, H. (2001). Faith development theory revisited: The religious styles perspective. *The international Journal for the Psychology of Religion*, 11(3), 143-158.
- Strong's exhaustive concordance of the Bible: Updated and expanded edition*. (2007). Peabody, Massachusetts: Hendrickson Publishers, Inc.

- Tabachnick, B. G. & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education.
- The Master's College. (2011). Mission statement. Retrieved from <http://www.masters.edu/abouttmc/>
- Thiessen, E. J. (2007). Refining the conversation: some concerns about contemporary trends in thinking about worldviews, Christian scholarship and higher education. *Evangelical Quarterly*, 79(2), 133-152.
- University of Pennsylvania. (2012). Research. Retrieved from <http://www.upenn.edu/researchdir/>
- Valk, J. (2007). Plural public schooling: religion, worldviews and moral education. *British Journal of Religious Education*, 29(3), 273-285. .
- Vanhoozer, J. J., Anderson, C. A, & Sleasman, M. J. (Eds.). (2007). *Everyday theology: How to read cultural texts and interpret trends*. Grand Rapids: Baker Academic.
- Walsh, B. J., & Middleton, J. R. (1984). *The transforming vision: Shaping a Christian world view*. Downers Grove: InterVarsity.
- Watson, J. E. (2007). Integrating a biblical worldview into Bible college teacher education programs. *Christian Higher Education*, 6(5), 357-369.
- Webb, M., & Whitmer, K. (2001). Abuse history, world assumptions, and religious problem solving. *Journal For The Scientific Study Of Religion*, 40(3), 445-453.
- Willard, D. (2002). *Renovation of the heart: Putting on the character of Christ*. Colorado Springs, CO: NavPress.
- William and Mary College. (2012). Research and scholarship. Retrieved from <http://www.wm.edu/research/index.php>

- Wineland, R. K. (2005). Incarnation, image, and story: Toward a postmodern orthodoxy for Christian educators. *Journal of Research on Christian Education, 14*(1), 7-16.
- Wolf, S. M. (2011). The shaping of a professional worldview in the classroom: A Christian psychology project. *Journal Of Psychology & Christianity, 30*(4), 329-338.
- Wood, M. K. (2008). *A study of the Biblical worldview of K-12 Christian school educators*. (Doctoral dissertation). Liberty University, Lynchburg, VA. (UMI 33330608)
- Woodson, S. K. (2010). *Cura personalis in online undergraduate Christian higher education*. (Doctoral dissertation). Capella University. ProQuest LLC.
- Wright, B. & Schwager, P. H. (2008). Online survey research: Can response factors be improved? *Journal of Internet Commerce, 7*(2), 1-17.
- Wuthnow, R. (2007). *After the baby boomers: How twenty- and thirty-somethings are shaping the future of America religion*. Princeton, NJ: Princeton University Press.
- Yale University. (2013a). About Yale: President's welcome. Retrieved from <http://www.yale.edu/about/president.html>
- Yale University. (2013b). About Yale: History. Retrieved from <http://www.yale.edu/about/history.html>
- Yount, W. R. (2010). *Created to learn*. Nashville, TN: B&H Publishing Group.
- Yount, W. R. (2012). The role of scripture in Christian education, session II: Christian education as scriptural life. *Christian Education Journal, 9*S53-S65.

APPENDIX A

Three Dimensional Worldview Survey – Form C (3DWS-Form C); © 2013 Katherine G. Schultz,
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Item No. Content (*3DWS-Form C*)

- 01 History is a random series of events.
- 02 There is a constant spiritual battle between the forces of good and the forces of evil.
- 03 Jesus Christ physically rose from the dead.
- 04 If confronted with a moral dilemma, I figure it out by discovering what will help the most people.
- 05 The Holy Spirit is a symbol of God's presence rather than a living being.
- 06 We can interpret current events as expressions of God's will.
- 07 Jesus Christ is important in my life today.
- 08 The best source for determining if something is morally right or wrong is the law of the land.
- 09 The Bible is more like a good story that teaches moral lessons than a historic record of real people and events.
- 10 A person can earn eternal salvation by being good, for example by doing good things for other people.
- 11 God created everything.
- 12 I am the one who ultimately determines what is right or wrong for me.
- 13 There is no way to decide which of the many competing worldviews is true.

- 14 All medical research that promotes our knowledge of science is valuable,
especially if it results in future medical advances that benefit people.
- 15 Sexual behavior outside marriage is wrong.
- 16 Every life has value, whether unborn, disabled, sickly, or in any other way
limited.
- 17 Muslims, Christians, Jews, and all other people pray to the same God, even
though they use different names for their God.
- 18 Two people could define truth in conflicting ways and both still be correct.
- 19 If people will only work hard enough, their cooperation could result in a
perfect society.
- 20 I can know what is morally right and wrong for other people.
- 21 Entertainment has great power to captivate the imagination, and should
therefore be treated with great respect and thought.
- 22 If someone wrongs me, then I will want to get even.
- 23 The Bible is true because I believe it.
- 24 A well-run government can solve all problems.
- 25 I can tell if something is morally right by whether or not it works in my life.
- 26 I am waiting to have sex until I am married, no matter what.
- 27 People are not morally responsible for their actions if they are so poor that
the only way for them to eat is to steal.
- 28 The meaning of words depends on each reader's interpretation.
- 29 I have made a personal commitment to Jesus Christ.
- 30 Most people are basically good.

- 31 God is a personal being.
- 32 Everything belongs to God: for example, my computer, my phone, my clothes.
- 33 Medical treatment should be given based on who would bring the greatest benefit to society.
- 34 The best source for determining if something is morally right or wrong is the Bible.
- 35 God is important primarily because faith in Him makes us more civilized and psychologically healthy.
- 36 I would marry someone of another faith if I were in love.
- 37 Every woman should have a right to abort her fetus.
- 38 All cultures are morally equal.
- 39 I believe that when I die I will go to Heaven because I have been a good person.
- 40 God is actively involved in the universe today.
- 41 The Bible is true in all its teachings.
- 42 I feel that no one has the right to tell me what to do.
- 43 The devil is a symbol of evil rather than a living being.
- 44 I believe that when I die I will go to Heaven because I have been going to church pretty much all my life.
- 45 God is one God who exists in three persons: Father, Son, and Holy Spirit.
- 46 God holds all human beings accountable for their behavior.
- 47 When Jesus Christ was on earth, He lived a sinless life.

- 48 The standard for truth is when I feel it to be true in my heart.
- 49 I read or study the Bible [frequency multiple choice response].
- 50 I attend a church worship service [frequency multiple choice response].
- 51 I work with other Christian believers for the purpose of introducing un-churched people to Jesus Christ.
- 52 My interactions with non-Christians are likely to demonstrate that I am a Christian.
- 53 I enjoy talking with one or more of my friends about spiritual things.
- 54 I feel frustrated when my individual right to choose what I want to do is limited.
- 55 I question the goodness of God because I know that evil exists.
- 56 In everyday activities, for example, doing homework, I deepen my relationship with God.
- 57 I look forward to the time when I can take a break from going to church.
- 58 When I watch a sporting event, I get more involved than when I attend a worship event.
- 59 When I see inconsistencies at church between what people say and what they do, I want to stay away from church.
- 60 When I make decisions, the biggest factor is how it will affect my relationship with God.
- 61 I stand up for what is right even if my friends don't join me.
- 62 When I have questions about how I should live my life, I look for answers in the Bible.

- 63 I freely forgive those who hurt me even when the hurt they have caused is very great.
- 64 I only spend my money on what will benefit me.
- 65 When something offends me, it keeps irritating me whenever I think about it.
- 66 I find the Bible is relevant to my daily life.
- 67 In my prayers, I actively seek to discover the will of God.
- 68 When I do something wrong, I respond cheerfully and humbly to discipline.
- 69 I enjoy participating in a worship service with other believers.
- 70 Repentance is a part of my private prayers to God.
- 71 I think about passages I read in the Bible.
- 72 I enjoy being with other believers, whether or not we are doing religious activities.
- 73 I spend time thinking about the sermon after I have left the church building.
- 74 I do without things I want in order to give sacrificially to the work of God.
- 75 Beauty is only a matter of personal opinion: there is no such thing as objective beauty.
- 76 When I hear about natural disasters, I do something to help.

APPENDIX B

Three-Dimensional Worldview Survey (3DWS); © 2013 Katherine G. Schultz (used with permission)

The items for the initial version of the 3-Dimensional Worldview Survey as evaluated in the expert panel review study and administered in the student pilot study are listed below.

Item No.	Content (<i>3DWS</i>)
01	History is a random series of events.
02	There is a constant spiritual battle between the forces of good and the forces of evil. (Barna, 2005, p. 26; Naugle, 2002, p. 279)
03	Jesus Christ physically rose from the dead. (Patrick Henry College, 2006)
04	If confronted with a moral dilemma, I figure it out by discovering what will help the most people. (Gross, n.d., p. Eth. 85)
05	The Holy Spirit is a symbol of God's presence rather than a living being.
06	We can interpret current events as expressions of God's will. (Gross, n.d., p. Hist. 9)
07	Jesus Christ is important in my life today. (Barna Group, Ltd, 2009)
08	The best source for determining if something is morally right or wrong is the law of the land.
09	The Bible is more like a good story that teaches moral lessons than a historic record of real people and events.
10	A person can earn eternal salvation by being good, for example by doing good things for other people. (Barna, 2003a, pp. 22-23)
11	God created everything. (Boa & Bowman, 1997, p. x)

Item No.	Content (<i>3DWS</i>)
12	I am the one who ultimately determines what is right or wrong for me.
13	There is no way to decide which of the many competing worldviews is true. (Moreland & Craig, 2003, p. 149)
14	All medical research that promotes our knowledge of science is valuable, especially if it results in future medical advances that benefit people. (Gross, n.d., p. HM 88)
15	Sexual behavior outside marriage is wrong. (Patrick Henry College, 2006)
16	Every life has value, whether unborn, disabled, sickly, or in any other way limited. (Gross, n.d., p. HM 84)
17	Muslims, Christians, Jews, and all other people pray to the same God, even though they use different names for their God.
18	Two people could define truth in conflicting ways and both still be correct.
19	If people will only work hard enough, their cooperation could result in a perfect society. (Noebel, 1991, p. 471)
20	I can know what is morally right and wrong for other people.
21	Entertainment has great power to captivate the imagination, and should therefore be treated with great respect and thought. (Gross, n.d., p. AE 59)
22	If someone wrongs me, then I will want to get even. (Gross, n.d., p. Eth. 79)
23	The Bible is true because I believe it.
24	A well-run government can solve all problems. (Noebel, 1991, p. 619)
25	I can tell if something is morally right by whether or not it works in my life.

