

BIBLICAL WORLDVIEW DEVELOPMENT WHILE LEARNING ORIGINS SCIENCE

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

The purpose of this hermeneutic phenomenology was to understand the lived experience of how homeschooled high school students integrate origins science into a biblical worldview. For this study, biblical worldview development is the process of faith development in either form or content through an individual's understanding and application of the Bible. The theoretical framework guiding this study is Fowler's faith development theory as it relates an individual's physical, mental, and moral growth to the development of their worldview. This study sought to answer the following research question: how do homeschooled high school students integrate origins science into a biblical worldview? Participants were selected from homeschooled families from across the United States. Data collection included free word association documents, semi-structured interviews, and a focus group. The result of this study is a model for biblical worldview development that explains the lived experience of homeschoolers integrating origins science into a biblical worldview through the components of preparation, education, determination, and reflection. Parents significantly influence the components of the resulting model, causing participants to develop their worldview according to that of their parents. The resulting model for biblical worldview development aligns with the faith stages of Fowler's faith development theory and supports the latter's use as a worldview development theory.

Keywords: biblical worldview development, creation, evolution, faith development theory, homeschool, origins science, worldview

Dedication

To my dear wife and children who have supported me during this entire process—
you have been a true gift and joy in my life.

Acknowledgments

I am grateful to God for His provision and strength during this entire dissertation process.

Dr. James Swezey initially encouraged me to pursue worldview development during an intensive course. I am thankful for his much-needed direction during the early formation of this dissertation.

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Monica Bowman provided edits of my drafts and helpful feedback during the early stages of each chapter.

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List of Abbreviations

3-Dimensional Worldview Survey (3DWS)

American Association for the Advancement of Science (AAAS)

Home School Legal Defense Association (HSLDA)

Institutional Review Board (IRB)

National Center for Science Education (NCSE)

National Home Education Research Institute (NHERI)

Non-overlapping magisteria (NOMA)

CHAPTER ONE: INTRODUCTION

Overview

An individual's worldview is a fundamental set of assumptions about what is real and true about the world (Naugle, 2002; Sire, 2015). Although all of a worldview is central to the examined Christian life (Sire, 2015), an essential aspect of an individual's worldview is the interpretation of origins (Matthews, 2009a; Pearcey, 2004; Rau, 2012; Sire, 2015; Zacharias, 2014). Since the publication of Darwin's *On the Origin of Species* (1859), theologians and scientists have renewed their attempts to reconcile the special revelation of the Bible and the general revelation of science into a coherent biblical worldview (Cabal & Rasor, 2017; Rau, 2012).

Neither public schools nor Christian schools allow students to integrate origins science into a biblical worldview while learning it in the science classroom. Public schools are not legally allowed to have teachers advocate for religious traditions or textbooks that affirm creationism (*Edwards v. Aguillard*, 1987) or Intelligent Design (*Kitzmiller v. Dover Area School District*, 2005). At the same time, Christian schools believe they have achieved biblical integration by including either mandatory Bible classes (Knight, 2006), prayer, or devotional verses that have only the faintest connection to the course material (MacCullough, 2016; Pearcey, 2004). However, homeschooled students have more academic freedom compared to their public school or Christian school peers (Thomas, 2016) and therefore offer an ideal population for understanding how students integrate origins science into a biblical worldview.

Chapter One provides a framework for this study, beginning with a background on the historical, social, and theoretical contexts of worldview. After the background, I describe my motivation and desire in researching these topics, followed by the problem statement, purpose

statement, significance of the study, and research questions. Chapter One concludes with definitions of key terms and a chapter summary.

Background

The following sections give a brief survey of significant historical, social, and theoretical contexts of worldview to establish the importance of studying how students integrate origins science into a biblical worldview.

Historical Context

The concept of worldview has developed over the past centuries by philosophers and theologians, beginning with Kant and including Dilthey, Nietzsche, Foucault, Orr, Kuyper, and Schaeffer (Sire, 2015). While each contributor provided their definition for *worldview*, definitions that are worldview dependent (Naugle, 2002; Sire, 2015), many early biblical worldview definitions included only propositional truths (Schultz & Swezey, 2013), or sets of statements to which one intellectually assented (Naugle, 2002). These biblical worldviews included statements on the nature of reality, knowledge, and morality (Thomson, 2012), but lacked the more recent contributions in the literature (e.g., Naugle, 2002; Pearcey, 2004; Schultz & Swezey, 2013; Setran, 2018; Sire, 2015). The necessary components of a biblical worldview evolved from simple propositional truths to include behavior and heart orientation as well (Schultz & Swezey, 2013; Sire, 2015).

Belief in God and the propositional truths about Him and His creation are not an adequate foundation on which to live since even God's enemies know these truths (James 2:19). More recent literature on biblical worldviews has added behavior to the previously held propositional truths (Schultz & Swezey, 2013; Setran, 2018). However, there have been warnings that simply adding behaviors, or deeds, to professed belief in God still does not provide the firm foundation

on which to live (Matthew 23). A biblical worldview must include more than correct actions and beliefs (Porter, 2014). To this end, Naugle (2002) and Sire (2015) have included heart orientation as the third necessary component of a biblical worldview (Schultz & Swezey, 2013). A biblical worldview then includes not only propositional truths and behavior but also the core desires of an individual's being, their heart orientation. The literature most often cites Sire's (2015) definition of worldview:

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) which 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. 141)

Here we can see that Sire (2015) has included propositional truths (“a story or in a set of presuppositions”), behavior (“which we hold...on which we live and move and have our being”) and heart orientation (“a fundamental orientation of the heart”) as part of a worldview.

There has been a trend in interpreting origins science in terms of worldview (AnswerAnyone, 2018; Colson & Pearcey, 1999; Ham & Hodge, 2014; Matthews, 2009b; Naugle, 2002; Pearcey, 2004; Sire, 2015; Turek, 2014). Today there are no shortages of books and conferences fleshing out how a biblical worldview looks (Pearcey, 2004) with comparatively little literature discussing how it develops, especially when individuals learn origins science. Since origins science should be a significant component of every science curriculum (Larkin & Perry-Ryder, 2015), it behooves educators and other stakeholders to understand how biblical worldview development relates to the learning of origins science. Interestingly, worldview writers seem more concerned with worldview product rather than worldview process. This study

researched this gap into how a biblical worldview develops, specifically when an individual learns origins science.

Social Context

Individuals make all their daily decisions based on a frequently unconscious worldview, meaning interactions between any two people likely constitutes an exchange of different worldviews (Naugle, 2002; Sire, 2015). Because worldviews are all-compassing views of reality, it is of the utmost importance to recognize worldview differences in others as a means for negotiating peaceful coexistences. Since each major worldview interprets reality through vastly different lenses, it becomes necessary to understand the perspectives of others with a different worldview, others who seem to be from another universe (Sire, 2009).

The significant discussions of today can rightly be understood in terms of worldview differences. Issues such as death, sex, personhood, abortion, homosexuality, and gender can, and should, be recognized as differences in worldviews (Pearcey, 2018). Because every worldview is at least slightly different, Sire (2015) argued that no two people agree on every single aspect of reality. Any disagreements individuals have with each other should be seen as a disagreement between worldviews, especially for disagreements regarding origins science (Ham & Hodge, 2014).

Creationists claim that the issues regarding origins science are a matter of worldview (AnswerAnyone, 2018; Colson & Pearcey, 1999; Ham & Hodge, 2014; Matthews, 2009b; Naugle, 2002; Pearcey, 2004; Sire, 2015; Turek, 2014). While all humans have access to the same evidence about origins, it is the interpretation of that evidence over which individuals differ, interpretations based on worldview assumptions (AnswerAnyone, 2018; Gauch, 2009a). How individuals interpret evidence depends on how they evaluate truth claims. Since science

cannot answer philosophical questions of ontological truth (Reiss, 2011), it then becomes necessary to establish a worldview before analyzing the evidence (AnswerAnyone, 2018). How individuals view the world filters the way they interpret origins evidence, or as Sire (2015) stated, “ontology precedes epistemology” (p. 95). This study illuminates the boundaries and gap that exist between theist and naturalist worldviews that interpret the nature of reality quite differently (Sire, 2009).

Given the current intellectual climate between various interpretations of origins evidence (Ham & Hodge, 2014), it is necessary to understand how individuals reach their conclusions about origins science within the framework of a given worldview. While this research was not intended to determine the correct interpretation of the evidence, it served to identify the critical issues involved by constructing a model for the process students go through when they integrate origins science into a biblical worldview. This model allows relevant stakeholders to have more meaningful discussions with each other about the root issues of the origins science debates rather than focusing on surface-level disagreements.

Theoretical Context

I used Fowler’s faith development theory (1981) as a theoretical framework for understanding the faith journey of participants, providing insight into their worldview development, and allowing me to understand worldview differences more clearly (Fowler, 1987). This theory details how people question the stories with which they have grown up and how they view others with whom they disagree as they move through various stages of faith (Fowler, 1981). Fowler (1981) provided three concepts with which to characterize a person’s faith, which I used as a framework for understanding how participants’ worldviews developed: locus of authority, form of world coherence, and bounds of social awareness.

Fowler based his theory on a combination of theories by Piaget and Kohlberg (Fowler, 2004), evidenced by his inclusion of a lengthy fictional conversation between the two to show how each brought a unique perspective to worldview development (Fowler, 1981). Piaget tracked cognitive development through various stages that align with the brain's physical development (Ormrod, 2008). Every person passes through sensorimotor, preoperational, concrete operational, and formal operational stages (Miller, 2011). Although Piaget focused his definition of intelligence on scientifically based assessments (Kowalski & Westen, 2009), Fowler (1981) used these stages to help locate participants in their worldview development. Fowler (1981) aligned faith development theory's first two stages with Piaget's preoperational and concrete operational logic while the remaining stages aligned with varying degrees of formal operational logic.

Additionally, Fowler (1981) identified Kohlberg's theory of moral development as a useful companion to faith development theory. Kohlberg tracked moral development through various stages that generally align with physical development (Kowalski & Westen, 2009). Every person passes through preconventional, conventional, and postconventional morality levels (Ormrod, 2008), and each of Kohlberg's stages correlates to the six stages of faith development outlined by Fowler (1981). In this way, Fowler's faith development theory serves as a particular case of Kohlberg's stages of morality.

Situation to Self

There are three main topics of interest involved in this research: origins science, worldview development, and homeschooling. Origins science has been a topic of fascination for me for most of my life. My conservative upbringing stressed the importance of trust in the Bible and the literal, 24-hour day interpretation, as given in Genesis, so for most of my grade school

years in public school, I was a young-earth creationist. I have since recognized that it was during a Bible tournament that I first revealed how much I had veered from my young-earth creationist views. During one match, a moderator asked, “when were the heavens and earth created?” to which an opposing team member responded with “the first day,” earning the point for the question. I immediately indicated to the moderator that I disagreed since the opening verse of Scripture said the heavens and the Earth were created “in the beginning,” what I believed to be a distinctly different time period than “the first day.” Affirming the amused confusion toward me from the entire audience, the moderator quipped, “wasn’t the first day in the beginning?” I do not remember how I responded to this, only that after a short discussion between the moderator and the judges, they ruled in my opponent’s favor.

During my later years of undergraduate work at a public college, I was introduced to Answers in Genesis and Ken Ham’s apologetic approach to young-earth creationism. It was refreshing to hear someone knowledgeable in science and theology give a coherent defense of the faith. What I did not know at the time was that many other knowledgeable scholars in science and theology were coming to vastly different conclusions. I ignored my view for many years until I found out that I would be required to teach evolution in the high school where I had been employed for five years. This new requirement began a renewed investigation into origins science for several months, during which I consumed many podcasts, books, and YouTube videos that discussed origins science from many different viewpoints. I felt that teaching a course on evolution at a public school required me to take a firm stand on what I believed. To that end, I have found myself unwilling to identify a label from the origins science spectrum that I believe has the most harmony between the special revelation of the Bible and the general revelation of nature. While I lean more toward old-earth creationism, I am neither convinced that

any one view has all the correct answers on the matter, nor that having all the answers is necessary. I hold my own beliefs in a very open hand as I find them rather unimportant compared to other matters of the faith and seek to defend merely special creation, that God created all things. Sire (2006) summarized this view well:

The fact is that there is no consensus among informed and intelligent Christians. So every apologist needs to have an informed position, either one of the several specific options Christian experts have outlined and promoted or a position like my own – that no position is obviously correct and that it is not necessary to decide which one is correct. The key issue is not *how* God did it but *whether* he did it [emphasis in original]. (p 174)

The second main topic of this research is worldview development. My concern with worldview emerged out of origins science and how evidence is interpreted. The issue of evidential or presuppositional apologetics has helped me categorize my thinking on worldview development. Although for many years I was interested in evidential apologetics, I have recently found presuppositional apologetics a more tenable and biblical view of apologetics and worldview development. For this reason, I was curious to hear from students about how they came to their conclusions on origins science: was that process based on evidence, presuppositions, or a combination of both?

The final topic of interest is homeschooling. For many years my wife and I have grown concerned as we have seen the decline of public school education in its more postmodern understandings of various social issues. Two books required in Liberty University courses have influenced my views on homeschooling. The first book, *Kingdom Education*, was early in my doctoral studies. In it, Schultz (2005) hinted at the fact that homeschooling is the only current form of education that finds support in the Bible. This view intrigued me, and I asked my wife to

read it shortly before we ended up homeschooling our oldest child. The second book, *Philosophy & Education*, was toward the end of my doctoral studies. This book was the first to help me see how a philosophy of education looks from a biblical worldview. In it, Knight (2006) dismantled many of the educational philosophies I had learned in my undergraduate work because they were based on atheist understandings of knowledge and truth. This book has given me conviction in my desire to homeschool our children.

Philosophical Assumptions

My philosophical assumptions toward ontology, epistemology, and axiology are given below. First, the question of ontology and the nature of existence (Knight, 2006) is of utmost importance to me. One of my original desires to pursue science in my undergraduate studies was that I wanted to know what was right and true about the universe. In determining a standard for truth, everyone must appeal to some ultimate authority. To be ultimate, this authority must be its own bearing for truth without appealing to any other authority; otherwise, that outside authority would be even more ultimate (Grudem, 1994). For example, many people hold reasoning and logic as ultimate authorities in determining truth because, using a bit of circular reasoning, it is reasonable or logical to use them as ultimate authorities (Grudem, 1994). Unfortunately for these individuals, reasoning and logic have no foundation for apprehending truth outside of a biblical worldview (AnswerAnyone, 2018; Colson & Pearcey, 1999; Turek, 2014) and so are not adequate arbiters of truth.

The Bible is God's breathed out words and is useful for learning what is truth, teaching others what is truth, correcting others in truth, and sustaining a life according to the truth (2 Timothy 3:16). My basic ontological framework then finds its foundation in the Bible. My understanding of the true nature of reality is found in Christ as He proclaimed that He is the ever-

present Being, the “I am” (John 8:58, NIV), the creator (John 1:1-3), purpose, and sustainer of all things (Col. 1:15-17). Although there is only one reality, I know little of it apart from what God reveals through the Bible (Hebrews 1:1-2) or nature (Romans 1:18-20). I believe that the study of God and nature gives us the humility to recognize how little we know of either.

Second, my assumptions about epistemology, the nature of knowledge, and determining what is true (Knight, 2006), flow from Christ as the ontological referent. Sire (2015) spent much time trying to convince his readers that “ontology precedes epistemology and hermeneutics – and whatever else there may be” (p. 95). As a result, I believe truth is objective and accords with the person and words of Christ (John 14:6). Although any truth is indeed God’s truth, any means of understanding reality, for example, logic, reason, mathematics, science, free will, or consciousness, must be understood in view of God’s special revelation (Knight, 2006; Morris, 2014). Additionally, any truth claims about reality must be rationally coherent, empirically correspondent, and existentially pragmatic (Naugle, 2002; Sire, 2009; Zacharias, 2014), all of which are defensible from a biblical worldview. Because my ontological basis is a God who created and sustains all natural law, I can have confidence in the truth claims that logic, reason, mathematics, or science may reach. A biblical worldview provides the necessary substratum on which to build my life (Matthew 7:24-27).

Not surprisingly, my assumptions about axiology, determining what is of value (Creswell & Poth, 2018; Knight, 2006), also flow from Christ as the ontological and epistemological referent. Since “axiological systems are built upon conceptions of reality and truth” (Knight, 2006, p. 28), I seek to value what God values and behave how God behaves. Because of this, I value science, logic, and reason because they find their foundation in the scientific, logical, and reasonable Being that is revealed in the Bible and nature (Schaeffer, 1968b). I value truth

because it is God's native language (Numbers 23:19), and I seek to live according to a coherent biblical worldview because God's character delights in nothing less (1 Peter 1:16; James 1:22). I value understanding and discovering anything that brings glory to God, recognizing that any research endeavor or knowledge claims that do not lead me closer to God inevitably lead me further from Him (Vanderstelt & Connelly, 2017).

Finally, my philosophy of education as a teacher informs my interpretations as a researcher. I view students as beings who are sinful by nature (Eph. 2:1-3) and choice (Rom. 3:23) and need to be developed and equipped for a life of glorifying God (Blackaby & Blackaby, 2011). Successful education in my mind is not one that consists of high marks on projects or standardized tests but in helping students understand the nature of God (Guttek, 2011)—having prepared a student to live a full life with a satisfying career and family does little for me as an educator if students have no regard for their Creator. Proponents of the public school system see the purpose of education as preparing children to become contributing and successful members of society (Glanzer, 2013); I find this goal highly inadequate, mainly because my views of what is genuinely contributing, successful, and even society are markedly different from those who do not hold a biblical philosophy of education.

Interpretive Framework

This hermeneutic phenomenology aimed to understand the lived experience of how homeschooled high school students integrate origins science into a biblical worldview. As I have an interest in the sciences and have been teaching high school science for nine years, I used the postpositivist framework for this study. Creswell and Poth (2018) stated that postpositivism is scientific and logical. It is a framework whose adherents believe that “a single reality exists beyond ourselves, ‘out there’” while admitting “[I] may not be able to understand it or get to it

because of lack of absolutes” (p. 35). Although this framework agrees with my philosophical assumptions, it also reminds me that I am not God, I do not know all the answers, and I do not know precisely how all absolutes work. However, I can still understand what God has plainly revealed in nature (Romans 1:18-20) and Scripture (1 Corinthians 2:10).

Problem Statement

An individual’s worldview affects how they interact with and understand everything in the world around them (Sire, 2015). For this reason, interactions between individuals are interactions between different universes (Sire, 2009). However, much of the research in biblical worldview assumes that the worldview is already in place without explaining how it was developed (Brown, 2018; Burkholder, 2016; Esqueda, 2014; Hamilton, 2017). While there are plenty of books and articles about how a biblical worldview should look and many surveys for measuring adherence to a biblical worldview (Schultz & Swezey, 2013), few of them explain how a biblical worldview develops. The problem to be addressed in the research is how homeschooled high school students integrate origins science into a biblical worldview.

A vast majority of the research on origins science education since the turn of the century has focused on improving the role evolution plays in public schools with relatively little research on how worldview, particularly theism, affects an individual’s acceptance of evolution (Glaze & Goldston, 2015). Because an individual’s view of origins is an essential part of their worldview (Rau, 2012; Sire, 2015; Zacharias, 2014), it is necessary to understand how origins science and biblical worldview development are related. There is no research seeking to understand the interactions between a student’s learning of origins science and their biblical worldview development, a gap in the literature that this study sought to fill.

Public schools do not allow the breadth of options to understand all aspects of origins science (*Edwards v. Aguillard*, 1987; *Kitzmiller v. Dover Area School District*, 2005), and Christian schools integrate the Bible by having it in a separate class (Knight, 2006) or by sprinkling religious activities over otherwise secular content (MacCullough, 2016; Pearcey, 2004). Because of this, neither of these groups of students would yield the desired results for this study. Homeschoolers, however, have more freedom with the curriculum than other students (Thomas, 2016) and are rich for research opportunities (Wilkins et al., 2015), making them ideal candidates for this research.

Purpose Statement

The purpose of this hermeneutic phenomenology was to understand the lived experience of how homeschooled high school students integrate origins science into a biblical worldview. For this study, biblical worldview development is the process of faith development in either form or content (Fowler, 1981) through an individual's understanding and application of the Bible. The theoretical framework guiding this study was Fowler's faith development theory as it relates physical, mental, and moral growth to the development of an individual's worldview (Fowler, 1981).