Item No.	Content (<i>3DWS</i>)
26	I am waiting to have sex until I am married, no matter what. (Ham, Beemer, & Hillard, 2009, p. 67)
27	People are not morally responsible for their actions if they are so poor that the only way for them to eat is to steal. (Noebel, 1991, p. 238)
28	The meaning of words depends on each reader's interpretation. (Moreland & Craig, 2003, p. 147)
29	I have made a personal commitment to Jesus Christ. (Barna Group, Ltd, 2009)
30	Most people are basically good. (Romans 3:23)
31	God is a personal being. (Noebel, 1991, p. 86)
32	Everything belongs to God: for example, the home I live in, the car I drive, my music collection. (Patrick Henry College, 2006, p. Priv Prop)
33	Medical treatment should be given based on who would bring the greatest benefit to society. (Gross, n.d., p. HM 90)
34	The best source for determining if something is morally right or wrong is the Bible.
35	God is important primarily because faith in Him makes us more civilized and psychologically healthy. (Gross, n.d., p. Th. 7)
36	I would marry someone of another faith if I were in love. (Gordon & Horowitz, 2006, p. 4)
37	Every woman should have a right to abort her fetus. (Gross, n.d., p. HM 83)
38	All cultures are morally equal. (Gairdner, 2009)
39	I believe that when I die I will go to Heaven because I have been a good person.

Item No.	Content (<i>3DWS</i>)
40	God is actively involved in the universe today. (Barna, 2003a, pp. 22-23)
41	The Bible is true in all its teachings. (Barna, 2003a, pp. 22-23)
42	I feel that no one has the right to tell me what to do. (Gross, n.d., p. Eth. 88)
43	The devil is a symbol of evil rather than a living being.
44	I believe that when I die I will go to Heaven because I have been going to church pretty much all my life.
45	God is one God who exists in three persons: Father, Son, and Holy Spirit. (Boice, 1986, p. 111)
46	God holds all human beings accountable for their behavior. (Boa & Bowman, 1997, p. x)
47	When Jesus Christ was on earth, He lived a sinless life. (Barna, 2003a, pp. 22-23)
48	The standard for truth is when I feel it to be true in my heart. (Gross, n.d., p. Ep. 55)
49	I read or study the Bible [frequency multiple choice response]. (Thayer, 2004, p. BRS 33)
50	I attend a church worship service [frequency multiple choice response].
51	I work with other Christian believers for the purpose of introducing un-churched people to Jesus Christ. (Thayer, 2004, p. W 14)
52	My interactions with non-Christians are likely to demonstrate that I am a Christian. (Thayer, 2004, p. Ev 34)

- Item No. Content (*3DWS*)
- 53 I enjoy talking with one or more of my friends about spiritual things. (G. Bradfield, personal communication, December 6, 2009)
- 54 I feel frustrated when my individual right to choose what I want to do is limited. (Barna, *Revolution*, 2005, p. 44)
- 55 I question the goodness of God because I know that evil exists.
- 56 In everyday activities, for example, doing homework, I deepen my relationship with God.
- 57 I look forward to moving away from home so I can take a break from going to church. (Ham, Beemer, & Hillard, 2009, p. 30)
- 58 When I watch a sporting event, I get more involved than when I attend a worship event.
- 59 When I see inconsistencies at church between what people say and what they do, I want to stay away from church. (Ham, Beemer, & Hillard, 2009, p. 65)
- 60 When I make decisions, the biggest factor is how it will affect my relationship with God.
- 61 I stand up for what is right even if my friends don't join me. (G. Bradfield, personal communication, December 6, 2009)
- 62 When I have questions about how I should live my life, I look for answers in the Bible.
- 63 I freely forgive those who hurt me even when the hurt they have caused is very great. (Thayer, 2004, p. M 18)
- 64 I only spend my money on what will benefit me. (Gross, n.d., p. Ax. 90)

Item No.	Content (<i>3DWS</i>)
65	When something offends me, it keeps irritating me whenever I think about it.
66	I find the Bible is relevant to my daily life. (Ham, Beemer, & Hillard, 2009, p. 68)
67	In my prayers, I actively seek to discover the will of God. (Thayer, 2004, p. P 4)
68	When I do something wrong, I respond cheerfully and humbly to discipline. (Wilson, 1996, p. 34)
69	I enjoy participating in a worship service with other believers.
70	Repentance is a part of my private prayers to God. (Thayer, 2004, p. R 7)
71	I think about passages I read in the Bible. (Thayer, 2004, p. M 15)
72	I enjoy being with other believers, whether or not we are doing religious activities.
73	I spend time thinking about the sermon after I have left the church building. (Cox, personal communication, December 2, 2009)
74	I do without things I want in order to give sacrificially to the work of God. (Thayer, 2004, p. St 49)
75	Beauty is only a matter of personal opinion: there is no such thing as objective beauty. (Gross, n.d., p. Ed. 64)
76	When I hear about natural disasters, I do something to help. (Thayer, 2004, p. EC 22)

APPENDIX C

E-Mail Invitation for Participation in Study

April 12, 2013

Greetings biblical worldview students!

My name is Kathy Morales, and I am a doctoral candidate at Liberty University in the process of obtaining my Ed.D. degree. The purpose of my research is to validate the *Three-Dimensional Worldview Survey-Form C* for use in Christian higher education institutions. This survey has the potential to allow faculty and institutions to more fully understand the worldview presuppositions of their incoming students so that teaching methods and curricula can be aligned to promote an expected outcome.

All students enrolled in a biblical worldview course who are 18 years or older are invited to participate in cutting edge worldview research via an online survey link below. I only ask that you please refrain from discussing the questions on this survey with your classmates until the survey closes in two weeks.

Thank you for your willingness to be part of this exciting worldview research! When validated, this instrument holds great promise for making all biblical worldview instruction more effective in Christian colleges and universities.

I kindly ask you to participate in this worldview survey. I wholeheartedly value your truthful answers and would love for you to be a part of this groundbreaking worldview research.

The survey can be accessed by the hyperlink below and will be open from April 12th to April 26th.

(Hyperlink to Survey Monkey)

God bless you all!

Kathy Morales

If you have any questions about the survey or the purpose of this research, please contact me at kmorales@liberty.edu.

*Attention Faculty: Will you kindly e-mail the researcher the total number of e-mail survey participation invites you forward so that response rates can be tracked? Thank you!

APPENDIX D

Halfway E-Mail Reminder for Participants

April 19, 2013

Hello Biblical Worldview Students!

If you have not yet taken the *Three-Dimensional Worldview Survey-Form C*, please do so as soon as possible. The survey will only be open for one more week and officially closes at midnight on (April 26, 2013).

Thank you for your honest answers and your willingness to be a part of cutting edge worldview research!

You may access the survey by the following link: (*Hyperlink to Survey Monkey*)

Sincerely,

Kathy Morales

If you have any questions about the survey or the purpose of this research, please contact me at kmorales@liberty.edu.

APPENDIX E

Thank You E-mail to Participants and Worldview Faculty

April 26, 2013

Hello Biblical Worldview Faculty and Students!

Thank you, faculty, for your support in encouraging students to participate in this research.
Thank you, students, for your willingness to contribute to this worldview research.

May God continue to bless you all in whatever He has called and equipped you to do for His glory!

Blessings,

Kathy Morales

kmorales@liberty.edu

APPENDIX F

3DWS Score Report - © 2013 by Katherine G. Schultz. Used with permission.

3D Worldview Survey Results

Participant ID: Participant11

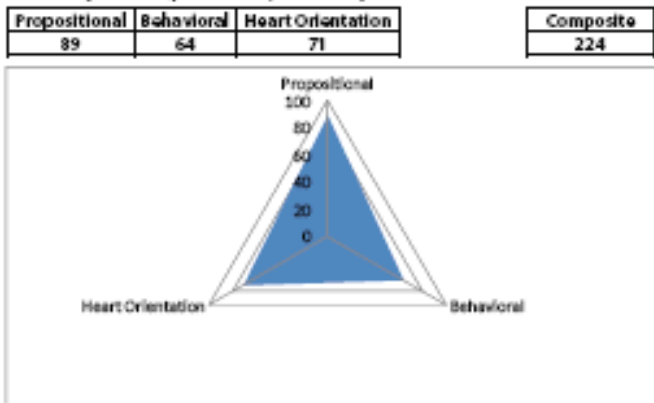
Assessment Date: March 9, 2010

Propositional Dimension	very good
Your responses tend in the direction of a Biblical worldview on 40 out of 43 propositional items. That indicates that you probably have a very good knowledge of Biblical truth.	

Behavioral Dimension	somewhat poor
Your responses tend in the direction of a Biblical worldview on 4 out of 13 behavioral items. That indicates that you probably have a somewhat poor record for living out Biblical truth.	

Heart Orientation Dimension	good
Your responses tend in the direction of a Biblical worldview on 12 out of 20 heart-orientation items. That indicates that you probably have a good inner attitude about God, Jesus, and the things the Bible says.	

Now look at your detailed score and the picture will show you how well your scores are in balance with each other. The more your triangle is shaded, the better your results.



Comments:
Your highest dimension subscore is for the Propositional Dimension at 89.
Your lowest dimension subscore is for the Behavioral Dimension at 64.
Your average dimension subscore is 74.7.

Commendation:
When the propositional dimension is your highest score, you are to be commended for how well you are learning about the Bible and God. Continue to "present yourself to God as one approved, a workman who does not need to be ashamed and who correctly handles the word of truth" (2 Timothy 2:15).

Cautions:
When the behavioral dimension is your lowest score, you would probably benefit by remembering that we are warned against "having a form of godliness but denying its power" (2 Timothy 3:2-5).

When the propositional dimension is your highest, be careful to keep your knowledge in perspective: "Knowledge puffs up, but love builds up" (1 Corinthians 8:1).

Opportunity for Growth:
If you want to improve in the behavioral dimension, think about how you can connect what you know with what you do: "Do not merely listen to the word, and so deceive yourselves. Do what it says" (James 1:22).

APPENDIX G

Consent Form

AN INSTRUMENT VALIDATION FOR A THREE-DIMENSIONAL WORLDVIEW SURVEY AMONG UNDERGRADUATE CHRISTIAN UNIVERSITY STUDENTS USING PRINCIPAL COMPONENTS ANALYSIS

Kathy Morales
Liberty University
Department of Education

You are invited to be in a research study of that has significant potential to contribute to the study of worldview research. You were selected as a possible participant because of the university you are currently attending. I ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Kathy Morales and the Department of Education at Liberty University.

Background Information

The purpose of this study is to validate the first ever created three-dimensional worldview survey for use in Christian higher education institutions.

Procedures

If you agree to be in this study, I would ask you to simply click on the hyperlink to the study and answer all the questions truthfully. There are 76 questions in this survey and all responses are measured on 5-point Likert type scales. It should take approximately 20-30 minutes to complete.

Risks and Benefits of Being in the Study

No study is without risks, but the risks involved in this anonymous online survey are as minimal as possibly can be. The risks are no more than you would encounter in everyday life.

The benefits to participation are the privilege of being part of cutting edge worldview research. If this survey is validated it will significantly fill to the gap in worldview literature and give Christian colleges and universities a powerful tool for accurately assessing their students worldview presuppositions.

Compensation

Participants will not be compensated for their participation.

Confidentiality

The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Any surveys that might have inadvertently included names or other identifying information will be immediately destroyed.

Hard copies and electronic storage devices will be stored securely and only the researcher will have access to the records. The researcher will create the survey in Survey Monkey and use SSL encryption to ensure the data's security. No e-mail addresses will be collected via Survey Monkey to assure complete anonymity. No names, addresses, or any other identifiable information will be collected. Data will be kept for three years in a locked cabinet at the researcher's resident in Las Vegas, Nevada. After three years, any hard copies of data will be shredded and all electronic data will undergo appropriate erasure procedures including multiple-pass procedures if necessary to erase all data. If proper tools or expertise is lacking, the researcher will seek out aid from the research institution or from local professional services. After the three years, there is no anticipated use of the data.

Voluntary Nature of the Study

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions

The researcher conducting this study is Kathy Morales. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at kmorales@liberty.edu. The faculty advisor for this research is Dr. James Swezey who may be reached at jaswezey@liberty.edu or 434-592-4903.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Suite 1837, Lynchburg, VA 24502 or email at irb@liberty.edu.

You will be given a copy of this information to keep for your records.

Statement of Consent

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

IRB Code Numbers: [Risk] (After a study is approved, the IRB code number pertaining to the study should be added here.)

IRB Expiration Date: [Risk] (After a study is approved, the expiration date (one year from date of approval) assigned to a study at initial or continuing review should be added. Periodic checks on the current status of consent forms may occur as part of continuing review mandates from the federal regulators.)

APPENDIX H

3DWS-Form C 47 items: Keyes-Meyer-Olkin (KMO) Measuring of Sampling and Bartlett's

Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.942
Bartlett's Test of Sphericity Approx. Chi-Square	10190.401
df	1081
Sig.	.000

APPENDIX I

Correlation Matrix

Correlation	q0001_0001	q0002_0001	q0003_0001	q0004_0001	q0005_0001	q0006_0001	q0007_0001	q0008_0001	q0009_0001	q0010_0001	q0011_0001
q0001_0001	1.000	.106	.127	.210	.240	.057	.127	.282	.350	.332	.081
q0002_0001	.106	1.000	.476	.025	.110	.119	.197	.084	.164	.260	.215
q0003_0001	.127	.476	1.000	.064	.159	.053	.242	.124	.243	.266	.297
q0004_0001	.210	.025	.064	1.000	.288	-.073	.081	.419	.305	.286	.088
q0005_0001	.240	.110	.159	.288	1.000	-.159	.114	.436	.402	.383	.096
q0006_0001	.057	.119	.053	-.073	-.159	1.000	.130	-.138	-.078	-.065	.106
q0007_0001	.127	.197	.242	.081	.114	.130	1.000	.088	.181	.190	.364
q0008_0001	.282	.084	.124	.419	.436	-.138	.088	1.000	.382	.456	.106
q0009_0001	.350	.164	.243	.305	.402	-.078	.181	.382	1.000	.577	.190
q0010_0001	.332	.260	.266	.286	.383	-.065	.190	.456	.577	1.000	.180
q0011_0001	.081	.215	.297	.088	.096	.106	.364	.106	.190	.180	1.000
q0012_0001	.301	.158	.165	.361	.299	-.027	.278	.304	.395	.409	.209
q0013_0001	.426	.199	.227	.277	.394	-.028	.254	.427	.503	.533	.258
q0014_0001	.117	.011	.052	.093	.137	-.051	.117	.121	.106	.125	.052
q0015_0001	.072	.211	.222	.092	.228	.124	.297	.147	.189	.213	.176
q0016_0001	.183	.190	.200	.092	.140	.055	.380	.258	.291	.239	.203
q0017_0001	.262	.134	.258	.299	.362	-.066	.189	.380	.412	.464	.151
q0018_0001	.256	.159	.238	.222	.427	-.061	.070	.343	.363	.361	.087
q0019_0001	.286	.170	.190	.333	.411	-.065	.143	.453	.404	.440	.193
q0020_0001	.013	.029	.111	.117	.200	.065	.024	.092	.003	.038	.032
q0021_0001	-.002	.100	.054	-.017	.111	.100	.029	.044	-.011	-.013	.054
q0022_0001	.126	.068	.079	.118	.056	.032	.324	.126	.105	.155	.101
q0023_0001	.202	.004	.037	.253	.378	-.132	-.077	.289	.248	.220	-.058
q0024_0001	.268	.192	.152	.250	.336	-.044	.144	.449	.313	.367	.273
q0025_0001	.289	.086	.078	.313	.309	.005	.142	.377	.307	.344	.058
q0026_0001	.113	.234	.248	.007	.212	.072	.349	.141	.192	.207	.182
q0027_0001	.263	.127	.091	.267	.209	-.010	.255	.242	.345	.334	.140
q0028_0001	.232	.116	.184	.236	.285	-.061	.182	.299	.295	.313	.145
q0029_0001	.199	.226	.313	.129	.212	.084	.634	.150	.328	.293	.453
q0030_0001	.254	.137	.195	.291	.313	-.032	.102	.333	.337	.380	.107
q0031_0001	-.210	-.209	-.272	-.111	-.272	-.033	-.307	-.167	-.231	-.195	-.240
q0032_0001	-.160	-.238	-.228	-.170	-.176	-.124	-.406	-.139	-.165	-.246	-.237
q0033_0001	.288	.108	.125	.288	.225	-.059	.171	.322	.348	.363	.128
q0034_0001	.115	.319	.344	.146	.122	.159	.434	.202	.295	.323	.447
q0035_0001	.266	.013	.041	.346	.341	-.094	.045	.284	.290	.303	.067
q0036_0001	.279	.248	.277	.317	.346	-.021	.300	.410	.445	.497	.244
q0037_0001	.304	.104	.128	.146	.198	-.026	.197	.259	.365	.431	.171
q0038_0001	.078	.155	.180	.094	.146	-.053	.077	.207	.162	.206	.138
q0039_0001	.308	.214	.203	.329	.364	-.073	.104	.422	.536	.600	.141
q0040_0001	.208	.250	.256	.095	.233	.121	.604	.221	.290	.267	.388
q0041_0001	.160	.247	.295	.110	.168	.083	.460	.181	.297	.352	.424

q0042_0001	.225	.156	.136	.298	.269	-.021	.317	.283	.288	.382	.193
q0043_0001	.396	.205	.193	.278	.541	-.072	.175	.424	.504	.535	.183
q0044_0001	.300	.206	.227	.302	.346	-.031	.161	.443	.493	.552	.195
q0045_0001	.135	.238	.245	.182	.136	.108	.430	.153	.222	.223	.343
q0046_0001	.138	.257	.223	.059	.104	.160	.337	.121	.227	.255	.275
q0047_0001	.166	.161	.335	.187	.267	-.062	.275	.269	.342	.382	.311
q0048_0001	.299	.187	.235	.350	.410	-.037	.224	.455	.407	.453	.106
q0049_0001	.140	.082	.120	.188	.191	.010	.389	.173	.183	.207	.257
q0050_0001	.091	.132	.210	.080	.121	-.054	.192	.091	.156	.192	.106
q0051_0001	-.062	-.143	-.161	-.013	-.111	.047	-.270	-.057	-.108	-.151	-.088
q0052_0001	-.126	-.132	-.177	-.201	-.263	.072	-.365	-.255	-.223	-.253	-.225
q0053_0001	-.197	-.107	-.134	-.202	-.218	.017	-.373	-.284	-.243	-.250	-.139
q0054_0001	-.152	.022	-.034	-.057	-.053	-.021	-.228	.051	-.053	-.010	-.125
q0055_0001	-.178	-.166	-.242	-.211	-.219	-.014	-.308	-.182	-.291	-.343	-.217
q0056_0001	-.104	-.027	-.074	-.125	-.134	-.048	-.350	-.066	-.123	-.094	-.141
q0057_0001	-.172	-.107	-.099	-.085	-.163	-.051	-.302	-.146	-.182	-.156	-.059
q0058_0001	-.129	.035	-.063	-.171	-.097	-.030	-.113	-.157	-.122	-.140	-.017
q0059_0001	-.070	-.084	-.099	-.149	-.055	-.094	-.306	-.075	-.087	-.108	-.102
q0060_0001	-.183	-.051	-.128	-.145	-.094	.005	-.408	-.171	-.181	-.182	-.193
q0061_0001	-.101	-.086	-.114	-.197	-.161	.034	-.262	-.205	-.194	-.195	-.153
q0062_0001	-.211	-.154	-.281	-.224	-.326	-.010	-.421	-.306	-.321	-.379	-.226
q0063_0001	-.127	-.058	-.056	-.077	-.218	.017	-.194	-.109	-.148	-.101	-.066
q0064_0001	.080	-.068	-.048	.087	.043	.047	-.053	-.057	.089	.012	.005
q0065_0001	-.012	-.001	-.001	.023	-.074	.067	-.097	.044	.006	.022	-.034
q0066_0001	-.207	-.178	-.229	-.211	-.318	-.090	-.571	-.306	-.313	-.307	-.310
q0067_0001	-.189	-.147	-.195	-.096	-.159	-.078	-.445	-.138	-.232	-.206	-.239
q0068_0001	-.113	-.080	-.103	-.085	-.112	-.022	-.179	-.058	-.074	-.035	-.144
q0069_0001	-.223	-.183	-.223	-.124	-.131	-.074	-.426	-.224	-.225	-.350	-.218
q0070_0001	-.102	-.122	-.139	-.053	-.139	-.101	-.321	-.129	-.212	-.206	-.216
q0071_0001	-.132	-.082	-.143	-.178	-.203	-.059	-.351	-.202	-.231	-.239	-.189
q0072_0001	-.281	-.167	-.216	-.248	-.262	.008	-.430	-.321	-.368	-.438	-.198
q0073_0001	-.080	-.021	-.067	-.134	-.164	-.082	-.262	-.108	-.136	-.152	-.131
q0074_0001	-.012	-.019	-.027	.018	.007	.076	-.272	-.023	.023	-.022	-.038
q0075_0001	.030	-.054	-.024	.005	-.002	-.045	.080	.035	.010	.049	-.006
q0076_0001	-.031	.075	-.021	.019	-.015	.021	-.156	.002	.038	.053	-.057