Significance of the Study

There is little research on worldview development as most books and articles instead focus on defining aspects of various worldviews. Because of this, my research on worldview development has theoretical, empirical, and practical significance. Since qualitative research is often a precursor to quantitative studies, my study suggests variables of interest for future researchers (Corbin & Strauss, 2015). The resulting model for biblical worldview development adds to the literature on worldview development and the formation of a biblical worldview. This

study also contributes to the growing literature on Fowler's faith development theory and its application in various domains.

This study adds to the limited research on biblical worldview development. Much of the biblical worldview literature focuses on why it is an important starting point for understanding various issues (Brown, 2018; Burkholder, 2016; Esqueda, 2014; Hamilton, 2017), with little qualitative research done on how it personally develops. Fowler's faith development theory is an exception, though his initial research took place decades ago (Fowler, 1981). This study serves to fill this gap in the literature on biblical worldview development. Additionally, homeschoolers are often ignored in educational research (Howell, 2013; Watson, 2018). As such, this study also contributes to the growing but limited body of homeschooling research over the last several years (Ray, 2017). Since qualitative studies are frequently preludes to quantitative studies (Corbin & Strauss, 2015), this study serves as a foundation for future quantitative studies in worldview development or homeschooling.

The practical significance of this study is for those interested in worldview development, origins science, and homeschooling. First, it provides some insight into how worldviews develop, particularly during the later adolescent years. Individuals interested in instilling biblical worldviews in the next generation need a basic understanding of how biblical worldviews develop. Second, scientists are interested in how students learn origins science and are intrigued as to why evolution is not taught or accepted as readily as anticipated (Borgerding, 2017; Larkin & Perry-Ryder, 2015; Mangahas, 2017). This study provides insight into the process students go through when they integrate origins science into a biblical worldview. Finally, this study is of significance to homeschooling advocates. The results of this research provide a greater sense of

urgency in helping others understand the many non-academic benefits of homeschooling (NHERI, 2018).

Research Questions

The central research question and sub-questions for this study are given and described below.

Central Research Question

How do homeschooled high school students integrate origins science into a biblical worldview?

A worldview describes a set of assumptions for how an individual views life (Sire, 2015). In practice, homeschoolers have the most freedom in choosing their curriculum (Thomas, 2016). Since an interpretation of origins is an essential part of an individual's worldview (Matthews, 2009a; Pearcey, 2004; Rau, 2012; Sire, 2015; Zacharias, 2014), it is of interest to determine how students with the most considerable academic freedom integrate these ideas into a biblical worldview.

It has been suggested that the faith development theory used as the theoretical framework for this study should more appropriately be called the "world view development" theory to remove any religious connotation (Fowler, 1981, p. 91). Because of this worldview developmental aspect, the following three sub-questions aligned with stages 3-5 from the faith development theory, where all the participants in this study were located (Fowler, 1981).

Sub-Questions

1. How do homeschooled high school students describe the relationship between the Bible and science?

The faith stages depend partly on a person's authority structure (Fowler, 1981). If a person's locus of authority is external, this is characteristic of stages three and four (Fowler, 1981). If that place of authority moves inward because of questioning of childhood beliefs and assimilation of the perspectives of others, this is characteristic of stages five and six (Fowler, 1981). By understanding how students describe how the Bible and science inform or correct each other (Reiss, 2009), I gained an understanding of how they understand these sources of authority (Ham & Hodge, 2014), illustrating how their worldview developed.

2. How do homeschooled high school students describe the process of changing or sustaining their beliefs about origins science?

The faith stages depend partly on a person's questioning of prior learning (Fowler, 1981). This self-reflection occurs particularly during stages four and five, in which convictions and self-identity begin to develop (Fowler, 1981). Since an interpretation of origins is essential to understand an individual's worldview (Matthews, 2009a; Pearcey, 2004; Rau, 2012; Sire, 2015; Zacharias, 2014), the people, books, videos, or ideas that have helped students change or sustain their beliefs were crucial in understanding how their worldview developed.

3. How do homeschooled high school students perceive others with whom they disagree about origins science?

The faith stages depend partly on an individual's grace toward others during disagreements (Fowler, 1981). The debates around origins science are filled with much vitriol, particularly with the dogmatism found in both fundamental Christians and fundamental New Atheists (Cabal & Rasor, 2017; Rau, 2012). The humility with which participants approach others with whom they disagree indicated how their worldview developed (Fowler, 1981).

Definitions

The following terms are used throughout this study:

1. *Biblical Worldview* – a worldview that consists of beliefs, actions, and values based on the Bible that are grounded in Christ and seek the establishment of His kingdom (Pearcey, 2004; Schultz, 2005; Sire, 2015).
2. *Biblical Worldview Development* – the process of faith development in either form or content (Fowler, 1981) through an individual’s understanding and application of the Bible.
3. *Experimental Science* – science that is testable and repeatable (Ham & Hodge, 2014). This includes many areas of physics, chemistry, and biology.
4. *Faith Development Theory* – the theory of stages of faith that all humans move through based on their locus of authority, form of world coherence, and bounds of social awareness (Fowler, 1981).
5. *General Revelation* – any truth about reality that can be discerned by believers and unbelievers through science, including “the knowledge of God’s existence, character, and moral law that comes through creation to all humanity” (Grudem, 1994, p. 1243).
6. *Historic Science* – science that seeks to understand the present by making interpretations about the past (Ham & Hodge, 2014). This includes many areas of geology, paleontology, and forensic science, as well as portions of physics, chemistry, and biology.
7. *Hermeneutic Phenomenology* – a qualitative methodology that is “a *descriptive...methodology* because it wants to be attentive to how things appear [and also] ...an *interpretive...methodology* because it claims that there are no such things as

uninterpreted phenomena [emphasis in original]” (Van Manen, 1997, p. 180). It is a research methodology centered on interpreting a collective lived experience (Creswell & Poth, 2018) while focusing on the science of humans rather than the science of nature (Van Manen, 1997).

8. *Homeschool* – a form of education where students learn primarily under the direction of their parents (Thomas, 2016) or other like-minded parents and cooperative teachers as a “deliberate alternative to and rejection of institutional schooling” (Gaither, 2008, p. 202).
9. *Microevolution* – “small-scale genetic and structural changes in organisms” (Dembski & Wells, 2008, p. 316). All Christians accept microevolution as it can be easily shown in experiments. Macroevolution, that species have evolved from other species, is a philosophical extrapolation of microevolution.
10. *Origins Science* – any aspect of science that seeks to explain the origins of the universe, life, or humanity (Dembski & Wells, 2008; Ham & Hodge, 2014; Rau, 2012).
11. *Science* – initially a system of knowing that could apply to physical science, mathematics, and even theology (Pearcey, 2004) but typically refers to the study of the natural world, with a clear secular emphasis on natural (Fishman, 2009; Ham & Hodge, 2014).
12. *Special Revelation* – any truth about reality given directly by God and “addressed to specific people, including the words of the Bible” (Grudem, 1994, p. 1255).
13. *Worldview* – a “reasonably straightforward and relatively noncontroversial” definition is the “interpretation of reality and a basic view of life” (Naugle, 2002, p. 260). Though Naugle’s (2002) definition is an important starting point for introducing the term to a novice, I used Sire’s (2015) definition as it is often cited in the literature:

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) which 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. 141)

Summary

Chapter One introduced the background of worldview and its historical, social, and theoretical contexts, recognizing that more has been done on the identification of worldviews than their development. The problem addressed in this research was how homeschooled high school students integrate origins science into a biblical worldview. The purpose of this hermeneutic phenomenology was to understand the lived experience of how homeschooled high school students integrate origins science into a biblical worldview. Fowler's faith development theory informed the resulting model by providing a greater understanding of the stages of faith each participant finds themselves, informing how their biblical worldview has developed. The results of this study add to the literature on worldview development, homeschooling, origins science, and faith development theory.

CHAPTER TWO: LITERATURE REVIEW

Overview

This literature review provides a synthesis of previous research done in faith development theory, worldview, origins science, and homeschooling. Faith development theory research focuses on Fowler's (1981) seminal work. Following this is a discussion of the historical and conceptual use of worldview (Naugle, 2002; Sire, 2009, 2015) and its specific impact on understanding the Bible and science. Next, the literature on origins science (Dembski & Wells, 2008; Rau, 2012) shows how worldview has affected various spheres of educational philosophy and practice. Finally, I end with the current state of homeschooling research before concluding with a chapter summary and a description of the literature gap this study sought to fill.

Theoretical Framework

A theoretical framework is used in a research design when the study deductively applies an already established theory to a new situation (Rocco & Plakhotnik, 2009). To this end, the concepts underlying faith development theory aided in understanding how biblical worldviews developed for homeschooled students while learning origins science. The following paragraphs summarize the findings of faith development theory and its fundamental concepts.

Faith development theory was initially created by James Fowler and his students in the 1970s as a result of their interviews with 359 participants (Fowler, 1981). Though his theory may appear to be religious in nature due to its name, Fowler routinely insisted that faith does not have to be based on religion (Fowler, 1981, 2000). Instead, Fowler (1981) gave a detailed definition of faith that does not necessitate religious belief:

In the most formal and comprehensive terms I can state it, *faith* is: People's evolved and evolving ways of experiencing self, others and world (as they construct them) as related

to and affected by the ultimate conditions of existence (as they construct them) and of shaping their lives' purposes and meanings, trusts and loyalties, in light of the character of being, value and power determining the ultimate conditions of existence (as grasped in their operative images – conscious and unconscious – of them). (pp. 92-93)

This definition allowed Fowler (1981) to separate the structure of a person's faith, the way it looks, from its content, the person, thing, or system on which it is based. Although Fowler (1986) admitted that faith is typically mediated through religion, he contested that many modern individuals have faith in someone or something that is not part of a communal narrative (Fowler, 2000). However, because faith is a universal human experience, it will either be directed toward God or something else that serves as a functional savior (Pearcey, 2004). Some have proposed “‘world view development,’ ‘belief system formation’ or, on occasion, the ‘development of consciousness’” as alternate names for the theory to avoid faith development theory's religious connotation (Fowler, 1981, p. 91).

Because of its similarity to understanding an individual's worldview development, this study employed faith development theory to understand the characteristics of each of the research participant's worldviews. Fowler provided six stages of faith and four stage characteristics to locate his participants in their faith journey. While the stages may be of some use to this research, three of Fowler's four stage characteristics, locus of authority, form of world coherence, and bounds of social awareness (Fowler, 1981), were mainly used to guide the creation of the interview and focus group questions and were also used throughout the data analysis to provide a theoretical framework for the participants' worldview development.

Stages of Faith

Fowler's faith development theory organizes the faith of an individual into six stages that move through a four-dimensional, ascending spiral (Fowler, 1981). Fowler stressed that some people never progress through future stages, though this is not a judgment on the person's quality of faith (Fowler, 1987). Instead, each stage occurs for the correct amount of time for each person to fully live out its benefits and understand life's experiences associated with that stage (Fowler, 1981). The goal is not for individuals to reach a final stage but to live within each stage as closely as possible with what Fowler (2000) called *Spirit*. Fowler's writing makes it unclear, likely deliberately, whether this Spirit only refers to the Christian view of the Holy Spirit or also to some ultimate Other (Fowler, 2001) that serves as the person, thing, or system around which individuals center their lives.

It is incorrect to think of some faith stages as higher or lower than others as if they were value judgments on a person's faith (Fowler, 2000). The stages are simply a way of understanding the complexity of a person's faith framework. Individuals progress through each of these stages sequentially (Fowler, 1986), generally corresponding to their mental, physical, and moral development as they grow in their faith journey (Fowler, 1981, 1988). However, unlike other theories of development, individuals do not automatically progress into the next stage of faith simply because time has passed or their body has physically matured (Fowler, 1987, 2000; Fowler & Dell, 2004). The transition from one stage to another requires a rethinking of the form of an individual's faith, typically as a result of some cognitive dissonance (Fowler, 2000). Because of its similarities to the development of worldviews, it is useful to understand the distinctions between these stages as a framework for understanding how homeschooled high school students progress in their understanding of origins science.

Infancy and Undifferentiated Faith

Fowler calls this a pre-stage, a time associated with infancy from birth up to two years old (Fowler, 1981, 1987). In this stage, individuals are utterly dependent on caregivers for all of life's necessities, forming a level of trust with the caregiver and environment (Fowler, 1981, 1987). The transition to stage one occurs when individuals have learned to use language and symbols to communicate (Fowler, 1981).

Stage One – Intuitive-projective Faith

Stage one typically begins for individuals during preschool age (Fowler, 1987) between the ages of two and six (Fowler, 1981). In this stage, individuals are easily pleased by fantasy and their imagination as they encounter different stories and images that resonate with their intuition (Fowler, 1981). Children in this stage do not just possess emotions; their emotions also possess them (Fowler, 1987). The transition into stage two occurs when individuals form concrete operational thinking, desiring to know the difference between reality and fantasy (Fowler, 1981).

Stage Two – Mythic-literal Faith

Stage two typically begins for individuals during mid-childhood (Fowler, 1987) and can continue for the rest of their lives (Fowler, 1981). In this stage, individuals live within the stories of their culture and build meaning and coherence in their lives as they begin to understand the experiences of others (Fowler, 1981). Children in this stage use stories as the primary vehicle of understanding and sharing reality with others (Fowler, 1987). Although children in the previous stage are controlled by their emotions, children in this stage begin to control their own emotions and act in a way to satisfy their "imperial self" (Fowler, 1987, p. 63). The transition into stage three occurs when individuals note difficulties in reconciling aspects of authoritative truth stories

from their own lives, like the Bible's truth account of creation with the truth account given by scientists (Fowler, 1981). This transition is noted to be the likely place of conversion for those of religious faith (McLean, 1986).

Stage Three – Synthetic-conventional Faith

Stage three typically begins for individuals during adolescence (Fowler, 1987) and can continue for the rest of their lives (Fowler, 1981). For some adults, stage three “becomes a long-lasting or permanently equilibrated style of identity and faith” (Fowler, 1981, p. 161). In this stage, individuals begin to look outside their immediate families and initial stories to synthesize the identities and stories of others (Fowler, 1981). Individuals in this stage seek to understand themselves by synthesizing the selves they believe others see in them (Fowler, 1987). The transition to stage four occurs when individuals reflect critically on their own beliefs and values, typically as a result of individuating themselves from their parents by leaving home, going to college, or entering the workforce (Fowler, 1981).

Stage Four – Individuative-reflective Faith

Stage four typically begins for individuals during young adulthood and can continue for the rest of their lives (Fowler, 1981, 1987). In this stage, individuals form their identities and worldviews despite the influence of the surrounding culture (Fowler, 1981). The individual's self may still have the same roles and responsibilities as before but is no longer defined by them (Fowler, 1987). Individuals must reflect on their previously held worldviews and identities apart from the culture in which they grew up (Fowler, 1987). Their worldviews do not need to change in content, but individuals in this stage assume authority over their own goals and beliefs, an authority that was previously delegated to others (Fowler, 1987). The transition to stage five

occurs when individuals recognize that life is not dichotomous and instead seek to understand the complexity of truth that was not initially presented in earlier stages (Fowler, 1981).

Stage Five – Conjunctive Faith

Stage five typically begins for individuals during their early-thirties, can continue for the rest of their lives (Fowler, 1981), and is quite typical for middle adulthood (Fowler, 1987). In this stage, individuals recognize and embrace paradoxes and contradictions, believing that truth is found in the tensions (Fowler, 1981). Individuals in this stage seek to find unity in what was previously seen as divided, hence the name of the stage (Fowler, 1987). It is a difficult stage to describe as Fowler (1981) himself admitted that he had “not found or fabricated a simple way to describe Conjunctive faith” (p. 184). Fowler (1987) noted that for a Christian, growing maturity to this stage looks like an ultimate embrace of various biblical paradoxes such as the trinity or the hypostatic union. The transition to stage six occurs when individuals seek to transform and unite the world through their understanding of reality (Fowler, 1981).

Stage Six – Universalizing Faith

Stage six typically begins for individuals in middle adulthood and later (Fowler, 1987). It is a very rare stage to reach as only one individual in Fowler’s original pool of 359 participants was in this stage (Fowler, 1981). Fowler referred to Mahatma Gandhi, Martin Luther King Jr., and Mother Theresa as examples of people with stage six faith whose “heedlessness to self-preservation and the vividness of their taste and feel for transcendent moral and religious actuality give their actions and words an extraordinary and often unpredictable quality” (p. 200). Individuals in this stage live fully in God’s ontological, epistemological, and axiological views of the world, living as though God’s kingdom is already present (Fowler, 1987). Not

surprisingly, Fowler (2000) admitted that this stage might not be possible for people without religious orientation.

Stage Characteristics

While conducting the initial research, Fowler (1981, 2001) and his students recognized three concepts to help determine an individual's faith stage: locus of authority, form of world coherence, and bounds of social awareness. The locus of authority is the person or object by which an individual makes their decisions about beliefs and actions (Fowler, 1981). This locus of authority starts with the caregivers (stages one and two) and moves toward the surrounding social structure at large (stage three) before moving inward (stage four) while also including the claims of others (stages five and six) (Fowler, 1981).

The form of world coherence is the degree to which an individual's worldview coheres internally and externally (Fowler, 1981). This form of world coherence starts as loosely connected events (stages one and two) and moves toward an understanding of the symbols of the faith (stage three) before becoming explicit and reflective (stage four) while also including aspects of multiple worldviews (stages five and six) (Fowler, 1981).

The bounds of social awareness are the extent to which components of other worldviews have been met, considered, and either included or excluded in an individual's faith (Fowler, 1981). These bounds of social awareness start with just the family and the larger structures that are similar to the family (stages one and two) and move toward people from many different group structures (stage three) or self-identified groups (stage four) before including the truths from opposing worldviews (stage five) up to a recognition of a oneness of humanity (stage six) (Fowler, 1981).

Summary of Theoretical Framework

Fowler's faith development theory has been used in over 90 studies since its original inception 40 years ago (Parker, 2010). Fowler sought to explain what he viewed as a universal human construct in terms of discrete stages to understand better this complex phenomenon he called faith (Fowler, 1981). Faith development theory was used for three of the four concepts Fowler created to understand the faith stage of individuals: locus of authority, form of world coherence, and bounds of social awareness (Fowler, 1981, 2001). While interviewing homeschooled students about origins science, these three concepts were used to determine the participants' authority for truth claims, worldview coherence, and awareness and views of those who disagreed with them. The goal of using this theory was not to categorize the participants but to use these three concepts to understand better how their worldviews developed. This research advances the validity of Fowler's theory as a useful framework for understanding the worldview development of others.

Related Literature

The related literature begins with a discussion on worldview, its beginning as a concept, how it develops, and its current usage in Christian settings. This transitions naturally into a discussion of origins science since much of the interpretations of origins science evidence depend on an individual's worldview (AnswerAnyone, 2018; Ham & Hodge, 2014). The final related literature section surveys the research that has been done in homeschooling.

Worldview

Worldviews provide overarching metanarratives to help individuals understand ontology, epistemology, morality, and humanity along with the origin, purpose, and destiny of life (Sire, 2009). It is essentially the philosophy by which a person lives (Schaeffer, 1972) or "the sum total

of our beliefs about the world, the ‘big picture’ that directs our daily decisions” (Colson & Pearcey, 1999, p. 14). A worldview seeks to give pure knowledge about reality that was initially attained only by religions, then philosophies, and now science (Bugajak, 2014). A simplistic definition of worldview is the “interpretation of reality and a basic view of life” (Naugle, 2002, p. 260). Naugle (2002) also provided a more formal definition of worldview as “a semiotic system of narrative signs that has a significant influence on the fundamental human activities of reasoning, interpreting, and knowing” (p. 253). Sire’s (2015) definition for worldview is most often cited in the literature and is used throughout this research:

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) which 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. 141)

Sire (2009) provided eight basic questions that each worldview must answer and explained how Christian theism, naturalism, and postmodernism, along with several other worldviews, answer these questions.

Countless philosophers, scientists, psychologists, sociologists, anthropologists, and theologians have sought to carefully define worldview (Naugle, 2002), resulting in a concept that should prove exceedingly helpful in understanding the conflicts in our postmodern world (Pearcey, 2004; Schaeffer, 1968b). An individual’s worldview must be rationally coherent, empirically correspondent, and existentially pragmatic (Naugle, 2002; Sire, 2009; Zacharias, 2014); this means the worldview must not contain any contradictions, must be able to explain the various situations of life, and be of practical use to the individual. The difficulty is that most

people do not reflect on their worldviews of which they are mainly unconscious (Sire, 2015), so the coherence, correspondence, or pragmatism of an individual's worldview may go unquestioned for years.