Correlation	q0012_0001	q0013_0001	q0014_0001	q0015_0001	q0016_0001	q0017_0001	q0018_0001	q0019_0001	q0020_0001	q0021_0001	q0022_0001
q0001_0001	.301	.426	.117	.072	.183	.262	.256	.286	.013	-.002	.126
q0002_0001	.158	.199	.011	.211	.190	.134	.159	.170	.029	.100	.068
q0003_0001	.165	.227	.052	.222	.200	.258	.238	.190	.111	.054	.079
q0004_0001	.361	.277	.093	.092	.092	.299	.222	.333	.117	-.017	.118
q0005_0001	.299	.394	.137	.228	.140	.362	.427	.411	.200	.111	.056
q0006_0001	-.027	-.028	-.051	.124	.055	-.066	-.061	-.065	.065	.100	.032
q0007_0001	.278	.254	.117	.297	.380	.189	.070	.143	.024	.029	.324
q0008_0001	.304	.427	.121	.147	.258	.380	.343	.453	.092	.044	.126
q0009_0001	.395	.503	.106	.189	.291	.412	.363	.404	.003	-.011	.105
q0010_0001	.409	.533	.125	.213	.239	.464	.361	.440	.038	-.013	.155
q0011_0001	.209	.258	.052	.176	.203	.151	.087	.193	.032	.054	.101
q0012_0001	1.000	.467	.137	.196	.251	.379	.370	.412	.133	.047	.183
q0013_0001	.467	1.000	.199	.224	.240	.482	.460	.499	.143	.040	.150
q0014_0001	.137	.199	1.000	.135	.082	.115	.137	.230	.072	.008	.022
q0015_0001	.196	.224	.135	1.000	.335	.248	.190	.226	.098	.043	.139
q0016_0001	.251	.240	.082	.335	1.000	.222	.166	.221	.026	.066	.129
q0017_0001	.379	.482	.115	.248	.222	1.000	.465	.447	.075	.004	.064
q0018_0001	.370	.460	.137	.190	.166	.465	1.000	.434	.274	.064	.039
q0019_0001	.412	.499	.230	.226	.221	.447	.434	1.000	.053	.042	.168
q0020_0001	.133	.143	.072	.098	.026	.075	.274	.053	1.000	.103	-.108
q0021_0001	.047	.040	.008	.043	.066	.004	.064	.042	.103	1.000	-.068
q0022_0001	.183	.150	.022	.139	.129	.064	.039	.168	-.108	-.068	1.000
q0023_0001	.236	.200	.135	.081	.028	.223	.298	.301	.160	.026	.036
q0024_0001	.319	.408	.170	.144	.181	.352	.299	.548	.046	.025	.180
q0025_0001	.352	.429	.133	.113	.203	.401	.355	.437	.185	.062	.217
q0026_0001	.218	.277	.172	.491	.305	.238	.215	.204	.109	.069	.125
q0027_0001	.342	.313	.095	.200	.209	.365	.270	.348	.007	.042	.251
q0028_0001	.296	.343	.198	.161	.193	.419	.435	.333	.116	-.002	.151
q0029_0001	.327	.398	.043	.301	.368	.236	.164	.236	.049	.072	.232
q0030_0001	.365	.368	.174	.167	.110	.447	.416	.518	.141	.037	.037
q0031_0001	-.181	-.251	-.013	-.349	-.311	-.191	-.215	-.238	-.130	-.069	-.120
q0032_0001	-.277	-.268	-.077	-.280	-.358	-.191	-.202	-.187	-.134	-.128	-.109
q0033_0001	.339	.336	.147	.093	.236	.212	.214	.345	.022	.008	.211
q0034_0001	.307	.351	.065	.395	.398	.259	.179	.207	.112	.101	.083
q0035_0001	.298	.290	.221	.088	.114	.292	.236	.436	.100	.050	.031
q0036_0001	.446	.519	.198	.369	.334	.512	.380	.433	.098	.018	.250
q0037_0001	.425	.418	.141	.265	.383	.317	.306	.324	.046	.070	.222
q0038_0001	.135	.254	.068	.038	.086	.261	.163	.236	-.102	-.034	.089
q0039_0001	.454	.496	.118	.174	.278	.437	.415	.467	.067	.027	.139
q0040_0001	.329	.365	.071	.357	.482	.212	.171	.232	.087	.088	.257
q0041_0001	.347	.352	.092	.400	.427	.314	.199	.240	.106	.028	.127
q0042_0001	.439	.359	.164	.205	.260	.361	.277	.347	.037	.007	.191
q0043_0001	.452	.536	.141	.230	.214	.417	.418	.494	.134	.076	.135
q0044_0001	.494	.500	.076	.196	.341	.453	.389	.470	.056	.067	.191

q0045_0001	.244	.320	.008	.246	.386	.187	.136	.174	.077	.096	.155
q0046_0001	.202	.325	.033	.276	.345	.230	.150	.220	.083	.084	.025
q0047_0001	.258	.383	-.010	.270	.292	.303	.271	.287	.124	.106	.086
q0048_0001	.419	.483	.191	.249	.240	.490	.406	.461	.172	.011	.102
q0049_0001	.210	.309	.153	.260	.181	.258	.153	.182	.038	.023	.249
q0050_0001	.140	.197	.083	.190	.169	.178	.124	.123	.123	.038	.137
q0051_0001	-.096	-.174	-.095	-.142	-.099	-.195	-.062	-.087	-.024	.046	-.248
q0052_0001	-.250	-.326	-.100	-.249	-.248	-.250	-.243	-.295	-.127	-.011	-.287
q0053_0001	-.249	-.260	-.105	-.231	-.261	-.240	-.199	-.250	-.067	-.058	-.271
q0054_0001	-.129	-.111	-.126	-.169	-.122	-.071	-.042	-.069	-.024	.155	-.292
q0055_0001	-.241	-.279	-.072	-.152	-.198	-.201	-.209	-.225	-.125	-.003	-.259
q0056_0001	-.139	-.186	-.104	-.218	-.171	-.206	-.079	-.078	-.111	-.039	-.260
q0057_0001	-.186	-.236	-.141	-.226	-.217	-.223	-.224	-.137	-.060	.020	-.144
q0058_0001	-.136	-.182	-.104	-.135	-.170	-.170	-.130	-.130	-.034	.035	-.185
q0059_0001	-.073	-.189	-.089	-.192	-.142	-.107	-.090	-.028	-.072	.047	-.225
q0060_0001	-.233	-.266	-.130	-.280	-.246	-.151	-.135	-.155	-.076	.053	-.399
q0061_0001	-.193	-.295	-.023	-.177	-.204	-.232	-.186	-.192	-.075	-.014	-.250
q0062_0001	-.325	-.400	-.092	-.320	-.245	-.386	-.324	-.274	-.189	-.024	-.332
q0063_0001	-.120	-.186	.003	-.153	-.178	-.115	-.103	-.130	-.029	-.072	-.304
q0064_0001	.007	.001	.000	.042	.050	-.023	-.008	.016	-.036	.140	-.128
q0065_0001	-.059	.007	.014	-.003	-.008	-.005	.022	.009	.079	.024	-.202
q0066_0001	-.322	-.445	-.178	-.377	-.344	-.339	-.279	-.312	-.116	-.036	-.311
q0067_0001	-.228	-.332	-.045	-.192	-.236	-.178	-.132	-.202	-.053	-.059	-.335
q0068_0001	-.070	-.085	.019	-.115	-.145	-.058	-.060	-.037	.036	-.006	-.202
q0069_0001	-.228	-.343	-.059	-.289	-.269	-.234	-.237	-.207	.004	.004	-.261
q0070_0001	-.167	-.321	.016	-.176	-.193	-.181	-.093	-.150	-.022	-.125	-.187
q0071_0001	-.185	-.295	-.017	-.266	-.200	-.305	-.195	-.202	-.066	-.049	-.338
q0072_0001	-.327	-.495	-.153	-.369	-.283	-.387	-.361	-.356	-.044	.000	-.229
q0073_0001	-.141	-.214	-.037	-.185	-.183	-.204	-.154	-.187	-.033	-.007	-.206
q0074_0001	.002	-.083	-.023	-.079	-.097	.028	.003	.052	.018	.041	-.198
q0075_0001	.023	.068	-.002	.016	.000	.065	-.016	-.006	.024	-.060	.091
q0076_0001	.003	-.066	.026	-.063	-.033	-.051	-.054	.044	-.085	-.014	-.134

Correlation	q0023_0001	q0024_0001	q0025_0001	q0026_0001	q0027_0001	q0028_0001	q0029_0001	q0030_0001	q0031_0001	q0032_0001	q0033_0001
q0001_0001	.202	.268	.289	.113	.263	.232	.199	.254	-.210	-.160	.288
q0002_0001	.004	.192	.086	.234	.127	.116	.226	.137	-.209	-.238	.108
q0003_0001	.037	.152	.078	.248	.091	.184	.313	.195	-.272	-.228	.125
q0004_0001	.253	.250	.313	.007	.267	.236	.129	.291	-.111	-.170	.288
q0005_0001	.378	.336	.309	.212	.209	.285	.212	.313	-.272	-.176	.225
q0006_0001	-.132	-.044	.005	.072	-.010	-.061	.084	-.032	-.033	-.124	-.059
q0007_0001	-.077	.144	.142	.349	.255	.182	.634	.102	-.307	-.406	.171
q0008_0001	.289	.449	.377	.141	.242	.299	.150	.333	-.167	-.139	.322
q0009_0001	.248	.313	.307	.192	.345	.295	.328	.337	-.231	-.165	.348
q0010_0001	.220	.367	.344	.207	.334	.313	.293	.380	-.195	-.246	.363
q0011_0001	-.058	.273	.058	.182	.140	.145	.453	.107	-.240	-.237	.128
q0012_0001	.236	.319	.352	.218	.342	.296	.327	.365	-.181	-.277	.339
q0013_0001	.200	.408	.429	.277	.313	.343	.398	.368	-.251	-.268	.336
q0014_0001	.135	.170	.133	.172	.095	.198	.043	.174	-.013	-.077	.147
q0015_0001	.081	.144	.113	.491	.200	.161	.301	.167	-.349	-.280	.093
q0016_0001	.028	.181	.203	.305	.209	.193	.368	.110	-.311	-.358	.236
q0017_0001	.223	.352	.401	.238	.365	.419	.236	.447	-.191	-.191	.212
q0018_0001	.298	.299	.355	.215	.270	.435	.164	.416	-.215	-.202	.214
q0019_0001	.301	.548	.437	.204	.348	.333	.236	.518	-.238	-.187	.345
q0020_0001	.160	.046	.185	.109	.007	.116	.049	.141	-.130	-.134	.022
q0021_0001	.026	.025	.062	.069	.042	-.002	.072	.037	-.069	-.128	.008
q0022_0001	.036	.180	.217	.125	.251	.151	.232	.037	-.120	-.109	.211
q0023_0001	1.000	.231	.321	.119	.143	.284	.036	.329	-.136	.000	.131
q0024_0001	.231	1.000	.389	.125	.348	.299	.231	.318	-.160	-.138	.399
q0025_0001	.321	.389	1.000	.087	.303	.295	.202	.316	-.198	-.190	.363
q0026_0001	.119	.125	.087	1.000	.172	.209	.371	.220	-.322	-.313	.098
q0027_0001	.143	.348	.303	.172	1.000	.383	.223	.381	-.097	-.224	.316
q0028_0001	.284	.299	.295	.209	.383	1.000	.204	.415	-.202	-.218	.273
q0029_0001	.036	.231	.202	.371	.223	.204	1.000	.176	-.385	-.399	.245
q0030_0001	.329	.318	.316	.220	.381	.415	.176	1.000	-.224	-.109	.269
q0031_0001	-.136	-.160	-.198	-.322	-.097	-.202	-.385	-.224	1.000	.405	-.255
q0032_0001	.000	-.138	-.190	-.313	-.224	-.218	-.399	-.109	.405	1.000	-.126
q0033_0001	.131	.399	.363	.098	.316	.273	.245	.269	-.255	-.126	1.000
q0034_0001	.018	.211	.217	.326	.287	.158	.572	.193	-.385	-.428	.179
q0035_0001	.368	.284	.346	.090	.189	.208	.093	.313	-.131	-.067	.248
q0036_0001	.241	.345	.317	.431	.343	.361	.312	.399	-.366	-.280	.371
q0037_0001	.138	.274	.329	.234	.347	.269	.275	.235	-.242	-.158	.360
q0038_0001	.076	.244	.211	.073	.121	.223	.134	.104	-.119	-.107	.170
q0039_0001	.308	.434	.349	.206	.338	.339	.241	.427	-.180	-.234	.425
q0040_0001	.030	.242	.188	.403	.244	.176	.649	.185	-.442	-.492	.228
q0041_0001	.022	.210	.203	.349	.287	.242	.629	.205	-.352	-.463	.181
q0042_0001	.142	.306	.389	.248	.350	.271	.303	.294	-.164	-.253	.337
q0043_0001	.292	.389	.415	.213	.310	.284	.288	.342	-.335	-.237	.373