Worldview as a Concept

The term worldview is translated from the German *Weltanschauung*, which is a combination of the German words for world and to look (Pearcey, 2004). Immanuel Kant initially used the term in 1790 as “the sense perception of the world” (Naugle, 2002, p. 59). Though purported to be an objective view of the world, the definition and usage of the term worldview is worldview dependent (Naugle, 2002; Sire, 2015). In response to the question, “what is a worldview?” Sire (2015) responded that “a single answer is not easy to come by. In fact, I don't think it exists” (p. 55). Although the term appears to have had passing significance for Kant, Naugle (2002) provided a rich history of how worldview as a concept has evolved through Christian, philosophical, scientific, psychological, sociological, and anthropological disciplines.

Even though every worldview is slightly different based on the person who lives by it, there are commonalities among all of them (Sire, 2015). Sire (2015) claimed that there are basic ontological, epistemological, axiological, and behavioral questions that worldviews must answer. Even postmodernism, a worldview that claims that there are no worldviews, provides answers to these questions (Sire, 2009). Worldviews can be dependent on the mind of the person as in Dilthey's view, culturally and temporally dependent in Nietzsche's view, or utterly reliant on language and hermeneutics as in Wittgenstein's and Foucault's views (Sire, 2015). These philosophers sought to define the term worldview within their own naturalist, nihilist, and existentialist worldviews (Sire, 2015).

Biblical Worldview

The concept of a biblical worldview finds its basis in Scripture as the biblical writers made bold claims about worldview questions of ontology (Genesis 1:1; John 1:1), epistemology (Proverbs 1:7; Romans 1:18-20), axiology (Colossians 3:2; Matthew 6:21), and behavior (Ephesians 5:1-2; Matthew 28:19-20). Schaeffer (1976) claimed that God spoke in clear ways through the biblical writers giving its readers objective revelatory truth about the world that could not be ascertained any other way. Up until the seventeenth century, a theistic worldview was presupposed by most of the Western world (Sire, 2009) with the primary focus on the question of ontology (Sire, 2015). For much of this time, it was the power of the biblical worldview that allowed Christians to overcome the emerging worldviews around them (Schaeffer, 1976). Since then, religious and secular worldviews have been dichotomized and relegated to personal and public worldviews, respectively (Van der Kooij et al., 2017; Pearcey, 2004). According to modern and postmodern thinking, personal religious worldviews belong in the upper stories of our minds where we hold subjective values while secular naturalism as the public worldview belongs in the lower stories of our minds where objective truth and facts reside, a dichotomy of truth which finds no basis in a biblical worldview (MacCullough, 2016; Naugle, 2002; Pearcey, 2004; Schaeffer, 1968a, 1968b). The Bible asserts that truth is found neither in the natural world nor divided between personal and public views of reality but is instead found in the person of Jesus Christ (John 14:6). In this way, truth found in science, math, social studies, literature, or any other content area must be subsumed under a biblical worldview because they “all have some residual characteristics of their original creative design in spite of human sin” (MacCullough, 2016, p. 24).

A biblical worldview, sometimes called a Christian worldview, Christian theistic worldview, or God-centered worldview, is a worldview that consists of beliefs, actions, and values based on the Bible that are grounded in Christ and seek the establishment of His kingdom (Pearcey, 2004; Schultz, 2005; Sire, 2015). It must be stressed that there is more than one biblical worldview that humans can possess (Sire, 2015) in ever-increasing conformity to Christ's worldview. It may be unhelpful to categorize people as having biblical or unbiblical worldviews and more helpful to place worldviews along a continuum of how well they accord with Christ's worldview (Schultz & Swezey, 2013), recognizing that the refining process continues until death (MacCullough, 2016). Though the essential characteristics remain the same, individuals with a biblical worldview have slightly different versions from everyone else (Sire, 2015).

Since Catholics, Protestants, and Eastern Orthodox all fall under the broad umbrella of Christianity, it comes as little surprise that each agrees on the overall essence of Scripture's revelation of creation, fall, and redemption (MacCullough, 2016; Naugle, 2002) while also providing their nuance (Thomson, 2012). Although Catholics focus on the incarnation of Christ and include their rich tradition, and Eastern Orthodox focus on liturgical practice, neither group has historically given as much attention to worldview as Protestants (Naugle, 2002).

Unfortunately, Protestants may focus too much on their worldview to the detriment of God on whom it rests, exchanging "a normative set of coherent propositions for a personal Savior" (Naugle, 2002, p. 338). Indeed, Karl Barth lamented that worldview thinking made God out to be an objective fact to be understood rationally rather than a subjective person to be understood relationally (Thomson, 2012).

Early contributors to the Protestant biblical worldview include Orr, Kuyper, Dooyeweerd, and Schaeffer (Naugle, 2002) with more recent contributions from Pearcey (2004), Naugle (2002), and Sire (2009, 2015). Naugle (2002) asserted that a biblical worldview is “not a mere religious possibility or philosophical option, but...an absolutist perspective on life that is real, true, and good” (p. 266). To this end, worldview thinkers have recently begun including the heart orientation of the individual as part of a biblical worldview (Naugle, 2002; Schultz & Swezey, 2013; Sire, 2015). Sire (2009) stated that “to accept Christian theism only as an intellectual construct is not to accept it fully” (p. 285). Full development of a biblical worldview includes not only submitting the mind and body to the lordship of Christ but also the heart (Matthew 22:37; Proverbs 3:5).

Sire (2009) cautioned that individuals should handle their worldviews with humility since they do not possess all knowledge (1 Corinthians 13:12). Naugle (2002) stated that this humility would be of importance with how the Bible and science inform worldviews from the approach of critical realism:

If God exists and is the maker of heaven and earth; if he has created all things by his word and designed all things by his wisdom and law; if he is the architect of the human mind and its cognitive power; and if he has so made people that their lives and perspectives consist of the belief content of the human heart...then it is reasonable to assume that knowledge of the cosmos is possible, though it is always conditioned by human finitude, sinfulness, and the experience of redemption. (pp. 325-326)

Individuals with biblical worldviews must develop them with a mixture of confidence in the object on whom their faith rests and humility for their own hermeneutic and epistemic inadequacies (MacCullough, 2016; Naugle, 2002). It is not possible to have complete agreement

with Christ's worldview, though individuals must continually develop a worldview that accords with biblical revelation (MacCullough, 2016; Naugle, 2002). Thomson (2012) contended that any worldview that finds itself in complete agreement with Scripture is guilty of confirmation bias, only seeing Scripture supporting what they already believed was true about it. Sire (2015) stated that since Christians have changed their worldviews before, from unbeliever to believer, that they should remain humble in asserting the absolute rightness of all their views, recognizing that their worldview is still a matter of faith.

Biblical Worldview Development. While passive worldview development begins from birth through the influence of family, community, church, and culture (MacCullough, 2016), Kuyper (Naugle, 2002) and Schaeffer (1968b) stressed that active worldview development begins with presuppositions, axioms held to be true as the foundation for a logical argument. Presuppositionalists have argued that a biblical worldview is not one of many worldviews in which to reason people into using evidential or probabilistic arguments, but rather is the only option through which all of life makes sense (AnswerAnyone, 2018; Naugle, 2002; Schaeffer, 1968b). Indeed, Paul says that God has made Himself plain to all but that many have suppressed the truth (Romans 1:18-20).

For this reason, presuppositionalists contend that “the unconverted can in no way grasp the force of a case for Christianity. The gospel is thus only to be proclaimed, not argued for” (Sire, 2015, p. 108). Sire (2015) stressed that ontology must come before epistemology; to know anything about God requires individuals first to recognize His Being. A biblical worldview cannot develop out of mere philosophic and rational discussions. It must first begin with our recognition that reasoning, logic, consciousness, epistemology, or hermeneutics do not make sense without an adequate ontological referent (AnswerAnyone, 2018; Sire, 2015).

To begin possessing a biblical worldview, an individual must first undergo a transformational work of the Holy Spirit (Ezekiel 36:26; Naugle, 2002; Sire, 2015). Naugle (2002) stated, “the formation of a Christian worldview is ultimately a function of God’s grace and redemption” (p. 289). Biblical worldviews then develop out of an individual’s understanding of the Bible, history, reason, and experience (Porter, 2014; Smith, 2015) and are not merely adopted in a moment, but instead develop over many years of walking faithfully with Christ (Smith, 2015). Biblical worldviews can also be cultivated by patterns of remembrance, praising, mourning, and by modeling these patterns for others (Setran, 2018).

A significant challenge to developing a biblical worldview is overcoming the atomic worldview of society with the relational worldview portrayed in Scripture (Smith, 2015). The atomic worldview promotes individualism while the relational worldview portrayed in Scripture encourages our interdependence with other believers (1 Corinthians 12:27; Galatians 6:2). A worldview develops as individuals interact with mundane or difficult moments of life (Sire, 2015), especially as they enter into the suffering of others (Setran, 2018). What individuals need, Naugle (2002) suggested, is a biblical understanding of the heart, how things go in, and why things come out. Understanding and applying these concepts are shaped sociologically, and “since social groups are epistemically significant, the church should never lose sight of the power of the Christian community in shaping Christian consciousness” (Naugle, 2002, p. 251). Indeed, McDowell and Wallace (2019) have found through their many years of teaching and pastoring that “worldviews are primarily shaped and learned through relationships” (p. 84). Christian communities should be mindful of their importance in shaping the hearts of children as their worldviews continue to develop (Luke 6:45; Proverbs 4:23). For example, Christian colleges can help students form biblical dispositions “through habitual practices that invite the

Spirit to transform the heart's loves and inclinations" (Setran, 2018, p. 71), practices that help bridge the gap between propositional truths and behaviors with heart orientation.

Individuals must be teachable in order to develop a biblical worldview after the Holy Spirit's initial work. This development requires the sacrificing of idols and praying for spiritual deliverance (Pearcey, 2004). In any area of life, for example, politics, economics, education, science, and family, it is necessary to cultivate biblical concepts of creation, fall, and redemption (Colson & Pearcey, 1999; Esqueda, 2014; Pearcey, 2004; Schaeffer, 1968b). A biblical worldview is not to be haphazardly cultivated as it requires time to be sanctified into the image of Christ (Porter, 2014). It can be challenging to develop a biblical worldview for several reasons: individuals tend to be around like-minded people, it is difficult to change an individual's already held worldview, few believers have a biblical worldview, unbiblical traditions persist, and spiritual pride can creep into those who recognize the unbiblical worldview of those around them (Smith, 2015). Pearcey (2004) suggested that individuals ask themselves how things were originally created to function biblically, how the Fall and the introduction of sin have distorted this original function, and how the restorative work of the gospel and the lordship of Jesus Christ can redeem the situation. Pearcey (2004) provided examples of how to do this with education, family, and parachurch organization fundraising. Smith (2015) suggested asking worldview questions of people, media, news, and other daily interactions to discern the level of harmony with a biblical worldview.

A biblical worldview begins with a heart change that prompts a change in thinking and believing. However, for individuals to simply state their worldviews without living it out is not possible (Pearcey, 2004). A worldview is "what is actualized in our behavior. We live our worldview or it isn't our worldview. What we actually hold, for example, about the nature of

fundamental reality may not be what we say” (Sire, 2015, p. 153), though Sire admitted that worldviews are workable and fluid. Although it is possible to live with a worldview that is not logical, Christians desire to eliminate those contradictions (Sire, 2015). Kuyper famously declared that “no single piece of our mental world is to be hermetically sealed off from the rest...there is not a square inch in the whole domain of our human existence over which Christ, who is Sovereign over all, does not cry: ‘Mine!’” (Bratt, 1998, p. 461). When Christians divide their minds into sacred and secular, they ultimately suffer more than an atheist who lives consistently within their worldview because “the most miserable person of all is the one who knows the truth yet doesn’t obey it” (Colson & Pearcey, 1999, p. 314). This lack of developing logical, biblical worldviews has led to a generation of young Christians who see religion as a matter of the heart while science is a matter of the brain (Kinnaman, 2011; Pearcey, 2004).

Science From a Biblical Worldview. The advantage of science is its ability to change quickly because of the demands of new evidence and explanatory power; the advantage of religion is its ability to slow down this incredible change in favor of “fighting for the maintenance of eternal truths” (Morris, 2014, p. 402). Science does not allow individuals to attain pure knowledge about reality (MacCullough, 2016) but limits them to only practical knowledge, a knowledge that can make predictions and create new technologies without ever needing to know the complete description of reality (Bugajak, 2014). Even so, many scientists unconsciously presuppose a biblical worldview (Colson & Pearcey, 1999; Turek, 2014). Scientists need Christianity to assert that “the physical world is real...nature is orderly and predictable...humans can discover nature’s order...[and] the order in nature is mathematically precise” (Colson & Pearcey, 1999, pp. 422-424). As opposed to many Eastern worldviews where science did not advance as readily as in the West, Christianity provided the necessary stable

foundation for science to develop (Colson & Pearcey, 1999). Today, the definition of science is significantly worldview laden (Ham & Hodge, 2014) and requires philosophic understanding to grasp (Gauch, 2009a). Initially, science meant merely a system of knowing that could apply to physical science, mathematics, and even theology (Pearcey, 2004) but science has now become the study of the natural world, with a clear secular emphasis on natural (Fishman, 2009; Ham & Hodge, 2014). As a result, many scientists are forced, by definition, to rule out the possibility of the supernatural from their investigations.

It is unlikely that today's naturalistic scientists would have been able to initiate the scientific revolution had they been given the opportunity with their current epistemology (Schaeffer, 1968a). Naugle (2002) stated that worldviews affect our rationality, hermeneutics, and epistemology. If this is true, as those with a biblical worldview contend, then the debates on origins science are over the wrong issues. Individuals cannot have coherent debates with others who have a different worldview over issues of evidence while the interpretation of that evidence and the validity of that evidence is disputed (Deckard et al., 2002). Instead, discussions should center on the worldviews by which we arrive at our conclusions (Pearcey, 2004). Unfortunately for naturalists, changing the discussion from the concrete evidence to the abstract worldview is often unwelcome (AnswerAnyone, 2018).

The concept of worldview becomes helpful in understanding the current relationship between scientists and the Bible. Many authors suggested that all the disagreements can be understood in light of opposing worldviews (AnswerAnyone, 2018; Colson & Pearcey, 1999; Ham & Hodge, 2014; Matthews, 2009b; Naugle, 2002; Pearcey, 2004; Sire, 2015; Turek, 2014), going so far as to dividing all worldviews into one of two options; biblical or unbiblical (AnswerAnyone, 2018; Schaeffer, 1968b; Schultz, 2005). Thus, the way to understand any of the

apparent contradictions between scientists and the Bible is to understand them as conflicts between naturalism and biblical theism (Colson & Pearcey, 1999; Ham & Hodge, 2014). To this end, Christians should focus on defending the faith from naturalism instead of defending it from evolution (Colson & Pearcey, 1999).

Authors with biblical worldviews have routinely defined two areas of science: experimental science and historic science (Ham & Hodge, 2014; Mortenson, 2016; Pearcey, 2004; Rau, 2012; Turek, 2014). For experimental science, scientists with opposing worldviews have no difficulty agreeing with each other's conclusions; for example, there is no young-earth creationist theory of electricity. The practical knowledge attained by science achieves widespread agreement and is not controversial. The vast amount of scientific consensus is agreed upon by all scientists regardless of worldview, though these agreements tend to fall under experimental science that is repeatable and testable (Ham & Hodge, 2014; Pearcey, 2004; Rau, 2012; Turek, 2014). It is the historic science, events that have occurred in the past, have happened a limited number of times, or occur over very long time scales where the interpretations given by the underlying epistemologies and worldviews of scientists then become relevant (AnswerAnyone, 2018; Ham & Hodge, 2014). Naturalistic scientists must realize that they are the intellectual progeny of Aquinas who falsely viewed man's intellect as unaffected by the Fall, meaning theology, philosophy, and science could all be pursued outside of professed knowledge of God (Schaeffer, 1968a). Instead, naturalistic scientists seek to show that it is possible for a sequence of events to have happened in the past using laboratory experiments that show how all the pieces could fit together; after showing its possibility, they declare its actuality. However, merely having a possibility cannot serve as proof that an event occurred (Bugajak, 2014).

The subtlety behind Darwinian evolution was not to simply question how species arose, but instead to question humanity's epistemology: are humans in a closed system where everything is a result of naturalistic cause and effect or are humans in an open system where the supernatural and an individual's consciousness can act on nature from the outside (Pearcey, 2004; Schaeffer, 1968a, 1976)? Naugle (2002) explained humanity's epistemology in this way:

Knowledge is born and raised, consciously or unconsciously, in a context, and articulated from a particular point of view. There are no perfect reasoners. There is no pure human logic. There is no god's-eye point of view. Some kind of worldview, however narrowly or broadly conceived, underlies the practice of science (and life) simply because science (and life) is a human endeavor. (p. 204)

Darwinian evolution itself did not begin the disagreements between modern science and religion. Disagreements arose because of the epistemological beliefs of the subsequent naturalist scientists (MacCullough, 2016), scientists who were able to do their work based on the assumptions and foundations of an existing Christian worldview that had too much inertia to be quickly exchanged (Schaeffer, 1976).

Science from a Naturalistic Worldview

While science initially meant simply studying the natural world, it is now used synonymously with naturalism, the view that reality is based on nature (Colson & Pearcey, 1999). The problem between biblical and naturalistic worldviews and their relationship to science is determining whether ontological naturalism is a useful presupposition in science or a logical conclusion supported by scientific evidence (Glennan, 2009; Matthews, 2009a). Darwin's *On the Origin of Species* (1859) marked a change in the general worldview consensus of scientists (Matthews, 2009a; Pearcey, 2004) that has given opponents of religion the needed

naturalistic mechanisms to be “intellectually fulfilled atheists” (Dawkins, 1986, p. 10) within their scientific worldview (Irzik & Nola, 2009; Reiss, 2011).

The practice of science today opposes major religious tenets along with other claims of pseudosciences (Matthews, 2009a). Indeed, if the supernatural did exist, it is expected to have been found by now after years of careful searching (Fishman, 2009). Although science routinely interacts with domains outside of itself with mathematics, logic, and epistemology, Matthews (2009a, 2009b) admitted that those domains are not immune to modification by scientific consensus. Indeed, science or scientism is a worldview without the usual buildings or liturgy in place, but still offers “a vision of redemption, a surrogate salvation, [and] a substitute for the kingdom of God” (Colson & Pearcey, 1999, p. 246).

Gauch (2009b) stated that the relationship between science and worldviews “is one of the most significant and yet unsettled aspects of science” (p. 668) and that “science’s boundary is somewhat fuzzy and controversial” (p. 672). To help clarify the role of science in general, Gauch (2009b) included seven pillars for what makes orthodox science: the physical world is real and comprehensible, science requires evidence and logic, science has its limits but must be available publicly, and science contributes to worldview. Gauch (2009b) admitted that at least one of his pillars, that the physical world is comprehensible, is a statement about what is true without explaining why it is true; he left an explanation of the latter up to individuals with various worldviews to answer, asserting that it was merely optional for some scientists to answer. Although there are current scientists who are religious (Ashton, 1999; Collins, 2006; Ham & Hodge, 2014; Mortenson, 2016) and would be interested in answering these optional questions, naturalistic scientists question the rationality of religious scientists because “scientists are

humans and humans notoriously can believe all sorts of crazy things at the same time” (Matthews, 2009b, p. 721).

Unfortunately, there seems to be very little agreement among scientists, philosophers, and educators as to the nature of science and the types of questions science can even answer (Matthews, 2009a; Reiss, 2009). Indeed, while it may be helpful to carefully define the nature of science and the nature of religion, these natures may be defined differently based on worldview (Glennan, 2009). Defining science from areas of non-science risks ignoring a priori some explanations that may exist (Fishman, 2009). Here it is useful to understand that science cannot prove or disprove anything definitively but only supply models and explanations that have probable evidential support on a continuous spectrum (Fishman, 2009; Reiss, 2009).