q0044_0001	.343	.500	.430	.262	.390	.324	.285	.381	-.210	-.259	.452
q0045_0001	.022	.201	.170	.233	.235	.185	.588	.172	-.355	-.379	.197
q0046_0001	.019	.233	.174	.251	.269	.240	.433	.158	-.258	-.438	.149
q0047_0001	.122	.228	.189	.283	.192	.205	.477	.249	-.415	-.338	.198
q0048_0001	.319	.324	.475	.303	.350	.395	.278	.450	-.340	-.162	.386
q0049_0001	.078	.192	.161	.295	.165	.188	.420	.231	-.196	-.252	.079
q0050_0001	.062	.091	.072	.237	.196	.158	.184	.189	-.168	-.147	.033
q0051_0001	-.049	-.092	-.078	-.143	-.108	-.124	-.204	-.129	.149	.199	-.035
q0052_0001	-.069	-.273	-.187	-.265	-.236	-.209	-.301	-.193	.283	.326	-.132
q0053_0001	-.099	-.206	-.178	-.241	-.247	-.209	-.373	-.226	.226	.257	-.165
q0054_0001	-.031	-.002	-.111	-.195	-.089	-.099	-.190	-.069	.038	.075	-.053
q0055_0001	-.129	-.176	-.163	-.231	-.247	-.227	-.316	-.202	.162	.195	-.186
q0056_0001	-.007	-.069	-.080	-.254	-.121	-.170	-.327	-.083	.169	.235	-.050
q0057_0001	-.045	-.109	-.160	-.250	-.158	-.161	-.265	-.088	.061	.149	-.036
q0058_0001	-.027	-.061	-.100	-.104	-.026	-.044	-.134	-.087	.094	.149	-.052
q0059_0001	.038	-.066	-.142	-.230	-.187	-.156	-.273	-.077	.051	.191	-.117
q0060_0001	-.044	-.162	-.117	-.282	-.197	-.226	-.376	-.115	.230	.200	-.148
q0061_0001	-.034	-.193	-.145	-.168	-.173	-.235	-.236	-.150	.127	.205	-.117
q0062_0001	-.096	-.215	-.212	-.339	-.210	-.251	-.411	-.231	.305	.298	-.154
q0063_0001	-.083	-.120	-.088	-.129	-.102	-.083	-.232	.009	.165	.140	-.095
q0064_0001	-.022	-.020	-.013	.036	.088	-.048	-.053	-.003	-.062	-.069	-.050
q0065_0001	-.122	-.038	.010	-.021	.019	-.030	-.117	-.008	.039	.024	.031
q0066_0001	-.059	-.274	-.233	-.358	-.294	-.308	-.501	-.243	.332	.383	-.184
q0067_0001	-.036	-.166	-.162	-.223	-.274	-.127	-.469	-.144	.259	.220	-.169
q0068_0001	.012	-.065	-.098	-.049	-.093	-.033	-.177	.016	.135	.110	.006
q0069_0001	.035	-.163	-.139	-.295	-.284	-.143	-.409	-.105	.221	.312	-.133
q0070_0001	.071	-.112	-.141	-.107	-.194	-.099	-.393	-.105	.179	.164	-.081
q0071_0001	-.096	-.181	-.151	-.229	-.208	-.203	-.388	-.183	.184	.209	-.104
q0072_0001	-.096	-.272	-.209	-.345	-.310	-.233	-.450	-.253	.238	.262	-.259
q0073_0001	.040	-.120	-.113	-.128	-.098	-.101	-.280	-.084	.120	.181	-.053
q0074_0001	.081	-.018	.003	-.155	-.019	-.047	-.151	.081	.068	.168	-.018
q0075_0001	.016	.127	.073	.031	.107	.109	.022	.016	-.027	-.043	.105
q0076_0001	.044	.003	-.003	-.040	-.001	-.001	-.110	-.014	.053	.082	.029

Correlation	q0034_0001	q0035_0001	q0036_0001	q0037_0001	q0038_0001	q0039_0001	q0040_0001	q0041_0001	q0042_0001	q0043_0001	q0044_0001
q0001_0001	.115	.266	.279	.304	.078	.308	.208	.160	.225	.396	.300
q0002_0001	.319	.013	.248	.104	.155	.214	.250	.247	.156	.205	.206
q0003_0001	.344	.041	.277	.128	.180	.203	.256	.295	.136	.193	.227
q0004_0001	.146	.346	.317	.146	.094	.329	.095	.110	.298	.278	.302
q0005_0001	.122	.341	.346	.198	.146	.364	.233	.168	.269	.541	.346
q0006_0001	.159	-.094	-.021	-.026	-.053	-.073	.121	.083	-.021	-.072	-.031
q0007_0001	.434	.045	.300	.197	.077	.104	.604	.460	.317	.175	.161
q0008_0001	.202	.284	.410	.259	.207	.422	.221	.181	.283	.424	.443
q0009_0001	.295	.290	.445	.365	.162	.536	.290	.297	.288	.504	.493
q0010_0001	.323	.303	.497	.431	.206	.600	.267	.352	.382	.535	.552
q0011_0001	.447	.067	.244	.171	.138	.141	.388	.424	.193	.183	.195
q0012_0001	.307	.298	.446	.425	.135	.454	.329	.347	.439	.452	.494
q0013_0001	.351	.290	.519	.418	.254	.496	.365	.352	.359	.536	.500
q0014_0001	.065	.221	.198	.141	.068	.118	.071	.092	.164	.141	.076
q0015_0001	.395	.088	.369	.265	.038	.174	.357	.400	.205	.230	.196
q0016_0001	.398	.114	.334	.383	.086	.278	.482	.427	.260	.214	.341
q0017_0001	.259	.292	.512	.317	.261	.437	.212	.314	.361	.417	.453
q0018_0001	.179	.236	.380	.306	.163	.415	.171	.199	.277	.418	.389
q0019_0001	.207	.436	.433	.324	.236	.467	.232	.240	.347	.494	.470
q0020_0001	.112	.100	.098	.046	-.102	.067	.087	.106	.037	.134	.056
q0021_0001	.101	.050	.018	.070	-.034	.027	.088	.028	.007	.076	.067
q0022_0001	.083	.031	.250	.222	.089	.139	.257	.127	.191	.135	.191
q0023_0001	.018	.368	.241	.138	.076	.308	.030	.022	.142	.292	.343
q0024_0001	.211	.284	.345	.274	.244	.434	.242	.210	.306	.389	.500
q0025_0001	.217	.346	.317	.329	.211	.349	.188	.203	.389	.415	.430
q0026_0001	.326	.090	.431	.234	.073	.206	.403	.349	.248	.213	.262
q0027_0001	.287	.189	.343	.347	.121	.338	.244	.287	.350	.310	.390
q0028_0001	.158	.208	.361	.269	.223	.339	.176	.242	.271	.284	.324
q0029_0001	.572	.093	.312	.275	.134	.241	.649	.629	.303	.288	.285
q0030_0001	.193	.313	.399	.235	.104	.427	.185	.205	.294	.342	.381
q0031_0001	-.385	-.131	-.366	-.242	-.119	-.180	-.442	-.352	-.164	-.335	-.210
q0032_0001	-.428	-.067	-.280	-.158	-.107	-.234	-.492	-.463	-.253	-.237	-.259
q0033_0001	.179	.248	.371	.360	.170	.425	.228	.181	.337	.373	.452
q0034_0001	1.000	.054	.403	.326	.109	.229	.527	.664	.264	.277	.309
q0035_0001	.054	1.000	.286	.159	.117	.385	.113	.101	.259	.381	.343
q0036_0001	.403	.286	1.000	.407	.232	.506	.388	.438	.398	.419	.507
q0037_0001	.326	.159	.407	1.000	.196	.400	.258	.321	.325	.363	.463
q0038_0001	.109	.117	.232	.196	1.000	.253	.093	.103	.132	.222	.247
q0039_0001	.229	.385	.506	.400	.253	1.000	.247	.238	.359	.570	.766
q0040_0001	.527	.113	.388	.258	.093	.247	1.000	.589	.302	.353	.333
q0041_0001	.664	.101	.438	.321	.103	.238	.589	1.000	.344	.288	.293
q0042_0001	.264	.259	.398	.325	.132	.359	.302	.344	1.000	.357	.426
q0043_0001	.277	.381	.419	.363	.222	.570	.353	.288	.357	1.000	.533