Methodological naturalism provides an objective means of understanding physical reality apart from any need to believe, posit, or acknowledge the existence of anything apart from matter and is “consistent with the existence of supernatural entities” (Irzik & Nola, 2009, p. 733). Naturalists insist that everyone should be able to accept the findings of science and the interpretations of scientists without concern for how it may impact worldviews (Matthews, 2009a). This is especially true since most Christian scientists are also methodological naturalists (Sire, 2015). However, some religious claims must at least be reinterpreted as non-literal based on the findings of science, particularly creationist claims (Matthews, 2009b). Creationists are called scientifically illiterate for ignoring modern science (Cordero, 2009) and rejecting well-established science that says species evolved on Earth (Glennan, 2009).

Other naturalists believe that science does have a direct impact on worldviews (Irzik & Nola, 2009) going as far as to call evolution a religion (Pearcey, 2004) that will slowly answer the questions previously reserved only for philosophy and religion (Cordero, 2009). The act of

doing science presupposes that there are natural explanations for all natural phenomena with the possible exception of the Big Bang (Irzik & Nola, 2009). However, even if all the evidence in a given situation like the Big Bang pointed toward a Creator, that possibility is not allowed by the definition some give to science (Pearcey, 2004). Science answers all questions as much as possible, relinquishing all non-scientific questions to an individual's worldview (Cordero, 2009). This worldview may be informed by evidence from science and humanities or by personal and meaningful experiences by the individual (Gauch, 2009a).

The interaction between science and religion can be described as conflict, dialogue, integration, or border crossings (Borgerding, 2017; Reiss, 2009; Taber et al., 2011). Personal worldviews could be compartmentalized from public worldviews like someone crossing a border between countries. Stephen Jay Gould (1999) popularized this concept as non-overlapping magisteria (NOMA). Gould (1999) suggested that there should be no arguments present between scientists and theologians because they both occupy different areas of knowing that do not impinge on each other. The Bible and science are both avenues for truth that need to stay within their areas of expertise; pastors should not preach about science about which they are not professionally trained, and scientists should not seek to explain fields outside of natural law (Morris, 2014; Reiss, 2009). Even though many evolutionists subscribe to this view of knowledge and truth claims, those with a biblical worldview oppose this bifurcation (Schaeffer, 1968b). Although there may be a level of agreement that science and scientists should not be speaking into matters of theology (Reeves, 2013), those with a biblical worldview vehemently disagree that theology cannot speak into matters of science (Dembski & Wells, 2008; Ham & Hodge, 2014; Pearcey, 2004).

It is difficult to live consistently within naturalism (MacCullough, 2016; Schaeffer, 1968b, 1972, 1976; Sire, 2009). Because naturalists are created in God's image, they feel the tension of professing one view academically while living out just the opposite privately (AnswerAnyone, 2018; Pearcey, 2004). Schaeffer (1972, 1976) stated that naturalistic views of the universe do not just get rid of God, they get rid of man, love, and freedom; humanity is simply reduced to a part of the cosmic machine. Some naturalists live honestly within their naturalism, claiming that consciousness, love, and free will are illusions (Pearcey, 2004), even going as far as to posit evolutionary reasons for rape (Thornhill & Palmer, 2000). Because of the difficulty of living out the logical consequences of naturalism practically with its chemical, genetic, and psychological determinism (Schaeffer, 1968a, 1972), it is routinely asserted by naturalists that they ought to live as if God exists even though they believe He does not, relegating Him to a mere useful illusion (Pearcey, 2004; Schaeffer, 1968a, 1968b, 1972) that has apparently survived because of evolutionary advantage. These scientists believe that simply understanding the truth about the human condition makes up for its existential bleakness (Reeves, 2013).

Origins Science

Origins science encompasses the creation of four main areas; the universe, life, species, and humans (Dembski & Wells, 2008; Rau, 2012). Although many worldviews answer these origins questions differently, any worldview answer can be considered as either biblical or unbiblical (Schaeffer, 1968b; Schultz, 2005). The biblical worldview states that God created the universe, life, species, and humans out of His own desire (Ham & Hodge, 2014; Sire, 2009). The current unbiblical worldview states that the universe began with the Big Bang or the multiverse, life formed out of random chance, species evolved by means of natural selection, and humans

evolved out of these species by the same process, all without any supernatural intervention (Rau, 2012). Though the details of each explanation vary among people, these two sets of worldview answers represent the extremes that are given the most attention in the popular media (Rau, 2012).

Origins Science in History

For hundreds of years in the West, the theistic worldview was presupposed as the public worldview (Naugle, 2002). Though individuals may have held different private worldviews, people knew that there were objectively good and bad decisions and that some things were true while their opposites were false (Schaeffer, 1968b). During this time, it was generally accepted that a non-specific god had created everything, and it was not unheard of to have many scientists like Copernicus, Kepler, or Newton insist that their endeavors were unmasking the face of god (Pearcey, 2004). These scientists recognized that rationality, logic, predictability, repeatability, and uniformity of nature required a god that acted as the underlying substratum (Pearcey, 2004; Schaeffer, 1976). Over time, through the contributions of Galileo in astronomy, Lyell in geology, and Darwin in biology, the public opinion began to sway to more naturalistic mechanisms of origins (Cabal & Rasor, 2017; Loftus, 2012; Pearcey, 2004; Schaeffer, 1976).

Galileo introduced the idea that Earth was not the center of the solar system, an idea not readily accepted by the Roman Catholic Church at the time (Cabal & Rasor, 2017; Matthews, 2009b). Lyell then introduced the uniformity of cause and effects within the field of geology, that only the processes that are active now created everything we see on the Earth today (Schaeffer, 1976). Neither of these scientists touched on the crucial subject of humanity quite as boldly as Darwin (1859). When *On the Origin of Species* was published, it was the first of its kind to give a natural mechanism for the biodiversity we see on Earth (Dembski & Wells, 2008).

This mechanism of natural selection was then extrapolated to explain how humans came to exist (Darwin, 1859). No longer were scientists only closing the god of the gaps in the relatively impersonal concepts like the center of the solar system or rock formations, but now Darwin and his followers questioned the origins of deeply personal topics of life and humanity.

Currently, the origins debate is typically seen as a dichotomy between naturalism and creationism (Rau, 2012). Naturalists on one side espouse evolution by natural selection and have said there is no controversy among scientists as to whether evolution is true (Deckard et al., 2002). The other side of the dichotomy is creationism, typically young-earth creationism. They have their own Ivy League doctorates who firmly believe in the fundamental view of Scripture and its authority over the fallibility of man's reasoning (Ashton, 1999; Ham & Hodge, 2014; Mortenson, 2016). They have developed their own museums and academic journals because their work is not considered actual science by those in the broader academia (Rau, 2012). If anyone attempts to hold a moderate view in the origins debate, they tend to get criticized from both sides, accused of being anti-science by the naturalists and compromising of Scripture by young-earth creationists (Cabal & Rasor, 2017).

To illustrate this dichotomy, the Discovery Institute began a list of scientists from the most prestigious institutions from around the world who disagreed with Darwinism, a list that has since reached 1,156 names (Discovery Institute, 2018). Each of the listed scientists agrees with the following statement, "we are skeptical of claims for the ability of random mutation and natural selection to account for the complexity of life. Careful examination of the evidence for Darwinian theory should be encouraged" (Discovery Institute, 2018). In response, the National Center for Science Education (NCSE) created its own list of scientists who agree with their statement:

Evolution is a vital, well-supported, unifying principle of the biological sciences, and the scientific evidence is overwhelmingly in favor of the idea that all living things share a common ancestry. Although there are legitimate debates about the patterns and processes of evolution, there is no serious scientific doubt that evolution occurred or that natural selection is a major mechanism in its occurrence. It is scientifically inappropriate and pedagogically irresponsible for creationist pseudoscience, including but not limited to “intelligent design,” to be introduced into the science curricula of our nation's public schools. (NCSE, 2020)

In a humorous attempt to show the overwhelming consensus of scientists who accept evolution, the petition only allows scientists named Steve to sign. NCSE named this endeavor Project Steve as a reference to Stephen Jay Gould, a prominent evolutionist and popularizer of the NOMA theory for how religion and science inform each other (NCSE, 2020). As of January 2020, 1,447 Steves have signed the statement (NCSE, 2020).

Origins Science in United States Public Schools

It is interesting to note that the significant voices in the origins science debates focus on what should be taught to our children in public schools (Fishman, 2009; Schaeffer, 1976). Without exception, stakeholders in origins science are much more concerned about how the next generation learns these concepts rather than what the current generation believes (Ham & Hodge, 2014; Morris, 2014). There seems to be an implicit understanding on both sides that the opposition has deceived the current generation and that the United States must start again by correcting the next generation. To this end, there have been several United States court cases that have slowly changed what is acceptable and unacceptable to teach in public schools regarding

origins science (*Edwards v. Aguillard*, 1987; *Epperson v. Arkansas*, 1968; *Kitzmiller v. Dover Area School District*, 2005; *Selman v. Cobb County School District*, 2006).

Opponents of creationism claim that creation science is simply not science (Loftus, 2012; Loftus & Rauser, 2013; Matthews, 2009b). Naturalistic scientists can make predictions that are testable and falsifiable, while biblical scientists merely create ad hoc explanations for phenomena already discovered (Cordero, 2009; Matthews, 2009b). Darwinism is so well regarded among the scientific community because it makes bold predictions about the nature of reality that have been later confirmed (Cordero, 2009). The American Association for the Advancement of Science (AAAS) wants all students to know that every problem is best solved by those carefully trained to have a scientific mind (Matthews, 2009b).

Advocates of teaching only evolution lament that it is difficult not to include religion in the science classroom when so many students still hold unscientific religious views (Glennan, 2009). Reiss (2011) insightfully noted that students who believe in creationism see the evidence from a non-scientific worldview, a worldview that is difficult to change in a short high school lesson, causing many biology teachers to avoid teaching evolution altogether (Larkin & Perry-Ryder, 2015). This difficulty in teaching evolution may be the result of the cognitive development of adolescent students who are expected to understand the complex natures of science and religion by high school (Taber et al., 2011). This avoidance of teaching evolution may be particularly noted in Christian schools whose graduates are viewed as scientifically illiterate by their college peers (Mangahas, 2017).

Origins Science in Christianity

Sire (2015) noted that there is good reason to believe that this world is intelligible in its complexity since it reflects the nature of God. Indeed, many early scientists were at least deists,

if not theists (Pearcey, 2004). They recognized that if an ordered and logical God existed, then it would make sense that nature was also ordered and logical. These early scientists recognized what many scientists recognize today, that God has authored two books: the special revelation of Scripture and the general revelation of nature (Pearcey, 2004).

Christians agree that the truths found in these books only make sense from a biblical worldview (Pearcey, 2004). It is the precise nature of how these two revelations relate to each other that separates the spectrum of biblical views of origins. Here it is important to note that there are no contradictions between general and special revelation; the contradictions appear only after each revelation is interpreted (Geisler, 2012). Although the Bible provides Christians sufficient truth about the world, it does not provide exhaustive truth (Schaeffer, 1976). It is the job of the scientist to give the how behind God's revelatory who and why (Schaeffer, 1976). Galileo encouraged this endeavor as a scientist by famously noting that the Bible tells an individual how to go to heaven, but not how the heavens go (Cabal & Rasor, 2017).

A worldview must address the concepts of creation, fall, and redemption (Matthews, 2009a; Pearcey, 2004; Rau, 2012; Zacharias, 2014). Colson and Pearcey (1999) stated that every worldview must begin with explaining the origins of the universe and that this starting point functions as the religion for the individual. As a result, the gatekeepers for understanding origins science also hold the key to worldview formation (Pearcey, 2004). Colson and Pearcey (1999) claimed that this gatekeeping role is key to understanding the major challenges in today's postmodern world:

Our origin determines our destiny. It tells us who we are, why we are here, and how we should order lives together in society. Our view of origins shapes our understanding of ethics, law, education – and yes, even sexuality. Whether we start with the assumption

that we are creatures of a personal God or that we are products of a mindless process, a whole network of consequences follow, and these consequences diverge dramatically. (p. 92)

If the universe began with a timeless, immaterial, creative, powerful, and caring Agent, it requires a response from the creation. This response includes new ways of behaving in the world as philosophers, lawyers, educators, and sexually reproductive beings. If instead there is no God, then there is nothing short of evolutionary advantage holding back the actions of highly developed primates. Any worldview's explanation for origins directs the remaining course of an individual's worldview, including biblical worldviews.

Unfortunately, the gatekeepers for origins science in Christianity are challenging to address because every person has a nuanced view on origins science that fall along a spectrum (Lennox, 2011; NCSE, 2016; Rau, 2012). There are Christians who defend a fundamental interpretation of Genesis, other Christians who defend more hermeneutic freedom with Genesis, and still others who hold one of a variety of other views (Rau, 2012). For example, James McCosh, one-time president of Princeton college, affirmed an evolutionary understanding of origins to defend his Christian faith during sermons (Morris, 2014). For simplicity, the following four main categories of origins science in Christianity are considered in this study: young-earth creationism, old-earth creationism, evolutionary creationism, and the overarching framework of intelligent design.

Young-earth Creationism. Young-earth creationism is the view that the natural reading of Scripture, particularly the early chapters of Genesis, reveals that the universe and all that is in it was created only several thousand years ago (Ashton, 1999; Cabal & Rasor, 2017; Ham & Hodge, 2014; Rau, 2012). This view is typically seen as the most direct opposition to naturalism

as it disagrees on all four aspects of evolution: the evolution of the universe, life, species, and humanity (Rau, 2012). In addition to holding the Bible inerrant, young-earth creationists tend to view their interpretation of Scripture as inerrant, causing the young-earth creationist group Answers in Genesis to amend the Chicago Statement of Biblical Inerrancy to include the age of the Earth as well (Cabal & Rasor, 2017). Organizations that promote young-earth creationism include Answers in Genesis, Creation Ministries International, Creation Research Society, and the Institute for Creation Research, whose advocates include Ken Ham, Henry Morris, and Kent Hovind (Rau, 2012).

Old-earth Creationism. Old-earth creationism is the view that the natural reading of Scripture, particularly the early chapters of Genesis, reveals that the universe and most of what is in it is billions of years old while humanity may have been a much more recent special creation (Cabal & Rasor, 2017; Rau, 2012; Reasons to Believe, n.d.). Old-earth creationists also hold the Bible inerrant, with The Evangelical Theological Society, likely made up of predominantly old-earth creationists, requiring its members to affirm the Chicago Statement of Biblical Inerrancy (Cabal & Rasor, 2017). The organization that promotes old-earth creationism is Reasons to Believe and its founder Hugh Ross (Rau, 2012).

Evolutionary Creationism. Evolutionary creationism is the view that the natural reading of Scripture must include the fact that the biblical writers were sinful and thus may have written or copied things incorrectly (Cabal & Rasor, 2017). Although the Bible may be inspired, it is undoubtedly not inerrant, at least not in the same way meant by conservative Christians (BioLogos, 2019; Cabal & Rasor, 2017; Yakimenko, 2017). Instead of creating everything via special creation, God created via secondary causes of natural law that would create everything precisely as He saw fit (Morris, 2014). For example, while Genesis affirms many aspects of

God's creation ex nihilo, God as the primary cause also used the land as the secondary cause to produce vegetation (Genesis 1:11). Evolutionary creationism is different from Darwinian evolution, which posits that no supernatural intervention has occurred or is needed to explain the origins of the universe, life, species, or humanity (Rau, 2012). The organization that promotes evolutionary creationism is BioLogos and its founder Francis Collins (Rau, 2012). The creator of the faith development theory used for this study also believed in evolutionary creationism evidenced when he stated that our ability to grow in faith and partnership with God is a result of "our creatively evolved biological heritage" (Fowler, 1987, p. 54).

Intelligent Design. The intelligent design movement has a mix of individuals who hold the three previous Christian views in addition to Jews and agnostics (Denton, 2016; Rau, 2012). Instead of focusing on science, scientists, as part of groups like the Discovery Institute, focus more on the intelligent design behind the universe (Dembski & Wells, 2008; Johnson, 2010). This conservative think tank acts more like a check on the prevailing evolutionary theory that has not yet been challenged successfully in the public field (Dembski & Wells, 2008). Organizations that promote intelligent design include the Discovery Institute, Intelligent Design Network, and International Society for Complexity Information and Design, whose advocates include William Dembski, Phillip Johnson, and Michael Behe (Rau, 2012).

Origins Science Agreement in Christianity

Although individuals tend to focus on the differences between these groups, it would be prudent to draw out the many agreements among them as well in stark contrast to naturalism. Christians have understood for centuries that there is a spiritual world that exists (Ephesians 6:12). For the individual, the soul, the mind, and consciousness are all things that exist but have no physical makeup (Turek, 2014). Christians also believe that God exists (Genesis 1:1; John

1:1) and that the Bible is God’s Word (2 Timothy 3:16). Because of these beliefs, Christians agree that Darwinian evolution, not to be confused with evolutionary creationism, is more of a deduction from a naturalistic worldview, not an inductive theory from the evidence (Pearcey, 2004). Christians also agree that salvation in Christ is more important than any creation view (Answers in Genesis, 2015; BioLogos, 2019; Reasons to Believe, n.d.) leading some to advocate either more humility when debating other believers regarding origins (Geisler, 2012; Grudem, 1994; Morris, 2014) or a careful consideration over whether the debate between believers should even take place at all (Cabal & Rasor, 2017). Indeed, Sire (2006) summarized the various viewpoints on evolution well:

The fact is that there is no consensus among informed and intelligent Christians. So every apologist needs to have an informed position, either one of the several specific options Christian experts have outlined and promoted or a position like my own – that no position is obviously correct and that is it not necessary to decide which one is correct. The key issue is not *how* God did it but *whether* he did it [emphasis in original]. (p. 174)

Homeschooling

The central phenomenon of this study is how biblical worldviews develop. Because I had a desire to see how this biblical worldview developed for students learning origins science, I wanted to ensure that I would have participants who had the opportunity to learn the different forms of origins science. Public schools are not allowed to provide the breadth of origins science possibilities (*Edwards v. Aguillard*, 1987; *Kitzmiller v. Dover Area School District*, 2005), and Christian schools include “a few narrowly defined ‘religious’ elements into the classroom, like prayer and Bible memorization – and then teach exactly the same things as the secular schools” (Pearcey, 2004, p. 37). Because homeschooled students enjoy the most academic freedom

(Thomas, 2016), they were studied to determine how a biblical worldview develops while learning origins science.

Homeschooling is a form of education where students learn primarily under the direction of their parents (Thomas, 2016) or other like-minded parents and cooperative teachers as a “deliberate alternative to and rejection of institutional schooling” (Gaither, 2008, p. 202). A homeschooler is a student who spends time away from public school to learn under the “supervision of their parents” (Thomas, 2016, p. 234). Homeschooling’s purposes include providing students with non-citizen identities (Glanzer, 2013) and direct religious instruction (Ray, 2015) though many families are doing it for a variety of personal reasons (Gaither, 2008). Conversely, public schooling is viewed as a way to prepare students for future investment in the United States (Cheng, 2014; Glanzer, 2013; Gray, 2018). Although the United States has historically believed that its strength depended on the strength of its families, the American people have had diverse views on how education can accomplish this (Gaither, 2008). Initially, this strengthening occurred by the government so that by 1918 every state required its students to attend public schools, many of which had been founded by Protestant ministers (Gaither, 2008). However, homeschooling exploded in the United States during the latter part of the 20th century because of mainstream anti-authoritarianism, suburbanization, and the idolization of children (Gaither, 2008).

From the 1960s to the 1990s, there were court battles advocating homeschooling in every state in addition to a few federal cases that placed limits on compulsory education (Gaither, 2008). Gaither (2008) noted that “more court cases were brought against public education between 1969 and 1978 than there had been for the previous fifty years” (p. 93). This was also a time when Christian educators became concerned with developing biblical worldviews in their

students (MacCullough, 2016), something that many Christian schools now have in their mission statements (Schultz & Swezey, 2013). With the formation of lobbying homeschool groups such as the Home School Legal Defense Association in 1983 (HSLDA, 2018), homeschooling eventually became legal in every state by the mid-1990s (Gaither, 2008).

Morrison (2014) found similarities between the homeschooling movement and the growth of conscientious objectors of wars; both groups were initially met with hostility and anger by the public at large, followed by some suspicion but gradual acceptance, up to widespread acceptance and legal protection. Homeschooling advocates have found affirmation for homeschooling in The Universal Declaration of Human Rights, where it states in Article 26 that all children have a right to an education, and parents have the right to choose that education for their children (United Nations, 1948). Recent descriptive statistics show that the number of students in the United States who are homeschooled has increased in recent years by 2-8% annually, allowing for an estimated 5.7 million Americans to have experienced homeschooling at some point in their life (NHERI, 2018). Despite these growing numbers, there is a clear lack of research in homeschooling (Gaither, 2008; Thomas, 2016).