q0044_0001	.309	.343	.507	.463	.247	.766	.333	.293	.426	.533	1.000
q0045_0001	.536	.080	.288	.213	.114	.249	.574	.483	.265	.216	.292
q0046_0001	.497	.054	.264	.158	.085	.259	.453	.434	.222	.193	.273
q0047_0001	.442	.136	.287	.248	.112	.296	.414	.433	.176	.334	.338
q0048_0001	.320	.354	.538	.315	.216	.446	.282	.275	.430	.522	.502
q0049_0001	.277	.082	.317	.129	.008	.195	.295	.319	.306	.185	.210
q0050_0001	.212	.074	.226	.124	.036	.132	.203	.167	.164	.125	.152
q0051_0001	-.183	.001	-.241	-.121	-.014	-.096	-.172	-.190	-.212	-.126	-.088
q0052_0001	-.271	-.097	-.329	-.243	-.133	-.241	-.305	-.264	-.307	-.203	-.260
q0053_0001	-.240	-.127	-.385	-.176	-.051	-.238	-.372	-.296	-.300	-.238	-.273
q0054_0001	-.085	-.142	-.142	-.069	.064	-.005	-.145	-.177	-.246	-.030	.013
q0055_0001	-.254	-.134	-.327	-.172	-.093	-.243	-.336	-.286	-.265	-.224	-.304
q0056_0001	-.142	-.001	-.283	-.134	-.053	-.092	-.289	-.220	-.237	-.084	-.162
q0057_0001	-.174	-.091	-.226	-.155	-.036	-.132	-.252	-.285	-.236	-.144	-.115
q0058_0001	-.046	-.064	-.153	-.072	-.011	-.125	-.197	-.073	-.196	-.113	-.129
q0059_0001	-.248	.017	-.226	-.161	.012	-.049	-.207	-.224	-.225	-.010	-.070
q0060_0001	-.223	-.054	-.289	-.182	-.019	-.201	-.369	-.294	-.261	-.214	-.199
q0061_0001	-.180	-.061	-.209	-.163	-.110	-.198	-.229	-.186	-.232	-.130	-.297
q0062_0001	-.358	-.164	-.436	-.202	-.133	-.304	-.382	-.379	-.365	-.361	-.367
q0063_0001	-.122	-.133	-.152	-.134	-.071	-.104	-.228	-.112	-.124	-.168	-.194
q0064_0001	-.003	.008	.011	.035	-.049	.021	-.007	-.041	-.095	.046	-.009
q0065_0001	.035	-.023	-.065	.074	-.005	.016	-.089	-.104	-.061	.025	.003
q0066_0001	-.388	-.179	-.427	-.263	-.140	-.304	-.499	-.401	-.440	-.338	-.356
q0067_0001	-.347	-.061	-.263	-.223	-.130	-.126	-.386	-.319	-.241	-.254	-.222
q0068_0001	-.087	-.005	-.097	-.125	-.074	.018	-.204	-.182	-.178	-.091	-.075
q0069_0001	-.313	-.031	-.379	-.283	-.108	-.203	-.373	-.329	-.357	-.222	-.272
q0070_0001	-.373	.039	-.201	-.185	-.041	-.089	-.311	-.281	-.207	-.228	-.185
q0071_0001	-.250	-.083	-.353	-.176	-.119	-.210	-.305	-.293	-.354	-.241	-.282
q0072_0001	-.359	-.144	-.503	-.285	-.124	-.370	-.408	-.417	-.377	-.382	-.362
q0073_0001	-.140	-.022	-.180	-.147	-.049	-.127	-.244	-.189	-.266	-.136	-.155
q0074_0001	-.041	.101	-.098	-.008	-.014	.022	-.136	-.079	-.157	.037	-.022
q0075_0001	.010	.040	.081	.063	-.005	.086	.042	-.008	-.009	-.011	.096
q0076_0001	.052	.001	-.001	-.011	.033	.018	-.113	-.046	-.048	.046	.015

Correlation	q0045_0001	q0046_0001	q0047_0001	q0048_0001	q0049_0001	q0050_0001	q0051_0001	q0052_0001	q0053_0001	q0054_0001	q0055_0001
q0001_0001	.135	.138	.166	.299	.140	.091	-.062	-.126	-.197	-.152	-.178
q0002_0001	.238	.257	.161	.187	.082	.132	-.143	-.132	-.107	.022	-.166
q0003_0001	.245	.223	.335	.235	.120	.210	-.161	-.177	-.134	-.034	-.242
q0004_0001	.182	.059	.187	.350	.188	.080	-.013	-.201	-.202	-.057	-.211
q0005_0001	.136	.104	.267	.410	.191	.121	-.111	-.263	-.218	-.053	-.219
q0006_0001	.108	.160	-.062	-.037	.010	-.054	.047	.072	.017	-.021	-.014
q0007_0001	.430	.337	.275	.224	.389	.192	-.270	-.365	-.373	-.228	-.308
q0008_0001	.153	.121	.269	.455	.173	.091	-.057	-.255	-.284	.051	-.182
q0009_0001	.222	.227	.342	.407	.183	.156	-.108	-.223	-.243	-.053	-.291
q0010_0001	.223	.255	.382	.453	.207	.192	-.151	-.253	-.250	-.010	-.343
q0011_0001	.343	.275	.311	.106	.257	.106	-.088	-.225	-.139	-.125	-.217
q0012_0001	.244	.202	.258	.419	.210	.140	-.096	-.250	-.249	-.129	-.241
q0013_0001	.320	.325	.383	.483	.309	.197	-.174	-.326	-.260	-.111	-.279
q0014_0001	.008	.033	-.010	.191	.153	.083	-.095	-.100	-.105	-.126	-.072
q0015_0001	.246	.276	.270	.249	.260	.190	-.142	-.249	-.231	-.169	-.152
q0016_0001	.386	.345	.292	.240	.181	.169	-.099	-.248	-.261	-.122	-.198
q0017_0001	.187	.230	.303	.490	.258	.178	-.195	-.250	-.240	-.071	-.201
q0018_0001	.136	.150	.271	.406	.153	.124	-.062	-.243	-.199	-.042	-.209
q0019_0001	.174	.220	.287	.461	.182	.123	-.087	-.295	-.250	-.069	-.225
q0020_0001	.077	.083	.124	.172	.038	.123	-.024	-.127	-.067	-.024	-.125
q0021_0001	.096	.084	.106	.011	.023	.038	.046	-.011	-.058	.155	-.003
q0022_0001	.155	.025	.086	.102	.249	.137	-.248	-.287	-.271	-.292	-.259
q0023_0001	.022	.019	.122	.319	.078	.062	-.049	-.069	-.099	-.031	-.129
q0024_0001	.201	.233	.228	.324	.192	.091	-.092	-.273	-.206	-.002	-.176
q0025_0001	.170	.174	.189	.475	.161	.072	-.078	-.187	-.178	-.111	-.163
q0026_0001	.233	.251	.283	.303	.295	.237	-.143	-.265	-.241	-.195	-.231
q0027_0001	.235	.269	.192	.350	.165	.196	-.108	-.236	-.247	-.089	-.247
q0028_0001	.185	.240	.205	.395	.188	.158	-.124	-.209	-.209	-.099	-.227
q0029_0001	.588	.433	.477	.278	.420	.184	-.204	-.301	-.373	-.190	-.316
q0030_0001	.172	.158	.249	.450	.231	.189	-.129	-.193	-.226	-.069	-.202
q0031_0001	-.355	-.258	-.415	-.340	-.196	-.168	.149	.283	.226	.038	.162
q0032_0001	-.379	-.438	-.338	-.162	-.252	-.147	.199	.326	.257	.075	.195
q0033_0001	.197	.149	.198	.386	.079	.033	-.035	-.132	-.165	-.053	-.186
q0034_0001	.536	.497	.442	.320	.277	.212	-.183	-.271	-.240	-.085	-.254
q0035_0001	.080	.054	.136	.354	.082	.074	.001	-.097	-.127	-.142	-.134
q0036_0001	.288	.264	.287	.538	.317	.226	-.241	-.329	-.385	-.142	-.327
q0037_0001	.213	.158	.248	.315	.129	.124	-.121	-.243	-.176	-.069	-.172
q0038_0001	.114	.085	.112	.216	.008	.036	-.014	-.133	-.051	.064	-.093
q0039_0001	.249	.259	.296	.446	.195	.132	-.096	-.241	-.238	-.005	-.243
q0040_0001	.574	.453	.414	.282	.295	.203	-.172	-.305	-.372	-.145	-.336
q0041_0001	.483	.434	.433	.275	.319	.167	-.190	-.264	-.296	-.177	-.286
q0042_0001	.265	.222	.176	.430	.306	.164	-.212	-.307	-.300	-.246	-.265
q0043_0001	.216	.193	.334	.522	.185	.125	-.126	-.203	-.238	-.030	-.224

q0044_0001	.292	.273	.338	.502	.210	.152	-.088	-.260	-.273	.013	-.304
q0045_0001	1.000	.493	.434	.287	.236	.214	-.119	-.258	-.271	-.089	-.282
q0046_0001	.493	1.000	.355	.219	.170	.161	-.124	-.151	-.153	-.043	-.182
q0047_0001	.434	.355	1.000	.284	.250	.178	-.151	-.286	-.275	-.075	-.271
q0048_0001	.287	.219	.284	1.000	.226	.175	-.091	-.217	-.260	-.041	-.233
q0049_0001	.236	.170	.250	.226	1.000	.270	-.298	-.306	-.392	-.238	-.236
q0050_0001	.214	.161	.178	.175	.270	1.000	-.264	-.195	-.207	-.129	-.156
q0051_0001	-.119	-.124	-.151	-.091	-.298	-.264	1.000	.400	.415	.141	.097
q0052_0001	-.258	-.151	-.286	-.217	-.306	-.195	.400	1.000	.453	.110	.226
q0053_0001	-.271	-.153	-.275	-.260	-.392	-.207	.415	.453	1.000	.153	.164
q0054_0001	-.089	-.043	-.075	-.041	-.238	-.129	.141	.110	.153	1.000	.198
q0055_0001	-.282	-.182	-.271	-.233	-.236	-.156	.097	.226	.164	.198	1.000
q0056_0001	-.162	-.118	-.110	-.100	-.361	-.141	.304	.340	.427	.188	.236
q0057_0001	-.165	-.132	-.126	-.184	-.291	-.134	.145	.186	.218	.242	.223
q0058_0001	-.091	.012	-.132	-.121	-.227	-.073	.087	.164	.260	.136	.214
q0059_0001	-.158	-.167	-.087	-.132	-.268	-.136	.217	.177	.188	.207	.298
q0060_0001	-.229	-.130	-.215	-.175	-.307	-.136	.342	.418	.444	.277	.239
q0061_0001	-.149	-.092	-.226	-.169	-.217	-.095	.330	.411	.396	.123	.204
q0062_0001	-.275	-.206	-.312	-.362	-.435	-.188	.430	.436	.485	.248	.345
q0063_0001	-.192	-.137	-.123	-.117	-.164	-.059	.244	.290	.299	.127	.162
q0064_0001	-.033	.030	.022	.001	-.023	-.027	.125	.109	-.012	.113	.099
q0065_0001	-.070	-.008	-.020	.029	-.135	-.040	.154	.051	.071	.233	.147
q0066_0001	-.390	-.326	-.345	-.381	-.492	-.208	.290	.441	.513	.218	.297
q0067_0001	-.338	-.197	-.207	-.250	-.375	-.184	.234	.377	.442	.174	.234
q0068_0001	-.159	-.065	-.111	-.015	-.170	-.020	.221	.251	.296	.168	.122
q0069_0001	-.294	-.271	-.276	-.263	-.355	-.220	.346	.393	.504	.117	.275
q0070_0001	-.314	-.165	-.186	-.171	-.238	-.078	.213	.285	.282	.057	.182
q0071_0001	-.267	-.157	-.213	-.261	-.411	-.188	.355	.392	.516	.210	.229
q0072_0001	-.316	-.266	-.328	-.419	-.386	-.210	.278	.418	.525	.168	.255
q0073_0001	-.176	-.139	-.185	-.128	-.248	-.051	.311	.385	.436	.156	.136
q0074_0001	-.053	-.011	-.036	-.005	-.207	-.071	.390	.319	.277	.136	.049
q0075_0001	.073	.087	.022	.044	-.068	.021	-.049	-.083	-.013	.017	.032
q0076_0001	-.017	-.016	.010	.005	-.149	-.124	.315	.214	.204	.069	-.010