Difficulty in Homeschooling Research

There is not much homeschool education research on which to build upon for future research (Howell, 2013; Marks & Welsh, 2019). Although the literature has grown considerably in the last several years (Ray, 2017), homeschooling is a relatively new field of education that many public school stakeholders have little reason to research (Gaither, 2008; Howell, 2013). Educational researchers wish to develop theories and causal-comparative discoveries that have wide-ranging implications (Howell, 2013), forcing them to focus on public education. Unfortunately, whereas public schools have centralized offices and a technological infrastructure

from which to gain data, homeschools have no such reporting agencies or assessment requirements, making it difficult to do research (Watson, 2018). Although it has been shown that home life has a significant impact on the education of a child, because schools cannot be held responsible for the home life of their students, homeschooling is a topic typically excluded from studies (Howell, 2013). For this reason, recent major homeschooling studies have come from departments of sociology instead of education (Howell, 2013).

It also appears that homeschool families themselves may not desire research in homeschooling (Gaither, 2008; Howell, 2013; Watson, 2018). With increased research comes increased funding, which in turn informs policy decisions that affect those areas of research (Gaither, 2008; Wilkens et al., 2015). Homeschool families have a variety of reasons for why they choose to homeschool (Gaither, 2008; Ray, 2015), not simply because it leads to more significant educational gains for their children. Parents choose to homeschool to instill moral values, avoid racism and bullying, have more time as a family, or give personalized learning experiences (Gaither, 2008; NHERI, 2018). Because of this, any research results would unlikely influence the minds of parents who are already homeschooling.

Homeschooling Advocates

Ray (2013) called public schools the “established secular church” of the state (p. 335). The public school systems advocate a religion called Democratic Education, where students must “place their faith and hope in Democracy” (Glanzer, 2013, p. 351). Public schools are essentially religious institutions that indoctrinate students to believe that their whole goal in life is to become productive members of society (Mazama & Lundy, 2015). Glanzer (2013) pointed out the irony that public schools try to teach students to have open minds about diversity and the views of others while never teaching these same students from any worldview other than

secularism. If the public school system truly advocated for a pluralist form of education, then educators and stakeholders would advocate for homeschooling programs since these typically provide alternative worldviews. For the public school system to provide a democratic education that prepares students for living in our world, then public schools “must demonstrate consistency by allowing critique if it wishes to remain robust and grow stronger” (p. 344). For this reason, homeschooling acts as a system of checks and balances on a public school system that has gone unchallenged for many years.

More than 78% of college admissions officers expect homeschoolers to do just as well as any other student, if not better (Gloeckner & Jones, 2013), and homeschoolers consistently do well on the SATs and ACTs in comparison to their public school peers (NHERI, 2018). Although there may not be research to causally show that homeschooling is the variable increasing student achievement (Lubienski et al., 2013), there is also no research that shows that not attending traditional schools is harming students (Howell, 2013). At the same time, there is consistent and overwhelming evidence that public schools increase the achievement gap, are ineffective in teaching the core classes, and produce psychological harm because of the effects of bullying (Howell, 2013). It is because the public school system gets so much of the educational funding and research that it is known how poorly it performs in the lives of students. Ironically, public schools then receive the most research in determining how to repair these issues since looking outside of public education for the answer is beyond the accepted educational paradigm (Howell, 2013).

Homeschooling Critics

Homeschooling critics believe the state has a duty to its citizens to provide equal opportunity to a quality education that exposes students to research-based instruction, diverse

views, and the ability to be socialized into critical thinking, democratic citizens (Ray, 2013). Homeschooling then limits the ability of the state to disseminate important cultural and civic identities to the next generation. For Dewey, an essential voice in shaping educational philosophy in the early 20th century, the purpose of education was to assimilate members of society into the life of the community (Guttek, 2011). In this regard, education is seen not just as part of political democracy but as “a way of life, a culture, free of those absolutes that blocked truly experimental inquiry” (p. 363). Therefore, it is not merely homeschooling that precludes this socialization; it is any form of schooling that removes children from the government-run public schools.

It is not simply a matter of the empirical evidence that supports which choice of schooling is best; it is about the fundamental philosophical purpose of education (Ray, 2013). This then creates a worldview issue on the part of educational researchers who have their own unspoken worldviews, including “critical theory, existentialism, naturalism, neo-Marxism, postmodernism, secular humanism, and statism” (Ray, 2013, p. 333). When individuals believe that education is for “collectively communicating essential ideas while attempting to weed out undesirable tendencies” (Gray, 2018, p. 442) or that homeschooled children are unsocialized because they are “distanced from larger social influences...without exposure to other religious points of view” (p. 442), it becomes straightforward to dismantle homeschooling as running contrary to the liberties and freedoms afforded in the Constitution.

Though the number of homeschooled students is increasing, it is not increasing for empirically-based reasons (Lubienski et al., 2013). This increase may be more because parents are asserting their rights to homeschool their children rather than because of the research that claims homeschooling is better for children, research that is “unsubstantiated and

methodologically flimsy” (p. 379). Even if it could be shown that homeschooling is beneficial for students, this cannot be viewed as a reason not to improve the public schools which most students attend (Howell, 2013). Although homeschooling advocates would like to declare a causal explanation for various academic achievements routinely touted in their literature (Lubienski et al., 2013), there are many confounding variables about homeschoolers that make it challenging to validate conclusions (Marks & Welsch, 2019; Watson, 2018). It may be that because parents decide to homeschool their children, they are then more invested in the education of their children, a factor that has been shown to increase the achievement of public school students as well (Lubienski et al., 2013). Indeed, Lubienski et al. (2013) suggested that “it is not the act of homeschooling itself, but instead being the type of family that is interested in homeschooling, that is more closely associated with better outcomes” (p. 384). Additionally, it has been suggested that many homeschoolers switch to public school during the last years of high school because of poor homeschooling testing results; this is a filtering mechanism that may explain the high academic achievement of homeschoolers in college (Marks & Welsch, 2019).

Response to Critics

Although homeschooling advocates admit that there are severe limitations to their research, Ray (2013) recognized that those limitations affect everyone. That is, critics of homeschooling or homeschooling research do not have any valid empirical studies to show that homeschooling is detrimental to students either. Though critics may say students are not socialized or politically tolerant, just the opposite has been found (Cheng, 2014). Indeed, due to the nature of homeschooling and its flexibility, homeschoolers may have more time for socialization than their public school peers since a vast majority of homeschooling families spend fewer than four hours a day on academics (Thomas, 2016).

The arguments against homeschooling appear to be more philosophical than empirical. Ray (2013) stated that critics of homeschooling have more confidence in the “values, beliefs, worldview, and behaviors of the state than...parents” (p. 334). Gray (2018) proposed that the purpose of education is “to improve society – to help our children make better lives and a better world than we had” (p. 445). Unfortunately, the thoughts of improving and leading better lives presuppose that society is advancing toward a goal, a goal that must be defined philosophically, a goal about which homeschooling advocates and critics fundamentally disagree. Critics of homeschooling may believe that teaching a child using one worldview is detrimental to their growth (Cheng, 2014), yet this occurs in the public school system under the name of secularism (Ray, 2013).

Ray (2013) admitted that homeschooling families are not a good sample population from which to draw conclusions about the general population. Homeschooling families are self-selected and may have other similar variables that affect academic results over the fact that they are homeschooled. Although it is possible that homeschooling does provide benefits for the students, studies must be conducted to show that it is homeschooling itself that is the variable of interest, and not one of a variety of others (NHERI, 2018; Watson, 2018; Yu et al., 2016).

Some parents homeschool for religious reasons (Ray, 2015). If the purpose of education is to lead children to accept, obey, and mature in God’s calling (Knight, 2006), then distancing children from larger social influences can meet those ends. For homeschooling parents, public school education is not just less effective on a continuum of viable options; it is simply not an option. Thomas (2019) found that most parents choose to homeschool because they can provide a better environment for learning than public schools. Many parents homeschool to avoid various aspects of public education, including bullying, racism, or wasted time (Ray, 2015). For many

African Americans, homeschooling is seen as an opportunity to instill non-Eurocentric worldviews, though little research has been done on this subset of homeschoolers (Ray, 2015). It may be that educational researchers focus too much on the pedagogical outcomes and not enough on the holistic outcomes of homeschooling (Neuman & Guterman, 2016).

Although much of educational research takes place in the public school setting, there is much to be gained from analyzing homeschooling education. There may be some advantages to homeschooling that could even be incorporated in public schools (Thomas, 2016). Unfortunately, much of the literature on homeschooling simply deals with whether homeschooling should be done or whether the research that has been done is even valid (Lubienski et al., 2013). Much of homeschooling research is qualitative, mainly because quantitative studies would be too difficult or time-consuming, perhaps even impossible to do in some situations. The numbers suggest, though, that the homeschooling population will continue to increase (NHERI, 2018), so there may be a greater impetus for homeschooling research in the coming years.

Importance of Parents

It is well established that parents are important in the lives of their children, both by influencing the nature and nurture of their children (Domingue et al., 2018). Researchers have suggested that parents influence early moral development (Cowell & Decety, 2015), obesity (Lifshitz, 2008), and the faith tradition of their children (Pew Research Center, 2016). In particular, a longitudinal study lasting 35 years and involving more than 1400 participants concluded that the most critical factor in transmitting the faith tradition to children is the warmth of the relationship children have with their parents, especially with their father (ASA, 2015). Since parents determine where children live, what they eat, where they go to school, and, if

homeschooling, what they learn and what curriculum is used, parents should recognize the vital role they play in the biblical worldview development of their children.

Summary

This literature review began with the theoretical framework. Fowler's faith development theory provided a natural transition into worldview, its development as a concept, and its use in understanding the Bible and science. Although much is known about the historical development of worldview and its current use as a concept, it was shown that there is a gap in the literature specifically regarding biblical worldview development, supporting the need for this study.

Origins science, in both history and content, was discussed from the literature before ending with the recent research that has been done on the homeschooling population. The research that has been done in homeschooling so far has sought to advance it as an academically viable alternative to public education. Little research has been done on the holistic effects of homeschooling education on the student. This research sought to fill this gap in the literature by providing insight into the worldview development of homeschoolers.

CHAPTER THREE: METHODS

Overview

The purpose of this hermeneutic phenomenology was to understand the lived experience of how homeschooled high school students integrate origins science into a biblical worldview. Worldviews are views of reality that contain propositional truths, behaviors, and heart orientations (Schultz & Swezey, 2013; Sire, 2015). When the components of each worldview are delineated, views regarding the origin of the universe naturally arise early. Once an individual understands the nature of origins, and specifically ontology, every other part of a worldview naturally flows from there (Sire, 2015). It then behooves those interested in instilling biblical worldviews in others to understand the lived experience of students when they learn about origins science because this may determine how the rest of their worldview develops (Pearcey, 2004). Since there are many ways to teach origins science and many perspectives to present (Rau, 2012), homeschoolers were used in this research because they are afforded the most considerable academic freedom when it comes to the curriculum (Thomas, 2016).

This chapter begins with the design choices for the research, addresses the setting and participants for the study, and provides the procedure for conducting the study. The chapter continues by explaining the role of the researcher and outlining the data collection and analysis process. I conclude with the trustworthiness of the study and ethical considerations before the closing summary.

Design

This study used a qualitative design for two reasons. First, qualitative research attempts to understand a phenomenon by getting close to those who experience it (Creswell & Poth, 2018). Although objectivity may be desirable for quantitative research, it is challenging to

establish objectivity or even desire it when researchers are working closely with humans (Creswell & Poth, 2018). Corbin and Strauss (2015) recommended seeking sensitivity instead of objectivity. Especially regarding such a personal topic as worldview development, which is a complicated construct to measure and assess (Schultz & Swezey, 2013), it is appropriate for a researcher to join the participants in their experiences. It is the complexity of human interactions and the flexibility of qualitative method and analysis, as opposed to the rigid structure of quantitative research, that appealed to me (Corbin & Strauss, 2015).

Second, it is challenging to do quantitative research on worldview (Schultz, 2010). While many worldview surveys could be used quantitatively, I had a desire to interact with participants to determine their worldview development on a personal level rather than as measured by a survey. Additionally, since this research centered on homeschoolers, qualitative research was more practical for many reasons. Homeschooling students can be challenging to identify since they do not have reporting agencies or assessment requirements like public schools (Watson, 2018), and there is not much research on homeschoolers with which to begin (Howell, 2013). Homeschoolers are a self-selected group with too many confounding variables to make any meaningful comparisons to other groups (Watson, 2018), thus limiting the generalizability of findings. Because of this, any research on homeschooling must be exploratory rather than correlational as in quantitative research. For these two reasons, a desire to get closer to participants to increase understanding and a lack of ability to do meaningful quantitative research, a qualitative research design was used.

A phenomenological study was chosen for this research. Phenomenology seeks to describe a common lived experience for the participants (Creswell & Poth, 2018), treating them as complex humans worthy of being inquired upon rather than mere subjects to be explained

(Van Manen, 1997). Phenomenologies allow for both subjective and objective perspectives of a lived experience; the objective perspective is the fact that all persons of interest actually experienced the particular phenomenon; the subjective perspective is what that experience meant to them (Moustakas, 1994). This combination ultimately situates phenomenology “somewhere on a continuum between qualitative and quantitative research” (Creswell & Poth, 2018, p. 76). Van Manen (1997) described phenomenology as a record of “experienced space, time, body, and human relations as we live them” (p. 184) while Moustakas (1994) explained it as “a return to experience in order to obtain comprehensive descriptions that provide the basis for a reflective structural analysis that portrays the essences of the experience” (p. 13). To this end, this phenomenology sought to explore and present the essence of integrating origins science into a biblical worldview during homeschooling.

A hermeneutic approach was used for this phenomenology. Hermeneutic phenomenology is “a *descriptive*...methodology because it wants to be attentive to how things appear [and also] ...an *interpretive*...methodology because it claims that there are no such things as uninterpreted phenomena [emphasis in original]” (Van Manen, 1997, p. 180). Van Manen (1997) explained that hermeneutic phenomenology does not have a set method for research design but instead is based on the “phenomenological scholarship” (p. 30) of previous philosophers including Kant, Hegel, Dilthey, and Husserl. Because hermeneutic phenomenology allows for flexibility of method while remaining attentive to its main research activities (Creswell & Poth, 2018; Van Manen, 1997), this study used the more rigorous data analysis methods of grounded theory (Corbin & Strauss, 2015).

Research Questions

This study focused on understanding the lived experience for how high school students integrate origins science into a biblical worldview. Therefore, the following central research question and sub-questions guided the study.

Central Question

How do homeschooled high school students integrate origins science into a biblical worldview?

Sub-Questions

1. How do homeschooled high school students describe the relationship between the Bible and science?
2. How do homeschooled high school students describe the process of changing or sustaining their beliefs about origins science?
3. How do homeschooled high school students perceive others with whom they disagree about origins science?

Setting

Participants were gathered from around the United States to ensure variation among participants and to avoid regional biases. The entire country was used to increase diversity in the demographics and backgrounds of participants while also allowing for more generalizable results. The setting was limited to the United States since the legal cultures of other countries, especially the separation of church and state concerns with teaching creationism in public schools, would likely confound any results. The setting included the current residences for the participants. Free word association questions were completed at the participant's convenience in a comfortable location that was free from distractions. Interviews were conducted via the online conferencing software Zoom to allow for communication despite geographic barriers. A focus

group also took place via Zoom. Individuals were given pseudonyms to ensure confidentiality.

Participants

Participants were selected via snowball sampling. Creswell and Poth (2018) define snowball samplings as identifying “people who know people who know what cases are information-rich” (p. 159). To this end, I contacted gatekeepers from around the United States, asking them if they knew of potential participants who would be interested in this study. The number of participants may vary between 4 and 15 individuals in phenomenologies (Creswell & Poth, 2018), so I used 12 participants for this study; their relevant demographic data are listed in Table 1.

Table 1

Demographic Data for Participants

Name	Gender	Age	Race	Region	Church Affiliation
Adam	M	23	White	Northeast	Non-denominational
Brian	M	21	White	Southeast	Baptist
Chloe	F	19	White	Southeast	Non-denominational, evangelical
Deidre	F	18	White	Northeast	Reformed, Presbyterian
Ella	F	20	White	Southeast	Presbyterian
Felicia	F	30	White	South America	Evangelical
Gabrielle	F	21	White	Midwest	Evangelical
Hannah	F	18	White	Northeast	Evangelical, Baptist
Isaiah	M	27	White	Northwest	Non-denominational, evangelical
Jennifer	F	18	White	Southeast	Non-denominational, Baptist

Name	Gender	Age	Race	Region	Church Affiliation
Kendrick	M	32	White	Midwest	Non-denominational, Baptist, reformed
Leslie	F	30	White	Midwest	Non-denominational, evangelical

Procedures

After receiving Institutional Review Board (IRB) approval (Appendix A), I contacted local, regional, and national homeschooling organizations for recommendations of participants who may be interested and qualified to participate in this study (Appendix B). Upon initial agreement, I emailed out an informational letter to potential participants (Appendix C), who then completed a demographic questionnaire and worldview survey via Google forms. A consent form (Appendix D) was then sent and returned before continuing with data collection. Upon return of the consent form, I sent out a free word association form (Appendix E) via Google Forms that was used for initial analysis and primed participants for the forthcoming interviews.

Interviews were scheduled and held at a convenient time for the participants and recorded using Zoom and an iPhone recorder. After each interview, I transcribed, coded, and memoed according to the steps listed by Corbin and Strauss (2015). A focus group then took place once all the transcription and data analysis for the interviews were completed. Information was stored on a password-protected computer (Creswell & Poth, 2018).

The Researcher's Role

The researcher was the primary instrument in qualitative research (Corbin & Strauss, 2015). All of the data in qualitative research flowed through me multiple times over; I created the free word association form, wrote the questions for the semi-structured interviews, and coded the interviews. Because the data required my interpretation during coding, it is important to understand my background and how it affected the data analysis process.

I have been teaching science in public schools for nine years. Throughout these years, I have been able to have many short conversations with students and colleagues about my beliefs regarding worldviews, origins science, and homeschooling. I have also taught science courses at a local Bible college for three years, where I have had more freedom to speak about how biblical worldviews inform interpretations of scientific evidence. It was after I found out that I would be teaching evolution in the public school classroom that I renewed my interest in determining the specifics about what I believe about origins.

My experiences with teaching science at various levels informs how I interpret what I hear from others and their worldview development. I have mentioned in Chapter One my assumptions about ontology, epistemology, and axiology, which influenced how I understood the statements of others. However, I sought to accurately and faithfully record and report the voices of my participants so that it was their experiences that formed the results, not my own. During the data collection and analysis process, I kept a researcher's journal (Corbin & Strauss, 2015) to record my thoughts and opinions to bracket these out during the analysis (Creswell & Poth, 2018). Additionally, member checking was done to ensure that my findings and interpretations were accurate representations of my participants' experiences.

Data Collection

Data were collected using a demographic questionnaire, worldview survey, free word association forms, semi-structured interviews, and a focus group. No data were collected until IRB approval was given. This study used free word association forms, semi-structured interviews, and a focus group to serve as data triangulation, using at least three sources of data collection to enhance the credibility of a study (Creswell & Poth, 2018; Guba & Lincoln, 1982).

Questionnaire/Worldview Survey

To ensure eligibility for participation, a demographic questionnaire and worldview survey was given to participants before interviews. The demographic questionnaire (Appendix F) gathered basic demographic information and ensured students were homeschooled and in high school when they took a course that taught origins science. Determining the worldview of another person is problematic because it is difficult enough for a person to know their own worldview (Sire, 2009, 2015), let alone that of others (Gauch, 2009a). Accurately determining the worldview of another would likely require the intense time and fieldwork of an ethnography (Creswell & Poth, 2018). Fortunately, a worldview survey had been developed that aligns with Sire's (2009) definition of worldview (Schultz, 2010).

Potential participants were asked to complete the *3-Dimensional Worldview Survey – Form C (3DWS)* (Appendix G) that determined how strongly each participant possessed a biblical worldview. This survey was created to measure Naugle's (2002) and Sire's (2009) three dimensions of a biblical worldview: propositional truths, behavior, and heart orientation (Schultz & Swezey, 2013). When initially created, Schultz (2010) had experts and nonexperts in worldview studies verify the validity of the *3DWS*. The survey was then piloted on 52 high school students from a Christian school in Minnesota to determine its internal reliability. This pilot study resulted in a Cronbach's alpha of .919, more than the minimum of .70 to establish reliability. Each of the three subscales of the survey, propositional truths, behaviors, and heart orientation, had reliability values higher than .70. After the pilot study and the review of worldview experts, the revised survey consisted of 73 questions: 40 for propositional truths, 13 for behaviors, and 20 for heart orientation.

In a second doctoral dissertation, the *3DWS* was slightly modified for use with post-secondary students (Morales, 2013). The survey was sent to students in worldview courses at a large Christian university with 427 useable responses. This new survey resulted in a Cronbach's alpha of .785. Two of the three subscales of the survey, non-biblical convictions and behaviors, had reliability values higher than .70, while one subscale, biblical convictions, did not. This last subscale received low values, possibly because there were only 12 questions that assessed it. Still, the reliability value was not low enough to be considered unacceptable.

Assessing the worldview of others via surveys is a challenge (Schultz, 2010). This study needed a way to determine the extent to which participants lived according to a biblical worldview to validate the results. To this end, the *3DWS-Form C* was sent to prospective participants since its previous use, while minimal, had resulted in validity and internal reliability (Morales, 2013; Schultz, 2010) in measuring the three components of a worldview as outlined by Sire (2009) and used throughout this research. Surveys were then scored by the survey author for a nominal fee. See Appendix H for a sample score report and Appendix I for the *3DWS – Form C* results for this study.

Free Word Association

Each participant was sent a free word association form. Free word association is based on psychology and is one of three methods to produce therapeutic change (Kowalski & Westen, 2009). Free word association was originally created to measure the imagination of participants, but psychologists quickly realized its benefits in their own field (Gough, 1976). Using free word association helps researchers understand how individuals have stored their memories about specific words (Ma, 2013). Experiments in free word association have yielded useful information about which words are most often related to each other; for example, *nurse* is highly associated

with *doctor* (Church & Hanks, 1990). Free word association is also a way to have participants bring to their consciousness what had been unconscious up to that point (Kowalski & Westen, 2009). The purpose of this form was to have an initial understanding of how students perceived others with whom they disagree about origins science.

Semi-Structured Interviews

Interviews are one of the primary sources of data collection in phenomenological research (Creswell & Poth, 2018). While unstructured interviews may be ideal for gathering the richest data (Corbin & Strauss, 2015), they are not recommended for novice researchers who can easily become flustered due to lack of practice (Charmaz, 2014). Semi-structured interviews were conducted because they provided consistency for me as a novice researcher and gave me the advantage to ask follow-up questions to clarify points. Interviews were conducted using Zoom and were audio and video recorded using the software and an iPhone before being transcribed and member checked for accuracy (Creswell & Poth, 2018). The following interview guide was evaluated by an expert methodologist and an expert in worldview studies for clarity and validity before being piloted on a participant not included in the study. The interview questions are included in Table 2 and Appendix J.

Table 2

Interview Guide for Participants

Questions
1. Please tell me about yourself, your experiences with homeschooling, and why you agreed to be part of this study.
2. Explain some of your answers on your free word association form.

Questions

3. If someone asked you to identify the key components of a biblical worldview, how would you respond?
 4. Many people are unaware of their worldview. Explain how often you think about your worldview.
 5. If an unbelieving friend asked you to describe to them what the Bible is about, how would you respond?
 6. Give me a definition for science.
 7. What are your beliefs about the scientific method and its ability to apprehend truth about reality?
 8. Explain the process you go through when you try to determine whether a truth claim about origins is accurate.
 9. Some Christians will speak of God authoring two books: Scripture and nature. Please tell me what you think about this view of God's authorship and how much authority each has in determining the truth about reality.
 10. Origins science has several parts to it. Of interest here are two main areas: the age of the universe/Earth and evolution of humans/animals. Explain what you were taught in your homeschooling curriculum about these two areas of origins.
 11. Tell me about your current beliefs about origins science.
 12. Explain what resources or people have influenced you in your current beliefs about origins science.
 13. Explain any understandings about origins science that you think may change in the future.
-

Questions

14. How much do you know about the views that disagree with your own?
 15. Explain how much you think someone could disagree with your views on origins science and still have a biblical worldview.
 16. What do you believe is holding other Christians back from committing themselves to what you believe is the most accurate interpretation of origins science?
 17. What resources would you recommend to others to have a greater understanding of your own views on origins science?
 18. What else would you like to tell me that would help me understand how you have integrated origins science into a biblical worldview?
-

Questions one and two were to help the participants feel comfortable with me. Charmaz (2014) stated that the responses of participants are affected by how I present myself. To this end, I used the first two questions to slowly introduce the more personal worldview questions later in the interview guide. These two questions were designed to allow the participant to freely talk about themselves and their thoughts to reduce any anxiety during the interview (Creswell & Poth, 2018). Questions three and four were to help the participants think through the purpose of this study and reflect on their worldview. Participants have possibly not thought deeply about their worldview (Sire, 2015), so this provided an opportunity to do so.

Questions five through nine were designed to help me understand how participants understand the relationship between the Bible and science. There are many different views as to how these sources of authority inform each other with much disagreement even among Christians (Cabal & Rasor, 2017; Rau, 2012). These were also more general questions to elicit some reflection before getting into questions that require more content knowledge. These

questions also helped me locate the participants' locus of authority, indicating how their worldview developed (Fowler, 1981). Question nine was a transition into the intermediate questions that were more difficult to answer and might have elicited distress or anxiety (Charmaz, 2014).

Questions 10 through 13 were designed to help me concretely understand where participants have placed origins science into their biblical worldview. Questions 10 and 11 allowed me to see where students were first formally taught about origins science as there are many different ways to incorporate origins science into a biblical worldview (Cabal & Rasor, 2017; Geisler, 2012; McDowell & McDowell, 2017; Rau, 2012). Question 12 helped locate the locus of authority for the participants as it revealed what authority figures participants had for truth (Fowler, 1981). Question 13 was designed to gauge how open the participants were to change their views in the future, an indication of their worldview coherence and willingness to embrace paradoxes (Fowler, 1981).

Questions 14 through 17 revealed how participants viewed others with whom they disagree. Question 14 is simply to understand how much participants have interacted with worldviews different from their own, their bounds of social awareness (Fowler, 1981). Question 15 asked participants to define which aspects of origins science were required to have a biblical worldview as some Christians may disagree with what is required for orthodoxy (AnswerAnyone, 2018; Cabal & Rasor, 2017; Ham & Hodge, 2014; Mortenson, 2016). Question 16 revealed what participants thought was the actual problem with Christians disagreeing with each other. Some believe the disagreement is a matter of sin (AnswerAnyone, 2018; Ham & Hodge, 2014), while others believe it is legalism (McDowell & McDowell, 2017) or perhaps pride (Geisler, 2012; Grudem, 1994). The level of grace participants gave to others who do not

hold their same beliefs helped indicate their faith development journey and their bounds of social awareness (Fowler, 1981). Question 17 was designed to be a sensitive transition from the intermediate questions to the closure of the ending question (Charmaz, 2014).

Question 18 provided participants with a final opportunity to share information with me that was important. It was suggested that the final questions of an interview should lend themselves to more positive responses to conclude the interview sensitively (Charmaz, 2014).

Additional follow up questions were asked as part of the semi-structured interview (Corbin & Strauss, 2015). I sought to remain neutral when asking and responding to questions to eliminate the possibility of the participants merely trying to give me the answers they thought I was looking for (Patton, 2015). I was also dressed appropriately for the interviews, though the interviews occurred via video conferencing, and I remained sensitive to the polarizing nature of the topic (Charmaz, 2014). This aided in establishing rapport with the participants to elicit helpful responses (Patton, 2015)

Focus Group

After the initial open and axial coding of the transcripts, I conducted one focus group with the participants using Zoom. The focus group provided an opportunity for more fruitful discussion as participants were able to build on each other's comments, and it served as a member check for the initial interviews (Creswell & Poth, 2018). For people who felt shy, vulnerable, or would not otherwise voice their opinions or concerns, the focus group allowed participants to slowly build confidence and speak off the comments of others as they tend to be more enjoyable than individual interviews (Patton, 2015).

Patton (2015) included several benefits of conducting focus groups. First, they are very cost and time-effective. The amount of information that can be gathered from many participants

in one hour helps strengthen the transferability of the findings for a fraction of the cost and time. Second, focus groups allow for the diversity of opinions to be highlighted as each participant hears the perspective of others. Patton (2015) suggested that diversity should be in the opinions, not necessarily of the backgrounds of the participants. Third, participants may talk differently about topics when they know other participants are listening, not just the interviewer. This may help create a more genuine social experience around the issues of origins science and worldview. Fourth, when a participant is silent or avoids a topic in an interview, it may merely be because it is a sensitive topic for that participant; if the whole focus group is silent or avoids a topic, this reveals much more to the interviewer. Fifth, data analysis occurs at the same time as the data collection. It can be easily determined during the focus group whether there is consensus about matters of origins science or if there are still a variety of viewpoints. Finally, because humans are naturally social, a focus group is more enjoyable for the participants than individual interviews. The interview guide is included in Table 3 and Appendix K.

Table 3

Interview Guide for Focus Group

Questions

1. Here are the most common answers given during the free word association prompt.
Why do you think these were the most common?
 2. Here are the most common answers given for key components of a biblical worldview.
What components need to be added or removed?
 3. Please place yourselves somewhere on the origins science spectrum. Remember, it is a spectrum, and you may find yourself in between some areas. What reasons do you have to place yourself there?
-

Questions

4. Please identify where you have been on the origins science spectrum in the past. What has caused you to change your beliefs?
 5. What would it take to change your position on the origins science spectrum?
 6. What do you think of those who are above you on the origins science spectrum? What do you think of those below you?
 7. What are the commonalities between all Christians on the origins science spectrum?
-

Questions one and two were an opportunity for my participants to get to know each other and reflect on the answers given by others. Question one was specifically an introduction question to ease everyone into the interview process and allow everyone a voice with which to speak (Patton, 2015). These two questions were designed to have participants explain their previous answers and give comments on what they thought of the answers of others. These previous answers were given via a PowerPoint presentation as we went through each of the more diverse responses on the free word association forms. This allowed me to see how participants viewed others with whom they may disagree, revealing their bounds of social awareness (Fowler, 1981). It also helped me see how strongly each person felt about their own beliefs in the face of others who explicitly disagreed with them.

Question three included an origins science spectrum on which participants chose a position that most closely matched their views. This was the most vulnerable question of the focus group as it forced participants to pick a stance and label themselves. This spectrum included a variety of options with varying degrees of weight placed on understanding reality through the lens of the Bible and the lens of science (Cabal & Rasor, 2017; Rau, 2012).

Questions four and five had participants consider why they have changed their beliefs or what type of evidence might get them to change their beliefs in the future. These questions related to the falsifiability of beliefs (Fishman, 2009) and the importance of questioning our worldviews for truth-seeking and clarity (Fowler, 1981).

Question six asked participants to characterize individuals who disagree with their views on origins science. The level of grace individuals gave to others who do not hold their same beliefs helped indicate their faith development journey (Fowler, 1981). Question seven was intended to leave the focus group with a positive response (Charmaz, 2014) about the aspects of origins science to which all Christians can find agreement.

Data Analysis

Data analysis followed the qualitative methods as outlined in Corbin and Strauss (2015), which included open coding, axial coding, and selective coding while employing continuous memos and constant comparison. Each of these forms of data analysis was done on the computer with NVivo 12 Plus. The computer was used to organize data for several reasons. First, I can type faster than I can write freehand, so it reduced the time needed to write, allowing more time to analyze the data. Second, Corbin and Strauss (2015) readily advocated the use of computers in qualitative analysis so long as the researcher recognizes that the computer does not do any of the analysis. The computer was not there to do the work for me but was there to help with the organizing work so I could spend more time on the actual analysis (Corbin & Strauss, 2015). Third, the computer made sorting, rearranging, searching, and modifying codes much more straightforward, allowing me to see connections between categories more readily. Finally, although some researchers may have difficulty with computer programs and take extensive time to learn how to use them, time that should be spent on analysis, it is readily recognized that

younger researchers are more comfortable using computer programs than others (Corbin & Strauss, 2015). To this end, I spent time going through tutorials for NVivo 12 Plus before data collection to ensure that I was prepared to use it to aid in analysis.

Free word association forms were uploaded to NVivo 12 Plus for initial analysis. Immediately upon completion of the first interview, I transcribed the interview verbatim. I sent each participant the transcription of their interview with instructions (Appendix L) to allow them to make any corrections, additions, and deletions to ensure that I was fairly representing their words and ideas. Each transcript was then uploaded to NVivo 12 Plus for analysis. Each free word association form, interview, and focus group had accompanying codes and memos to aid in the creation of temporary diagrams and models for biblical worldview development.

Coding

Coding is the process of assigning conceptual labels to the actual words given by participants (Creswell & Poth, 2018). Upon transcribing and uploading into NVivo 12 Plus, every word was thoughtfully analyzed and simplified into concepts to help funnel the raw data down into several concepts, a few categories, and ultimately a single core category. This funneling occurred during open, axial, and selective coding procedures as outlined in Corbin and Strauss (2015) and Creswell and Poth (2018).

Open Coding

After transcribing the interviews and uploading them to NVivo 12 Plus, I open coded the interviews into concepts (Creswell & Poth, 2018). Some of these were lower-level concepts or subcategories that served as the properties and dimensions for other higher-level concepts that served as the main category for a given section of raw data (Corbin & Strauss, 2015). In vivo codes were used for specific phrases made by the participants that memorably captured the

concept of the data (Corbin & Strauss, 2015; Creswell & Poth, 2018). The result of this initial round of open coding throughout all interviews was a list of codes (Appendix M) that stood for the concepts described by the participants (Corbin & Strauss, 2015).

Open coding was the first part of the data analysis process (Creswell & Poth, 2018) and therefore needed to provide a firm and trustworthy foundation for the rest of the research. As such, it was vital that I was aware of my own biases and presuppositions when interpreting the meaning behind the words of others. I used memos to remind myself of my own biases about worldview, homeschooling, and origins science to ensure that the results were grounded in the data and not in my own views. Each memo was entered into NVivo 12 Plus so I could easily see later how I arrived at conclusions about data. I took the resulting list of codes and used them to develop the properties and dimensions of more general categories through axial coding.

Axial Coding

After open coding for the main concepts, I axial coded to help identify a single core category on which to focus (Creswell & Poth, 2018). These axial codes (Appendix N) elaborated on the previous concepts identified during open coding and served to identify the causal conditions, strategies, actions-interactions, and consequences associated with the core category (Corbin & Strauss, 2015; Creswell & Poth, 2018). Constant comparison between interviews took place to saturate concepts in terms of their properties and dimensions (Corbin & Strauss, 2015; Creswell & Poth, 2018).

Selective Coding

Once axial coding was completed, I sought a single core category upon which all other sub-categories were built. This core category was sufficiently general to explain all or most of the data but also specific enough to be useful for further research (Corbin & Strauss, 2015). This

core category appeared often in the data and logically followed from the raw data and axial coding categories (Corbin & Strauss, 2015). A visual model was created to illustrate how the axial coding categories relate to each other and the core category that emerged from the data through thoughtful reflection. This model went through several iterations until a clear and logical one was developed that requires little additional information to understand (Corbin & Strauss, 2015).

Memoing

Memos were used immediately after the first interview and throughout the entire data collection and analysis process (Corbin & Strauss, 2015; Creswell & Poth, 2018). Memos were notes that I wrote that included what the interview was about, including any initial findings or observations (Appendix O). These memos served as a written audit trail of my thoughts from interview to model creation. Memos contained several sentences or several paragraphs depending on the density of information provided (Corbin & Strauss, 2015).

Trustworthiness

Those engaging in quantitative research have had centuries to refine their scientific methods of investigation, while qualitative researchers have had relatively few years in which to refine the inquiry process (Guba & Lincoln, 1982). For that reason, qualitative research has its own equivalents for each of the criteria in quantitative research. For qualitative research, trustworthiness is preferred over quantitative research's validity and reliability (Corbin & Strauss, 2015). Trustworthiness establishes the accuracy of the findings due to the researcher spending so much time in the field and data analysis (Creswell & Poth, 2018). Corbin and Strauss (2015) also stressed the quality of the research and the sensitivity of the researcher. To this end, I sought to create a study that is viewed by readers as an honest and probable

explanation for how homeschooled high school students integrate origins science into a biblical worldview. Guba and Lincoln (1982) provided four criteria to ensure the trustworthiness of qualitative research: credibility, dependability, confirmability, and transferability.

Credibility

Credibility is the extent to which the results of a research study accord with the reality as seen by the participants, analogous to internal validity in quantitative research (Guba & Lincoln, 1982). Credibility points to the believability of a study over its validity (Corbin & Strauss, 2015). Triangulation of data sources via free word associations, interviews, and a focus group lend to the credibility of this study (Creswell & Poth, 2018; Guba & Lincoln, 1982). Upon transcribing interviews, member checking occurred to ensure an accurate representation of the participants' views (Corbin & Strauss, 2015; Creswell & Poth, 2018; Guba & Lincoln, 1982). Member checking also occurred with the preliminary model during the focus group to enhance the credibility of the results. Memoing also provided credibility for the study as I was able to establish an audit trail of my findings (Corbin & Strauss, 2015; Creswell & Poth, 2018). Corbin and Strauss (2015) stressed credibility in terms of a study being believable rather than being truthful "in the sense that findings can be readily used because the findings provide insight."

Dependability and Confirmability

Dependability is the extent to which another researcher would reach the same results if the same study were conducted, analogous to reliability in quantitative research (Guba & Lincoln, 1982). Dependability was achieved by auditing the research process (Creswell & Poth, 2018) with a focus on process (Guba & Lincoln, 1982). I kept an audit trail during the data analysis process and memoed my thoughts throughout the open and axial coding process. This enables any reader to track my thoughts from coding to model creation. Confirmability is the

extent to which the results of a study are objective and not dependent on the researcher, analogous to objectivity in quantitative research (Guba & Lincoln, 1982). Confirmability was achieved by auditing the research process (Creswell & Poth, 2018) with a focus on the original data (Guba & Lincoln, 1982). Again, I kept an audit trail that enables any reader to trace my analysis back to the original data. Guba and Lincoln (1982) also suggested triangulation and reflexivity to ensure confirmability. I triangulated my data with three data collection sources and have already reflected on my epistemological assumptions in a previous section.

Transferability

Transferability is the extent to which the results of a study can be applied in other contexts and with other participants, analogous to external validity in quantitative research (Guba & Lincoln, 1982). Corbin and Strauss (2015) stressed that findings should be “readily understandable by laymen” and “sufficiently general that it can be applied to diverse situations and populations” (p. 345). Transferability was achieved by thick description (Creswell & Poth, 2018; Guba & Lincoln, 1982). I provide enough description of my setting and participants that others can easily discern whether the results apply to other contexts. The transferability of this study was limited due to the narrow requirement of the participants to be homeschooled and have a biblical worldview. Within that pool, however, variation was sought in age, sex, ethnicity, religious affiliation, and environment of the participants to make the findings as transferable to other situations as possible.

Ethical Considerations

Creswell and Poth (2018) listed many ethical considerations while creating a research design, collecting, analyzing, and reporting data as well as publishing results. Corbin & Strauss (2015) suggested identifying ethical considerations in three main areas: participants, research,

and researcher. First, participants were fully aware of the purpose of the study as well as their ability to remove themselves from the study for any reason (Appendix D). They were exposed to minimal risk, no more than what they would encounter during their typical daily routines. Additionally, all names of participants remained confidential with pseudonyms (Corbin & Strauss, 2015). Due to the age of the participants and the polarizing nature of origins science (Ham & Hodge, 2014; Rau, 2012), I needed to be mindful of my reactions to participants' answers, not leaving them embarrassed or angry if I held different views from them. It was of utmost importance that I, as the researcher, was as unbiased as possible in my reactions during interviews so as not to influence answers or leave participants with undue emotional distress. To this end, I opened the interviews and focus group with informal questions to invite participants to share openly.