Correlation	q0056_0001	q0057_0001	q0058_0001	q0059_0001	q0060_0001	q0061_0001	q0062_0001	q0063_0001	q0064_0001	q0065_0001	q0066_0001
q0001_0001	-.104	-.172	-.129	-.070	-.183	-.101	-.211	-.127	.080	-.012	-.207
q0002_0001	-.027	-.107	.035	-.084	-.051	-.086	-.154	-.058	-.068	-.001	-.178
q0003_0001	-.074	-.099	-.063	-.099	-.128	-.114	-.281	-.056	-.048	-.001	-.229
q0004_0001	-.125	-.085	-.171	-.149	-.145	-.197	-.224	-.077	.087	.023	-.211
q0005_0001	-.134	-.163	-.097	-.055	-.094	-.161	-.326	-.218	.043	-.074	-.318
q0006_0001	-.048	-.051	-.030	-.094	.005	.034	-.010	.017	.047	.067	-.090
q0007_0001	-.350	-.302	-.113	-.306	-.408	-.262	-.421	-.194	-.053	-.097	-.571
q0008_0001	-.066	-.146	-.157	-.075	-.171	-.205	-.306	-.109	-.057	.044	-.306
q0009_0001	-.123	-.182	-.122	-.087	-.181	-.194	-.321	-.148	.089	.006	-.313
q0010_0001	-.094	-.156	-.140	-.108	-.182	-.195	-.379	-.101	.012	.022	-.307
q0011_0001	-.141	-.059	-.017	-.102	-.193	-.153	-.226	-.066	.005	-.034	-.310
q0012_0001	-.139	-.186	-.136	-.073	-.233	-.193	-.325	-.120	.007	-.059	-.322
q0013_0001	-.186	-.236	-.182	-.189	-.266	-.295	-.400	-.186	.001	.007	-.445
q0014_0001	-.104	-.141	-.104	-.089	-.130	-.023	-.092	.003	.000	.014	-.178
q0015_0001	-.218	-.226	-.135	-.192	-.280	-.177	-.320	-.153	.042	-.003	-.377
q0016_0001	-.171	-.217	-.170	-.142	-.246	-.204	-.245	-.178	.050	-.008	-.344
q0017_0001	-.206	-.223	-.170	-.107	-.151	-.232	-.386	-.115	-.023	-.005	-.339
q0018_0001	-.079	-.224	-.130	-.090	-.135	-.186	-.324	-.103	-.008	.022	-.279
q0019_0001	-.078	-.137	-.130	-.028	-.155	-.192	-.274	-.130	.016	.009	-.312
q0020_0001	-.111	-.060	-.034	-.072	-.076	-.075	-.189	-.029	-.036	.079	-.116
q0021_0001	-.039	.020	.035	.047	.053	-.014	-.024	-.072	.140	.024	-.036
q0022_0001	-.260	-.144	-.185	-.225	-.399	-.250	-.332	-.304	-.128	-.202	-.311
q0023_0001	-.007	-.045	-.027	.038	-.044	-.034	-.096	-.083	-.022	-.122	-.059
q0024_0001	-.069	-.109	-.061	-.066	-.162	-.193	-.215	-.120	-.020	-.038	-.274
q0025_0001	-.080	-.160	-.100	-.142	-.117	-.145	-.212	-.088	-.013	.010	-.233
q0026_0001	-.254	-.250	-.104	-.230	-.282	-.168	-.339	-.129	.036	-.021	-.358
q0027_0001	-.121	-.158	-.026	-.187	-.197	-.173	-.210	-.102	.088	.019	-.294
q0028_0001	-.170	-.161	-.044	-.156	-.226	-.235	-.251	-.083	-.048	-.030	-.308
q0029_0001	-.327	-.265	-.134	-.273	-.376	-.236	-.411	-.232	-.053	-.117	-.501
q0030_0001	-.083	-.088	-.087	-.077	-.115	-.150	-.231	.009	-.003	-.008	-.243
q0031_0001	.169	.061	.094	.051	.230	.127	.305	.165	-.062	.039	.332
q0032_0001	.235	.149	.149	.191	.200	.205	.298	.140	-.069	.024	.383
q0033_0001	-.050	-.036	-.052	-.117	-.148	-.117	-.154	-.095	-.050	.031	-.184
q0034_0001	-.142	-.174	-.046	-.248	-.223	-.180	-.358	-.122	-.003	.035	-.388
q0035_0001	-.001	-.091	-.064	.017	-.054	-.061	-.164	-.133	.008	-.023	-.179
q0036_0001	-.283	-.226	-.153	-.226	-.289	-.209	-.436	-.152	.011	-.065	-.427
q0037_0001	-.134	-.155	-.072	-.161	-.182	-.163	-.202	-.134	.035	.074	-.263
q0038_0001	-.053	-.036	-.011	.012	-.019	-.110	-.133	-.071	-.049	-.005	-.140
q0039_0001	-.092	-.132	-.125	-.049	-.201	-.198	-.304	-.104	.021	.016	-.304
q0040_0001	-.289	-.252	-.197	-.207	-.369	-.229	-.382	-.228	-.007	-.089	-.499
q0041_0001	-.220	-.285	-.073	-.224	-.294	-.186	-.379	-.112	-.041	-.104	-.401
q0042_0001	-.237	-.236	-.196	-.225	-.261	-.232	-.365	-.124	-.095	-.061	-.440
q0043_0001	-.084	-.144	-.113	-.010	-.214	-.130	-.361	-.168	.046	.025	-.338

q0044_0001	-.162	-.115	-.129	-.070	-.199	-.297	-.367	-.194	-.009	.003	-.356
q0045_0001	-.162	-.165	-.091	-.158	-.229	-.149	-.275	-.192	-.033	-.070	-.390
q0046_0001	-.118	-.132	.012	-.167	-.130	-.092	-.206	-.137	.030	-.008	-.326
q0047_0001	-.110	-.126	-.132	-.087	-.215	-.226	-.312	-.123	.022	-.020	-.345
q0048_0001	-.100	-.184	-.121	-.132	-.175	-.169	-.362	-.117	.001	.029	-.381
q0049_0001	-.361	-.291	-.227	-.268	-.307	-.217	-.435	-.164	-.023	-.135	-.492
q0050_0001	-.141	-.134	-.073	-.136	-.136	-.095	-.188	-.059	-.027	-.040	-.208
q0051_0001	.304	.145	.087	.217	.342	.330	.430	.244	.125	.154	.290
q0052_0001	.340	.186	.164	.177	.418	.411	.436	.290	.109	.051	.441
q0053_0001	.427	.218	.260	.188	.444	.396	.485	.299	-.012	.071	.513
q0054_0001	.188	.242	.136	.207	.277	.123	.248	.127	.113	.233	.218
q0055_0001	.236	.223	.214	.298	.239	.204	.345	.162	.099	.147	.297
q0056_0001	1.000	.200	.318	.326	.464	.309	.415	.264	.053	.095	.421
q0057_0001	.200	1.000	.285	.419	.275	.170	.324	.120	.063	.103	.309
q0058_0001	.318	.285	1.000	.146	.303	.147	.272	.201	.051	.069	.207
q0059_0001	.326	.419	.146	1.000	.221	.135	.202	.058	.111	.125	.272
q0060_0001	.464	.275	.303	.221	1.000	.371	.525	.298	-.016	.138	.452
q0061_0001	.309	.170	.147	.135	.371	1.000	.418	.351	.045	.040	.389
q0062_0001	.415	.324	.272	.202	.525	.418	1.000	.399	.102	.087	.627
q0063_0001	.264	.120	.201	.058	.298	.351	.399	1.000	.054	.269	.331
q0064_0001	.053	.063	.051	.111	-.016	.045	.102	.054	1.000	.178	-.020
q0065_0001	.095	.103	.069	.125	.138	.040	.087	.269	.178	1.000	.004
q0066_0001	.421	.309	.207	.272	.452	.389	.627	.331	-.020	.004	1.000
q0067_0001	.407	.213	.160	.236	.443	.259	.488	.285	.046	.030	.557
q0068_0001	.363	.155	.112	.123	.287	.251	.305	.369	.039	.170	.306
q0069_0001	.357	.358	.278	.347	.400	.308	.437	.273	-.026	.042	.543
q0070_0001	.235	.145	.080	.192	.288	.299	.337	.233	.012	.044	.414
q0071_0001	.438	.260	.211	.191	.460	.393	.609	.287	.069	.091	.516
q0072_0001	.326	.331	.185	.251	.341	.353	.518	.261	.013	.022	.591
q0073_0001	.385	.292	.230	.219	.352	.377	.464	.231	.052	.094	.348
q0074_0001	.370	.111	.111	.154	.327	.285	.330	.252	.140	.111	.252
q0075_0001	.006	.073	.042	-.020	-.008	.016	.035	-.016	.040	.039	-.055
q0076_0001	.238	.087	.123	.008	.238	.296	.224	.198	.082	.052	.188