The second area for ethical considerations was the research itself. Data were not collected until IRB approval was secured. I used the best practices of qualitative data analysis as outlined in Corbin and Strauss (2015) to ensure the "integrity of method" (p. 13). Because my participants were volunteering their time for this study to benefit others and the field of education, it was incumbent on me to do the research well and publish the results (Corbin & Strauss, 2015). As in any qualitative research, all data needed to be kept in a secure place with access only to the researcher (Creswell & Poth, 2018). To that end, I had all data on a password-protected computer that had a backup kept in a locked safe.

The final area of ethical consideration was the researcher. Corbin and Strauss (2015) stressed that researchers have "an ethical responsibility to self, to participants, and to the profession to produce the highest quality work that he or she is capable of" (p. 14). To this end, I spent several months interviewing, transcribing, coding, and contemplating the meaning behind

all collected data. I had prepared my family and friends for the reality that I would not be able to commit to every activity I had participated in in the past. I sought to treat my participants and their time with respect as I built a model for biblical worldview development. My goal was to advance the field of education for those interested in biblical worldview development, origins science, or homeschooling.

Summary

Chapter Three contains the elements of effective phenomenological research, an ideal research design for creating a model for biblical worldview development. I have identified my research question and sub-questions as well as my participants, procedure, and my role in the research design. I have described my data collection, analysis methods, and procedures and have established the trustworthiness of the study and its ethical considerations.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this hermeneutic phenomenology was to understand the lived experience of how homeschooled high school students integrate origins science into a biblical worldview. Chapter Four provides the results of this research, beginning with a brief description of each participant. The emerging categories and themes are explained, grounded in the free word association forms, interviews, and the focus group. Finally, the central research question and sub-questions are answered.

Participants

All participants were at least 18 years old, White, and were homeschooled while they learned various aspects of origins science. They all live good or very good adherence to a biblical worldview, as assessed by the *3DWS* (Appendix I). The following is a brief description of each participant alphabetically by pseudonym.

Adam

Adam is 23 years old and was homeschooled for all his K-12 years. He lives in the northeastern United States and identifies his church affiliation as non-denominational. Adam has taken more than four homeschool science courses in high school that dealt with origins science content and showed an unwavering commitment to a literal interpretation of Genesis in his young-earth creationist beliefs. Throughout the interview, Adam repeatedly based his answers to questions about origins science solely on his understanding of Genesis. When asked if there were any resources, videos, or books he thought would be useful for others to understand his point of view, Adam replied, “I don’t really think so; I think it’s mostly just about the Bible.”

Brian

Brian is 21 years old and was homeschooled for most of his K-12 years. He lives in the southeastern United States and identifies his church affiliation as Baptist. Brian has taken more than four homeschool science courses in high school that dealt with origins science and is currently attending a Christian university for engineering. While identifying as a young-earth creationist, Brian did allow for more liberal interpretations of Genesis to accord with a biblical worldview. When asked if Christians can cohere evolution with a biblical worldview, Brian responded, “I think you can still have a biblical worldview and believe in evolution...I don’t think that will change how good of a Christian you are or change how much God loves you.”

Chloe

Chloe is 19 years old and was homeschooled for all her K-12 years. She lives in the southeastern United States and identifies her church affiliation as non-denominational and evangelical. Chloe has taken more than four homeschool science courses in high school that dealt with origins science and is currently going to college. While speaking of her homeschooling process and what brought her to her current young-earth creationist beliefs, Chloe was easily able to name popular young-earth creationist apologists and was aware of common terminology in the literature. Chloe is a conservative young-earth creationist who does not allow for many other interpretations of origins from a biblical worldview. This can be seen from her free word association form, in which she associated the Big Bang with an “attempt to replace God as Creator” while associating six days of creation with “what God says is what happened.” Many of her origins beliefs were formulated during her middle school homeschooling years, with relatively little thought given to them during her high school science

classes. It was apparent that Chloe thought deeply about worldview issues continually, participating in this study because she believed that “worldview is incredibly important.”

Deidre

Deidre is 18 years old and was homeschooled for all her K-12 years. She grew up in the northeastern United States and identifies her church affiliation as reformed Presbyterian. Deidre has taken three homeschool science courses in high school that dealt with origins science and is currently attending a Christian university for journalism. While a Christian for much of her life, Deidre recognized that she does not think about her worldview much because it is all she has ever known. About her worldview, she commented, “I think, honestly, it’s just such a part of my daily routine...that’s my identity. That's who I am.” Deidre readily admitted that origins science was not something she was interested in learning more about and was fully confident that, although she may not know all the reasoning for her young-earth creationist perspectives, there were biblical groups like Answers in Genesis who did. On her free word association form, Deidre even associated young-earth creationism with “Answers in Genesis.” Deidre humbly accepted her ignorance and lack of expertise regarding origins topics but was also skeptical about views that differed from her own.

Ella

Ella is 20 years old and was homeschooled for most of her K-12 years. She lives in the southeastern United States and identifies her church affiliation as Presbyterian. Ella has taken more than four homeschool science courses in high school that dealt with origins science and is currently attending a Christian university for anthropology. Worldview issues are continually in Ella’s thoughts as she neared graduation with a bachelor’s degree in anthropology, a field that

requires her to take a stance on worldview issues as they affect interpretations of the past. When trying to understand historical humanity, Ella gave the example that

people are inherently bad. If given the decision to do a bad thing, we're probably going to take that. So looking at history, when things go badly, and bad people appear, I'm not like, "Oh, if only they had the right guidance." I'm like, "Yeah, that's kind of inevitable because we're human."

Ella takes a cautious young-earth creationist approach to the past, giving some flexibility toward the length of days mentioned in Genesis and considering herself moderate in that regard. When discerning the truth in a matter, Ella likes to ensure that "people are credentialed. I don't like learning from just a guy off the street."

Felicia

Felicia is 30 years old and was homeschooled for most of her K-12 years in Canada. She currently lives in South America and identifies her church affiliation as evangelical. Felicia has taken two homeschool science courses in high school that dealt with origins science before working toward a nursing degree in Canada. Felicia and her husband were sent as part of a missionary organization to serve in a church in South America, where she also fills in for nurses as needs arise. At the time of the interview, Felicia had just finished providing relief for nurses during the 2020 coronavirus pandemic. During the interview, it was clear that Felicia had thought through issues regarding origins science during her homeschooling and college years. Since portions of Canada are intensely secular, Felicia was exposed to many worldviews during college that were different from those she had experienced during homeschooling, forcing her to think through various worldview issues. Felicia's main concern with the Bible is "where we get our morality from. Who decides what's right and wrong?"

Gabrielle

Gabrielle is 21 years old and was homeschooled for all her K-12 years. She lives in the midwestern United States and identifies her church affiliation as evangelical. Gabrielle has taken more than four homeschool science courses in high school that dealt with origins science and is currently attending a Christian university for social work. Gabrielle went through many homeschooling years with Mormon students, who contributed to her growth in worldview understandings. When asked about the importance of various views about origins, Gabrielle was very gracious and inquisitive toward others who held different views from her own while maintaining confidence in her own young-earth creationist beliefs. Gabrielle stressed the importance of having conversations with people to understand their viewpoints. An important step for Gabrielle to begin a conversation with others about origins is “defining your terms and understanding where you are so that...everyone would be on the same page...making sure that you...understand fully what you’re talking about before you start deciding the truth in it.”

Hannah

Hannah is 18 years old and was homeschooled for most of her K-12 years. She lives on the east coast and identifies her church affiliation as evangelical Baptist. Hannah has taken three homeschool science courses in high school that dealt with origins science and is planning to attend a Christian university in the fall. Hannah had not spent much time thinking through issues of origins as she started the interview with “I’m not very big into science.” Apart from some different worldviews that she might encounter at work, Hannah is almost always around individuals who have a worldview similar to her own. She credits this to giving her confidence in her beliefs in young-earth creationism when at the end of the interview, she stated, “I think it really did help that all of the evolution that I’ve learned about was from a Christian worldview.”

Isaiah

Isaiah is 27 years old and was homeschooled for all his K-12 years. He lives on the west coast and identifies his religious affiliation as non-denominational and evangelical. Isaiah has taken two homeschool science courses in high school that dealt with origins science and is currently a high school apologetics teacher. Isaiah had thought through many origins science issues, noting that being a teacher forced him to understand his thoughts on various issues regarding origins. Isaiah is a young-earth creationist but shows much more grace toward old-earth and evolutionary creationists than many of the other participants. He cited thinkers like William Lane Craig and C. S. Lewis as examples of apologists who have convinced him that genuine believers can have views about origins other than young-earth creationism. Still, Isaiah held an unwavering commitment to young-earth creationism as found in Scripture even in the face of overwhelming scientific evidence, calling some predictions of science “a pretty good shot, but if it comes in contradiction with the Bible, I’m going to have to call it false.”

Jennifer

Jennifer is 18 years old and was homeschooled for all her K-12 years. She lives in the southeastern United States and identifies her church affiliation as non-denominational and Baptist. Jennifer has taken more than four homeschool science courses in high school that dealt with origins science and plans to attend a Christian university in the fall for biology. As a future biology major, Jennifer had thought through many of the questions that were discussed during the interview. She had recently completed a thesis for her homeschooling group dealing with biology, a field that she has no difficulty reconciling with her young-earth creationist beliefs. Along with the typical books and resources that have influenced the other participants, Jennifer cited her early teens for laying a solid biblical foundation. During her homeschooling courses,

Jennifer was prepared to refute the views of science and scientists who espouse evolutionary views. However, she has since recognized that “I believe that I should study their beliefs in a closer fashion. I know a lot of refutations to it, but I need to know more about their arguments, not necessarily just how to refute them.”

Kendrick

Kendrick is 32 years old and was homeschooled for most of his K-12 years. He lives in the midwestern United States and identifies his church affiliation as non-denominational, Baptist, and reformed. Kendrick has taken two homeschool science courses in high school that dealt with origins science and is currently working for a Christian science curriculum company. As one who deals with the content of science daily, Kendrick was more than comfortable sharing his views and defending his own young-earth creationist beliefs. He labeled the Bible as “truth,” old-earth creationism as “wrong,” evolution as “FALSE,” and young-earth creationism as “right” on his free word association form. He was quick to identify assumptions of those with whom he disagrees as well as graciously offer the evidence for his own position. Kendrick also named different resources than other participants, citing a local apologetics ministry and speaker as influential to him. In the end, Kendrick stressed the importance of parents picking an appropriate science curriculum for their children when he said, “curriculum choice still matters, whether it’s worldview altering or not, you’ve got to choose something that is biblical, that is Scripturally accurate.”

Leslie

Leslie is 30 years old and was homeschooled for all her K-12 years. She lives in the midwestern United States and identifies her church affiliation as non-denominational and evangelical. Leslie has taken two homeschool science courses in high school that dealt with

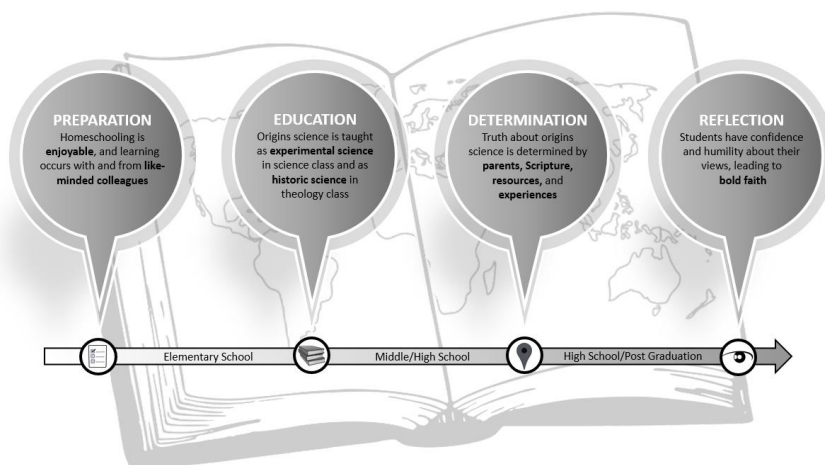
origins science and is currently a business professor at a midwestern university. While not necessarily dealing with origins science issues regularly, Leslie knew her old-earth creationist position well and confidently held her views and how the Bible and science can work together to reveal God’s truth. She was much more willing to allow scientific consensus to speak into biblical interpretation than other participants. In particular, she believed, “if there’s not a clear indication that God is doing a miracle, then one should be able to trust the natural order of things.” Leslie claimed that varying views of origins science were not issues of salvation, and she would consider young-earth, old-earth, or evolutionary creationists as part of the respectable Christian-fold as long as they held a “high view of Scripture.”

Results

The process that each participant took in integrating origins science into a biblical worldview followed a similar path. Each participant had comparable preparation, education, determination, and reflection stages as they went through their homeschooling courses that discussed origins science. The resulting model for biblical worldview development is given in Figure 1.

Figure 1

Model for Biblical Worldview Development



The purpose of this hermeneutic phenomenology was to understand the lived experience of how homeschooled high school students integrate origins science into a biblical worldview. For this study, biblical worldview development is the process of faith development in either form or content (Fowler, 1981) through an individual's understanding and application of the Bible. The theoretical framework guiding this study was Fowler's faith development theory as it relates physical, mental, and moral growth to the development of an individual's worldview (Fowler, 1981). The following sections give the results for this study. The first section explains how themes were developed, followed by descriptive narratives showing how themes were grounded in the data. The results section gives answers to the central research question and sub-questions.

Theme Development

Immediately upon receiving free word association forms and conducting interviews, data were analyzed according to the procedures recorded in Chapter Three. After completing a list of open codes for all the data (Appendix M), constant comparison was done with the data to determine how each code related to other similar codes. These similar codes were then axially coded into a smaller number of categories and sub-categories (Appendix N) around the core category of biblical worldview development. The categories and sub-categories were used in the creation of a biblical worldview development model for origins science, as depicted in Figure 1. The biblical worldview development process for participants began with the preparation phase.

Preparation

Throughout the interviews, every participant made statements about how much they enjoyed being homeschooled. An enjoyable homeschooling experience, along with similar beliefs to others, prepared participants for what they would learn in future courses concerning origins science.

Enjoyable Homeschooling Experience. Many participants reflected on their homeschooling experience and considered it beneficial for their lives, worldview, and interactions with others. Ella said her homeschooling experience was “pretty great,” while Felicia called it “very positive” and tells others that “my parents really gave me a love of learning.” Felicia added, “it wasn’t a chore to go to school...it was definitely positive for...my imagination or my creative side of things.” Felicia ended up spending two years at the end of high school attending public school instead, a transition that she found simple “because I was doing something that I liked, which was learning something new.” Felicia’s homeschooling taught her that “learning is fun and motivating.”

Compared with some of her homeschooling friends who wanted to go to public school, Gabrielle said, “I don’t think I would have ever wanted it another way” and has found similar freedom from the typical school structure throughout college as well. Gabrielle recognized that homeschooling provided

just a different perspective on schooling, which I really appreciated...it gave me a greater perspective on God’s kingdom. I felt like I could actually see the Lord in everything I did rather than having it be where I had to search for it.

Leslie had a similar view in which she described herself as the “quintessential introvert” who was able to use homeschooling to get ahead of her public-school peers. She also said, “I liked learning, and I liked being able to be bookish and...involved with the things I wanted to be involved with.” Jennifer had switched between two different homeschooling programs but found both to be enjoyable in their own way. The first was focused on fine arts, where she said, “that was a fun year” but was glad to get back into her current homeschooling program, calling it “very, very intense, but in a good way.”

Kendrick's homeschooling experience started differently. He remembered that "the early years were rocky" but recalled more recent conversations with his mom that led him to believe that his memories were actually "worse than it was...but after...those first two years, [I] loved it." Kendrick summarized his feelings toward homeschooling:

That was just a really good experience for me. I had no desire to go back to school in high school, like a lot of people do. It was just through and through a really good experience. My wife's pregnant with our first. We intend to homeschool, Lord willing.

His enjoyment of homeschooling was evidenced by the fact that Kendrick also described homeschooling as "kind of in my blood now," an identity theme that many of the other participants identified as well. In particular, participants appreciated the fact that they were getting consistent teachings from parents, teachers, and resources, a consistency in belief and worldview immersion that helped prepare them for their learning of origins science.

Beliefs of Other Homeschoolers. It is easier to learn and discuss topics in school when everyone believes the same thing as one another. The participants in this study all came from families with strong biblical worldviews, an aspect of which may include the belief that all education and learning should be done under the direct instruction or supervision of the parents. Most parents ensured that the curriculum, classmates, and content were all at least implicitly affirming a biblical worldview. Adam said, "a lot of my friends and family, we all believe a lot of the same thing. There's some details that we don't always agree on, but it's generally, we all believe the same thing." Kendrick stated that, even in high school, it is "the responsibility of parents to protect their kids," and one way they can do that is to "select a curriculum that is going to affirm biblical creation." Deidre is a prime example of how this consistency between parents and curriculum help shape beliefs:

Just hearing, growing up under their lectures, and then having to do homework that kind of aligned with that, that was kind of the thing that just pushed me, and I was like, “Okay, this is what I believe. This is what I’m being taught. I’m taking this, that’s what I believe.”

Gabrielle appreciated being challenged by others while recognizing Scripture as a common denominator. In recalling conversations with classmates, Gabrielle processed things with others by saying, “okay, now, this is Scripture. What do you think and what do I think?” and being able to challenge one another. I enjoy that.” Ella agreed as she recognized that “a lot of the time, we’re friends because I know we have the base understanding. We end up talking about a particular subject; I can always trust that we’re coming from the same place.” Indeed, Ella’s friendships were in place because “we view kind of the same truth.”

This “same truth” does not just extend to the same foundations of beliefs, but the same particulars of beliefs as well. As a high school apologetics teacher, Isaiah commented, “I’ve not been in a place where I’ve had to convince somebody, one of my students, about young-earth creationism; most of them are already.” Even growing up, Isaiah was around a “very conservative crowd” and would have found it “very strange if I ever interact with somebody who didn’t think that [young-earth creationism was true].” This commonality was so strong for Isaiah that he was almost able to define Christian orthodoxy by it:

The ones that stayed, I hate to say, stayed Christians, but the ones who did not reject Christianity entirely stayed young-earth creation. There were, of course, a number of people who said Christianity is just not true, and that’s a whole other discussion. But the Christians in my homeschooling group, I would say, still hold the young-earth creationism.

Hannah experienced a similar insulated Christian environment to Isaiah. She says that now she only thinks about her worldview when she is at work since she works “at a restaurant, and a lot of people are not Christians...[whereas] every other time I’m in a Christian situation, in a Christian environment.” She concluded, “it really did help that all of the evolution that I’ve learned about...was from a Christian worldview.”

This insulated Christian environment was different for Leslie, who did not agree with all her homeschooled friends about origins science. Instead, she grew up in a group that was “a good mix...of young-earth and old-earth viewpoints.” She recalled an informal debate where she had an opportunity to discuss differences with other homeschooled students graciously. Leslie believed that the parents had “agreed to disagree about the issue,” and the debate “was viewed with amusement and encouragement by both sets of parents as a good educational and learning tool.”

Before participants could fully integrate origins science into a biblical worldview, there were many years of preparation. Participants enjoyed being homeschooled and were around parents and peers with whom they shared similar beliefs about origins science. During this preparation phase, students were exposed to the central tenets of biological evolution while reserving some of the deeper scientific, theological, or philosophical discussions that surrounded it for later.

Education

At some point during high school, participants took more advanced courses that taught origins science to varying degrees of depth. Participants learned from science curricula that either ignored much of origins science, barely mentioned it, or for one participant, affirmed it.

Although origins science was learned for most in a scientific context, it was discussed just as much from a theological and philosophical point of view as well.

Science. It is essential to understand how each participant viewed the term science as this had a significant impact on how they integrated origins science into a biblical worldview.

Hannah had the most general definition with “the study of the world, it’s how the world works” while Jennifer’s definition was similarly broad as “the exploration of the world around us from large details to small in a way that we can find out as much knowledge as possible.” Adam held to a slightly narrower view that science is “the study of a lot of different things...but it’s a lot of experiments and lots of research and study of all different kinds of topics.” Deidre narrowed it down to biological science when she said that science is “the study of living things. Although I feel like that is a very broad definition that could apply to a lot of different areas of study.”

Gabrielle had similar difficulty in defining science:

When I think of science, I think of, I don’t know if this is even a definition, but I think of looking at the things that have been made and identifying pieces of it, and the search for truth or real things in everything.