Correlation	q0067 0001	q0068 0001	q0069 0001	q0070 0001	q0071 0001	q0072 0001	q0073 0001	q0074 0001	q0075 0001	q0076 0001
q0001_0001	-.189	-.113	-.223	-.102	-.132	-.281	-.080	-.012	.030	-.031
q0002_0001	-.147	-.080	-.183	-.122	-.082	-.167	-.021	-.019	-.054	.075
q0003_0001	-.195	-.103	-.223	-.139	-.143	-.216	-.067	-.027	-.024	-.021
q0004_0001	-.096	-.085	-.124	-.053	-.178	-.248	-.134	.018	.005	.019
q0005_0001	-.159	-.112	-.131	-.139	-.203	-.262	-.164	.007	-.002	-.015
q0006_0001	-.078	-.022	-.074	-.101	-.059	.008	-.082	.076	-.045	.021
q0007_0001	-.445	-.179	-.426	-.321	-.351	-.430	-.262	-.272	.080	-.156
q0008_0001	-.138	-.058	-.224	-.129	-.202	-.321	-.108	-.023	.035	.002
q0009_0001	-.232	-.074	-.225	-.212	-.231	-.368	-.136	.023	.010	.038
q0010_0001	-.206	-.035	-.350	-.206	-.239	-.438	-.152	-.022	.049	.053
q0011_0001	-.239	-.144	-.218	-.216	-.189	-.198	-.131	-.038	-.006	-.057
q0012_0001	-.228	-.070	-.228	-.167	-.185	-.327	-.141	.002	.023	.003
q0013_0001	-.332	-.085	-.343	-.321	-.295	-.495	-.214	-.083	.068	-.066
q0014_0001	-.045	.019	-.059	.016	-.017	-.153	-.037	-.023	-.002	.026
q0015_0001	-.192	-.115	-.289	-.176	-.266	-.369	-.185	-.079	.016	-.063
q0016_0001	-.236	-.145	-.269	-.193	-.200	-.283	-.183	-.097	.000	-.033
q0017_0001	-.178	-.058	-.234	-.181	-.305	-.387	-.204	.028	.065	-.051
q0018_0001	-.132	-.060	-.237	-.093	-.195	-.361	-.154	.003	-.016	-.054
q0019_0001	-.202	-.037	-.207	-.150	-.202	-.356	-.187	.052	-.006	.044
q0020_0001	-.053	.036	.004	-.022	-.066	-.044	-.033	.018	.024	-.085
q0021_0001	-.059	-.006	.004	-.125	-.049	.000	-.007	.041	-.060	-.014
q0022_0001	-.335	-.202	-.261	-.187	-.338	-.229	-.206	-.198	.091	-.134
q0023_0001	-.036	.012	.035	.071	-.096	-.096	.040	.081	.016	.044
q0024_0001	-.166	-.065	-.163	-.112	-.181	-.272	-.120	-.018	.127	.003
q0025_0001	-.162	-.098	-.139	-.141	-.151	-.209	-.113	.003	.073	-.003
q0026_0001	-.223	-.049	-.295	-.107	-.229	-.345	-.128	-.155	.031	-.040
q0027_0001	-.274	-.093	-.284	-.194	-.208	-.310	-.098	-.019	.107	-.001
q0028_0001	-.127	-.033	-.143	-.099	-.203	-.233	-.101	-.047	.109	-.001
q0029_0001	-.469	-.177	-.409	-.393	-.388	-.450	-.280	-.151	.022	-.110
q0030_0001	-.144	.016	-.105	-.105	-.183	-.253	-.084	.081	.016	-.014
q0031_0001	.259	.135	.221	.179	.184	.238	.120	.068	-.027	.053
q0032_0001	.220	.110	.312	.164	.209	.262	.181	.168	-.043	.082
q0033_0001	-.169	.006	-.133	-.081	-.104	-.259	-.053	-.018	.105	.029
q0034_0001	-.347	-.087	-.313	-.373	-.250	-.359	-.140	-.041	.010	.052
q0035_0001	-.061	-.005	-.031	.039	-.083	-.144	-.022	.101	.040	.001
q0036_0001	-.263	-.097	-.379	-.201	-.353	-.503	-.180	-.098	.081	-.001
q0037_0001	-.223	-.125	-.283	-.185	-.176	-.285	-.147	-.008	.063	-.011
q0038_0001	-.130	-.074	-.108	-.041	-.119	-.124	-.049	-.014	-.005	.033
q0039_0001	-.126	.018	-.203	-.089	-.210	-.370	-.127	.022	.086	.018
q0040_0001	-.386	-.204	-.373	-.311	-.305	-.408	-.244	-.136	.042	-.113
q0041_0001	-.319	-.182	-.329	-.281	-.293	-.417	-.189	-.079	-.008	-.046
q0042_0001	-.241	-.178	-.357	-.207	-.354	-.377	-.266	-.157	-.009	-.048
q0043_0001	-.254	-.091	-.222	-.228	-.241	-.382	-.136	.037	-.011	.046

q0044_0001	-.222	-.075	-.272	-.185	-.282	-.362	-.155	-.022	.096	.015
q0045_0001	-.338	-.159	-.294	-.314	-.267	-.316	-.176	-.053	.073	-.017
q0046_0001	-.197	-.065	-.271	-.165	-.157	-.266	-.139	-.011	.087	-.016
q0047_0001	-.207	-.111	-.276	-.186	-.213	-.328	-.185	-.036	.022	.010
q0048_0001	-.250	-.015	-.263	-.171	-.261	-.419	-.128	-.005	.044	.005
q0049_0001	-.375	-.170	-.355	-.238	-.411	-.386	-.248	-.207	-.068	-.149
q0050_0001	-.184	-.020	-.220	-.078	-.188	-.210	-.051	-.071	.021	-.124
q0051_0001	.234	.221	.346	.213	.355	.278	.311	.390	-.049	.315
q0052_0001	.377	.251	.393	.285	.392	.418	.385	.319	-.083	.214
q0053_0001	.442	.296	.504	.282	.516	.525	.436	.277	-.013	.204
q0054_0001	.174	.168	.117	.057	.210	.168	.156	.136	.017	.069
q0055_0001	.234	.122	.275	.182	.229	.255	.136	.049	.032	-.010
q0056_0001	.407	.363	.357	.235	.438	.326	.385	.370	.006	.238
q0057_0001	.213	.155	.358	.145	.260	.331	.292	.111	.073	.087
q0058_0001	.160	.112	.278	.080	.211	.185	.230	.111	.042	.123
q0059_0001	.236	.123	.347	.192	.191	.251	.219	.154	-.020	.008
q0060_0001	.443	.287	.400	.288	.460	.341	.352	.327	-.008	.238
q0061_0001	.259	.251	.308	.299	.393	.353	.377	.285	.016	.296
q0062_0001	.488	.305	.437	.337	.609	.518	.464	.330	.035	.224
q0063_0001	.285	.369	.273	.233	.287	.261	.231	.252	-.016	.198
q0064_0001	.046	.039	-.026	.012	.069	.013	.052	.140	.040	.082
q0065_0001	.030	.170	.042	.044	.091	.022	.094	.111	.039	.052
q0066_0001	.557	.306	.543	.414	.516	.591	.348	.252	-.055	.188
q0067_0001	1.000	.347	.442	.506	.509	.425	.350	.292	-.029	.170
q0068_0001	.347	1.000	.289	.262	.298	.227	.290	.323	.054	.190
q0069_0001	.442	.289	1.000	.309	.429	.644	.376	.292	-.081	.152
q0070_0001	.506	.262	.309	1.000	.354	.318	.323	.284	-.018	.150
q0071_0001	.509	.298	.429	.354	1.000	.476	.527	.354	.039	.245
q0072_0001	.425	.227	.644	.318	.476	1.000	.366	.212	-.054	.104
q0073_0001	.350	.290	.376	.323	.527	.366	1.000	.354	.063	.309
q0074_0001	.292	.323	.292	.284	.354	.212	.354	1.000	.037	.369
q0075_0001	-.029	.054	-.081	-.018	.039	-.054	.063	.037	1.000	.052
q0076_0001	.170	.190	.152	.150	.245	.104	.309	.369	.052	1.000

APPENDIX J

3DWS-Form C 47-items: Student Response Averages By Item

	Sum	Mean	Standard Deviation
5. The Holy Spirit is a symbol of God's presence rather than a living being.	1605	3.76	1.391
7. Jesus Christ is important in my life today.	2059	4.82	.486
8. The best source for determining if something is morally right or wrong is the law of the land.	1811	4.24	.901
9. The Bible is more like a good story that teaches moral lessons than a historic record of real people and events.	1971	4.62	.849
10. A person can earn eternal salvation by being good, for example by doing good things for other people.	2037	4.77	.649
11. God created everything.	2076	4.86	.472
12. I am the one who ultimately determines what is right or wrong for me.	1890	4.43	.910
13. There is no way to decide which of the many competing worldviews is true.	1947	4.56	.753
16. Every life has value, whether unborn, disabled, sickly, or in any other way limited.	2095	4.91	.330
17. Muslims, Christians, Jews, and all other people pray to the same God, even though they use different names for their God.	1871	4.38	.970
18. Two people could define truth in conflicting ways and both still be correct.	1717	4.02	1.154
19. If people will only work hard enough, their cooperation could result in a perfect society.	1812	4.24	.862
24. A well-run government can solve all problems.	1845	4.32	.782
25. I can tell if something is morally right by whether or not it works in my life.	1754	4.11	.890
29. I have made a personal commitment to Jesus Christ.	2064	4.83	.452
30. Most people are basically good.	1650	3.86	1.073
31. God is a personal being.	557	1.30	.706
32. Everything belongs to God: for example, my computer, my phone, my clothes.	601	1.41	.691
34. The best source for determining if something is morally right or wrong is the Bible.	2034	4.76	.546
35. God is important primarily because faith in Him makes us more civilized and psychologically healthy.	1522	3.56	1.283
36. I would marry someone of another faith if I were in love.	1867	4.37	.957
37. Every woman should have a right to abort her fetus.	2017	4.72	.688
39. I believe that when I die I will go to Heaven because I have been a good person.	1925	4.51	.776
40. God is actively involved in the universe today.	2047	4.79	.499
41. The Bible is true in all its teachings.	2058	4.82	.497
42. I feel that no one has the right to tell me what to do.	1732	4.06	.857
43. The devil is a symbol of evil rather than a living being.	1872	4.38	.943
44. I believe that when I die I will go to Heaven because I have been going to church pretty much all my life.	1964	4.60	.647

45. God is one God who exists in three persons: Father, Son, and Holy Spirit.	2078	4.87	.437
46. God holds all human beings accountable for their behavior.	2007	4.70	.620
47. When Jesus Christ was on earth, He lived a sinless life.	2053	4.81	.570
48. The standard for truth is when I feel it to be true in my heart.	1805	4.23	.953
49. I read or study the Bible [frequency multiple choice response].	1407	3.30	.975
51. I work with other Christian believers for the purpose of introducing un-churched people to Jesus Christ.	1296	5.04	.902
52. My interactions with non-Christians are likely to demonstrate that I am a Christian.	898	2.10	.771
53. I enjoy talking with one or more of my friends about spiritual things.	799	1.87	.877
56. In everyday activities, for example, doing homework, I deepen my relationship with God.	1216	2.85	.918
60. When I make decisions, the biggest factor is how it will affect my relationship with God.	947	2.22	.905
61. I stand up for what is right even if my friends don't join me.	821	1.92	.736
62. When I have questions about how I should live my life, I look for answers in the Bible.	861	2.02	.881
66. I find the Bible is relevant to my daily life.	669	1.57	.794
67. In my prayers, I actively seek to discover the will of God.	728	1.71	.840
69. I enjoy participating in a worship service with other believers.	697	1.63	.838
71. I think about passages I read in the Bible.	843	1.97	.854
72. I enjoy being with other believers, whether or not we are doing religious activities.	630	1.48	.729
73. I spend time thinking about the sermon after I have left the church building.	1002	2.35	.860
74. I do without things I want in order to give sacrificially to the work of God.	1263	2.96	.858

APPENDIX K

LIBERTY UNIVERSITY- IRB Approval

IRB [IRB@liberty.edu]

Actions

To: kathy.morales@cox.net

Cc: Swezey, James A.; IRB, IRB; Garzon, Fernando; Morales, Kathy

Dear Kathy,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and that no further IRB oversight is required.

Your study falls under exemption category 46.101 (b)(2), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), **survey procedures**, interview procedures or observation of public behavior, unless:

(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Please note that this exemption only applies to your current research application, and that any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption, or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

Fernando Garzon, Psy.D.

Professor, IRB Chair

Counseling

(434) 592-4054