This idea of using science to determine truth was found throughout other participant definitions. Brian narrowed his definition to “the pursuit of physical knowledge...really trying to rationalize a physical world that we have” with Ella echoing this by believing that “the provable methods...the building blocks of our physical world depends on what parts of science you want to go for.” Isaiah said science is a “process of observing patterns and attempting to recount those patterns into a predicable law.” Leslie’s definition summed up what most of the other participants believed:

The scientific method is an observational method designed to obtain observations and cause and effect in replications about the natural world and what we can see and what we can observe. The scientific method does not have any bearing on things that are outside the senses.

No participant included the scientist as part of their definition of science quite like Kendrick when he said, “science would be the data of our observation and the *interpretation* [emphasis added] of that data and formulating ideas around that data—solving problems with that data.” Although it came out in interviews with others about how influential the worldview of the scientist is during the scientific method, Kendrick was the only one to include the scientist’s interpretation as part of his definition. This distinction ultimately defines science in two different categories.

Two Types of Science. Chemistry, physics, and significant portions of biology are all repeatable, testable, laboratory sciences called experimental or observational science. The second type of science with archaeologists, paleontologists, or geologists consists of scientists who explain what they see in the present by appealing to what they believe happened in the past, called historic or forensic science. Many participants identified these differences explicitly. Chloe said,

I do believe that there are two camps of science: we have empirical science that really does involve repeated experiments and testing of a scientific hypothesis, and the other is more like predictions, guesswork that could, in theory, be accurate, but isn’t tested.

This “guesswork” depends on the worldview of the scientist and how they interpret past events.

Deidre recognized that scientists have “a personal bias against certain things...that can color how

they see things and how they report those results.” Felicia remembered her homeschooling videos dividing science into

observational science, things that we can see and measure and repeat...and then there’s, what maybe mainstream media would call, science that includes a lot of things that...aren’t necessarily things that can be observed or repeated in a laboratory...but they’re still thrown in under the term science...the historic science is probably where I have more differences with people and not so much the observational part.

She concluded that observational science “doesn’t really cause much of a conflict to me,” while historic science “is hard to be 100% objective” because an individual’s worldview could “affect your conclusions.”

Gabrielle alluded to these two types of science when she viewed some science as “continually evolving...but there’s also the absolute fact part of science that isn’t going to change.” Isaiah admitted, “science does a great job at [understanding the world] ...where it comes short is when it starts making things up that were not repeatable and observable.” This anthropomorphizing of science as a living thing that “starts making things up” was perceived by Kendrick. When asked how well he thought science understands the truth about the world, Kendrick responded, “well, that’s kind of an interesting question, the way that you phrased that. How well does science do, or how well do scientists do?” Kendrick immediately took the question as an opportunity to explain, “origins is a philosophy...science can’t tell you how we got here because it’s data. It’s empirical, so that’s the realm of philosophy...outside of that, I think scientists do really well.” Kendrick had included scientists as part of his earlier definition of science because he recognized how they influence scientific conclusions.

Because these homeschoolers were taught that origins science was a philosophy, they learned just as much about it in their theology classes as they did in their science classes. This separation of science into two parts is used by many of the curriculum writers, evidenced by how the science classes treated origins science. Chloe said,

we actually didn't discuss it. It wasn't critical to the curriculum besides God's, "This is Genesis account: this is what it is, this is how it was created. [If] we don't believe this, [that means] we don't believe the Bible, [and] we don't believe there's a God."

She also added that her curriculum did "reflect Scripture in its teachings on origins, although origins are not its focus...it was thrown in there like an introduction."

This lack of discussion in the science classroom led most participants to either ignore origins science or not understand it from a scientific perspective. Deidre was taught "that evolution is a theory made by a man, and it is not true...we always used young-earth biblical creation curriculum, or we always cut the evolution part out of our curriculum," while Brian said, "mostly what [the curriculum] taught to me was evolution as a theory." About evolution, Adam was taught that it meant "ape to man...apes can't talk, and all of a sudden, they can learn to talk." Deidre similarly associated evolution with "men from monkeys" on her free word association form. Felicia commented, "humans did not evolve from apes I am certain," while Jennifer asserted, "we do not evolve from apes."

Evolution to the participants strictly referred to human evolution as a result of time, matter, and chance. At the same time, participants agreed with some tenets of evolution, for example, microevolution and natural selection. About microevolution, the ability of species to evolve minor genetic differences without changing species, Brian said, "I think that's a very real thing. I think that's a fact." Chloe agreed, "of course, I believe that microevolution exists," and

Ella referred to it as “intelligent adaptation.” Felicia claimed, “I believe it is reasonable that all animals have evolved since they’re creation within their kind. So probably from some common ancestor through microevolution and natural selection...[there] could be [a] common ancestor...in each species we know today.” Jennifer called microevolution “fascinating” on her free word association form while Hannah recalled learning “there’s microevolution and not macroevolution.” Isaiah gave the simplest definition of evolution when he associated it with “change” on his free word association form. To be sure, evolution is a term that can mean a variety of things depending on the context, for example, cosmic evolution, chemical evolution, biological evolution, human evolution, microevolution, macroevolution, or psychological evolution. This is why Gabrielle’s advice for having discussions with others is so valuable when she said, “the first step is defining your terms and understanding where you are so that...everyone would be on the same page.”

Leslie was the only participant to have heavily learned origins science in a science classroom. Her parents chose “secular science books and science textbooks with the idea of, ‘you don’t need Christian electricity, just learn electricity.’” Her parents would then have discussions about evolution or the age of the Earth as that content came up. She recounted conversations that would arise:

“Mom, why do we have to read this when it isn’t true?” “Well it’s because it’s what most people think, and you need to understand what most people think, and you need to understand why they think it, and you need to know the best arguments for it and which parts are right so that you can understand how best to counter those arguments and make a stand for what you believe in intelligently.”

Leslie's parents wanted their daughter to learn what the world believes about origins science so she would be better prepared to interact with others.

View of Science. Ignoring origins science in the science class revealed at best a distrust for science and, at worst, ignorance of it for most of the participants. Brian said, "in philosophy, they always talk about how our senses can be flawed," and Hannah agreed, "humans are always flawed in their research." Chloe trusts other areas of research more than science:

I probably wouldn't trust [science] that much. I would expect it to develop over years and possibly entirely change that theory we come up with. For example, Carbon-dating has been shown to not be that accurate...I can't be sure in any theories regarding the age of the Earth...I probably actually trust anthropological theories more.

Indeed, this distrust was readily seen in the free word association forms. The Big Bang was associated with "a theory to explain our origins," "an attempt to replace God as Creator," "theory on how everything came to existence (according to main stream science)," "does not follow set laws of science," and ultimately, "FALSE." The first words participants think of with The Big Bang stem from their distrust of this "main stream science."

Brian distrusts science because of the hypocrisy he saw when he recalled that science "kept telling me to question creationism, but never wanted to question itself," referring to the fact that he felt evolution was viewed as an established fact in science that was not allowed to be investigated. Speaking of the scientific method, Ella said, "you take it as what you can with the evidence in front of you, but I wouldn't base my life off of it." Kendrick said that scientists make "underlying assumptions" about the nature of reality that affect how they interpret their results. Sometimes scientists say the age of something in nature is millions or billions of years old, a thousand-fold range that Felicia found absurd and lamented, "I have my doubts when they start

throwing out those big numbers like that.” Isaiah recognized the conflation of the two definitions of science and stated, “it’s great that a cell can mutate, but that doesn’t mean that this, that, and the other thing can happen.”

Some participants have simply ignored science, not seeing it as necessary or even important for their lives. Adam asked, “can you remind me what the scientific method is?” early in our interview. Similarly, when asked for a definition of science, Deidre responded,

what is my definition for science? Oh, my goodness. I don’t even know if I could. I don’t even know. I’m not a science major. I do not. I’m not a science major. So I really haven’t even thought about that question...I took BIO 101 last semester, and it just went straight out of my head. Can you give me a quick refresher on what the scientific method is?...I took Biology 101 literally only because I had to satisfy it for my major.

Gabrielle had a similar experience when she claimed, “I’m not a science person. I’ve done a lot, but just not my favorite...I’d have to refresh my brain a little bit on...those key concepts.” I asked Hannah if her homeschooling curriculum talked about how old the Earth was, and she responded, “if they did, I can’t remember.” Isaiah said, “I found out I was not a biologist” in college, but recalls how his high school science classes dealt with origins science:

I still remember it because it was kind of highlighted. There was a single page in a biology textbook that had like two paragraphs on the gap theory—theistic evolution. That was the only formal discussion. In my physical science class, there was probably a comment here and there about, “This is true, some people think that, but anyways...” and moved on from there. But as far as a formal discussion, there was maybe half a class period and one page in the biology textbook.

During the focus group, participants felt that their science courses did cover origins science material, but as Jennifer said, “it would be more from a Christian perspective and kind of refuting the evolutionist arguments.” This is understandable since the participants all have a definition of science that includes two different types: experimental and historic. Because origins science was viewed as part of historic science, assumptions about the past affect how scientists interpret what they see in the present. This means an understanding of origins science requires an understanding of worldview, theology, and philosophy.

Before moving on to how participants learned origins science in theology classes rather than science classes, it is of interest to note that Leslie, the old-earth creationist, viewed science differently than the rest of the participants. She was the only one to learn from secular science textbooks, but also personally knew and was taught in Sunday School by one of the world’s foremost Christian scholarly scientists, someone who had written many books and participated in many debates on the topics of origins science. As a result, Leslie stated,

I always grew up having a strong respect for science and for basically general revelation as well as specific revelation and the importance of them both and the study and integration of them both as being a key and core component to study. [This] then has actually been sort of a guiding principle that all truth is God’s truth—God is not a man that He should lie.

While not a scientist by trade, Leslie had respect for the ability of scientists to come to understand the truth about reality, respect not shared by many of the other participants since they viewed origins science under the realm of theology and philosophy rather than science.

Theology. Many of the resources participants listed as either influential in their understanding of origins or recommended for others to have a deeper understanding of origins were theological or philosophical in nature:

- *Defeating Darwinism*
- *It Couldn't Just Happen*
- *Don't Check Your Brains at the Door*
- *Total Truth*
- *How Should We Then Live?*
- *Darwin's Black Box*
- *The Case for Christ*
- *The Holy Bible*

Nearly all these books were written for a theological or philosophical purpose, not with the express purpose of teaching science content. There were few resources listed that were written from a strictly scientific perspective, while only one student mentioned reading *On the Origin of Species* (1859). However, since the participants' definition of science is different from a typical mainstream definition that does not acknowledge an artificial distinction between experimental and historic science, it's understandable that the participants would learn much about origins science within a theological or philosophical context. Kendrick articulated this necessity well:

And so, scientists can understand [experimental science] very, very well. It's when they go off into the realm of philosophy...the science has ended at that point, and now you're in the realm of philosophy and just really unprovable things, whereas science is, to some extent, provable...the data is the data. The philosophy is what we do with that data...you

can't do anything with that unless you're making interpretations and assumptions that you don't have data, necessarily, to back up.

Hannah added that she learned origins science “as an overview that some different youth pastors have taught on” and confirmed during the focus group that she “learned most about origins science more in the church setting.”

Determination

There was little variation on the origins science spectrum for participants; they were all self-identified young-earth creationists except one. Even so, how they came to their beliefs followed similar themes. The list for the determination component in Figure 1 is given in a deliberate order beginning with parents, followed by Scripture, resources, and experiences. Although it seems unusual to place parents ahead of Scripture, when this was presented at the focus group, Brian recognized,

that's fair because as you grow up, you start out trusting your parents because that's what your parents say. But then as you got older...you start having questions and questioning beliefs. And that's when you went to the Scriptures, and that's when you went to other resources trying to figure it out and eventually going out to experiences.

The list of four components of which participants used to determine truth is based on how truth was determined epistemologically, how participants came to know and learn the truth about origins science during homeschooling. It is also mainly chronological since parents are first in presenting truths to their children in the everyday routines of life. They use Scripture and resources to do so, but parents are the ones who decide what and how materials are presented.

One distinction in the list should be made for Leslie, the old-earth creationist. Like the rest, parents begin her list because they decided how to present the content when she was

homeschooled. Leslie's parents presented origins science from a secular textbook and supplemented the controversial sections either by having biblical worldview discussions or ignoring the homework assignments. However, after her parents, Leslie had learned that all other sources of revelation can, and should, be used equally in determining the truth about origins science. When asked about the relationship between general revelation and special revelation in understanding the truth of reality, she responded,

they are both true...thousands of years old documents and thousands of years old geology might not, the interpretations thereof, might also be fallen and prone to misinterpretation, even if the facts as they are and as they were, are completely true.

While Leslie has had Scripture, resources, and experiences as part of her understanding of origins science, they all worked together to form her understanding rather than stressing one over the other.

Parents. Every participant held the same beliefs about origins science as their parents. Adam said that it was “mostly my parents” who influenced him in his current beliefs. Brian stated, “the biggest resources....it was really just textbooks and parents.” Since parents pick the textbooks, it seemed appropriate to put parents ahead of other resources in terms of presentation of truth. Deidre admitted, “honestly, my mother was a big proponent for me to believe in young-earth creation” since her mom “did most of the homeschooling...and...just taught us biblical creation.” During the focus group, when asked why she believed young-earth creationism was correct, Hannah responded, “it's just from what I've been taught by parents and church, and it just really goes along with everything that I have been taught about creationism.”

While Ella and Isaiah are young-earth creationists, much like their parents, they are also more open to opposing beliefs than the other participants. Ella explained, “my dad taught history,

my mom was a journalist, so they scientifically, they don't have a very strong stance [about origins science], which is probably why I don't either." Isaiah's experience was similar when he said his parents are "young-earth creationists as well, but they didn't really, there wasn't a huge drive to that." However, Gabrielle said, "I definitely think my parents were a big influence," and Jennifer mentioned both parents as influential in her beliefs:

My dad's a doctor, and...he suggested a book to me that helped him when he was in college...and my mother...she helped a lot...she would find resources for me, and she would do a lot of the courses with me as well, and we've had about a thousand late-night discussions about it...just the fact that she put up with all the late-night discussions is one of the influencing factors.

Because Jennifer's dad is a medical doctor, he had to wrestle with the same questions of origins science as his daughter. Kendrick had a similar experience with his dad:

He has had a fundamental altering of his understanding of Scripture. He's a doctor...he grew up loosely in a Christian Science family and hook, line, and sinker, essentially, on evolution. It wasn't until medical school that that changed. And it was because of medical school that that changed and because of the science behind things. So he's been a huge influence on me in that regard.

Kendrick believed it is "still the responsibility of parents to protect their kids," and one way they can do that is to "select a curriculum that is going to affirm biblical creation." However, to Kendrick, "biblical creation" is synonymous with young-earth creationism. Since Leslie's parents were old-earth creationists and nearly all Christian homeschool science curriculum is presented from a young-earth creationist perspective, they taught Leslie with secular textbooks that presented origins science differently than the rest of the participants' parents. Because

parents directly supervise and, in some cases, deliver the homeschooling curriculum, they were viewed as the primary determiners of truth for their children.

Scripture. The order for determination on the model is epistemological, explaining the order in which participants come to know what is true about origins science. Parents first decide what curriculum and content will be used to instruct their children, a choice that reveals their interpretations of Scripture. Because of this, mostly young-earth creationist curricula were used (e.g., Apologia, Bob Jones, Answers in Genesis, and Exploring Creation) with only Leslie having learned origins science from secular sources.

The supremacy of Scripture was the most readily-seen theme throughout every interview, understandable since every participant needed a biblical worldview to qualify for the study. When asked how he would evaluate truth claims about origins science, Adam responded, “first I would look at the Bible and see what the Bible says,” and he disagreed with some interpretations of origins science because “that’s not in the Bible.” When asked for what resources he would recommend so that others could have a better understanding of his views on origins science, Adam simply replied, “just read the Bible and see what it says.” Chloe agreed that she would “definitely compare [creation claims] to the Genesis account first...that kind of is the first gate that I check it at.” She also agreed with Adam in that she would recommend that others “honestly just read the Bible because if they get the whole picture, then they’ll understand what I believe—what I think.” On her free word association form, Chloe thinks of “Word of God the Creator” when she thinks about the Bible, similar to others associating the Bible with “God’s written word,” “truth,” or “foundation.”

When comparing the ability of the Bible and science to understand the truth about reality, Deidre said, “I would place a Bible over science...the Bible would come before science” and

associated the Bible with “Truth” on her free word association form. She described her understanding of the Bible and science at length:

There have been times where I’ve seen things, and I’ve been like, “Hey, that doesn’t match up with what the Bible says” or “I don’t think that’s in the Bible, but science seems to prove it’s true”...for me, I just, in my mind I’m like, “Okay, the Bible is the holy, inerrant Word of God, He created the Earth, He cannot lie, He cannot”...so for me, that’s never really been a point of contention where I’ve been like “Okay, wait, like, what if science is above the Bible or...what if the Bible is not true on this certain point?”

Because Deidre already believes that the Bible is inerrant, there is no real truth from science that can come in contradiction with it. She has placed Scripture’s affirmation of reality above anything scientists may say when the two contradict. Ella agreed when she said, “the Bible is the basis just for kind of understanding the world. It is inerrant and infallible. So, it’s definitely, like you can believe it, it’s true” and called the Bible “sacred and infallible” on her free word association form. Ella said she uses the Bible as her “lens to viewing culture and viewing people and what does God say about people...so when things happen, it’s not a pure accident or it’s not a pure coincidence.” When she considers the ultimate truth about reality Ella admitted, “I kind of have to go ‘Well, the Bible.’” Ella ended her view of Scripture’s supremacy in her life with a remarkable level of humility:

There’s always this element of “Well, the Bible says this. A lot of people can interpret it this way, even Christians.” So, my resignation is not technically a resignation, but it’s just a faith that God is who He says He is and that in the end, I just have to know that God created the Earth and that there is design and there’s a purpose.

Interestingly, Felicia finds issues with much of mainstream origins science for reasons more than just her belief in the Bible. As a trained nurse, Felicia had a unique insight:

If you took away the Bible and looked at [origins science] scientifically, I wouldn't be convinced with what the evolution theory has to offer...I guess I've seen the flaws, or I've learned about the flaws that maybe they don't usually teach you...it's made me sort of question how solid the evolution theory is in and of itself...I really think [evolution] would have to explain the questions that I still have that I think the Bible answers...I think the Bible is clear about man's condition.

Isaiah also emphasized the authority of Scripture when he said, "the first thing I'm going to do is compare it to [the Bible]...the Bible is complete, and it's true...so my first thing is going to be to compare it to Scripture." He reaffirmed this later when he said, "if [science and the Bible] disagree with each other, I'm going to have to go with the Bible all the way because as God's Word, I believe it to be perfect." However, he was willing to have varying interpretations of origins science as long as they affirmed the goodness of God and the inerrancy of Scripture.

When Jennifer tries to determine the truth about reality, she first asks for someone else's evidence and tries to "line it up with the Bible." Kendrick recognized that for a Christian, the truth about origins science could be reached via Scripture and the scientific method, describing it as "two-pronged." However, he also said that "the shortcut test is, does that jibe with Scripture? Does that match up with Scripture?" Kendrick was unwavering, not just in his foundation of Scripture, but also in his interpretation of Scripture:

It's Scripture that interprets Scripture, not nature that interprets Scripture...you still go to Scripture, and you look, and you say, "Okay, nature seems to be telling me this but Scripture, which we also know is the divine revelation of God, tells me something else. I

must be understanding this nature wrong.” And so they don’t contradict each other. Our understanding of [nature] is what contradicts Scripture, and so we have to better understand [nature] to realize, “Oh, that fit the whole time.”

Almost all the participants held this view that Kendrick articulated. However, Brian was willing to give more weight to science’s role in understanding truth:

I try to find what Scripture says about origins, research truths from other people like articles in Acts and Facts, then compare those truths with sources in science. In general, I believe the authority source of Scripture can and should be proven with the authority source of science.

This should not be taken to mean that the Bible is only true because science supports it. Later, Brian stated that he takes “scriptural knowledge first and then physical knowledge second...in order of importance.” Brian recognized the ability that science has in increasing his faith in the truth of Scripture by providing evidence from other fields.

Leslie was willing to allow even more room for science to speak into the interpretation of Scripture. She claimed, “if there’s not a clear indication that God is doing a miracle, then one should be able to trust the natural order of things.” For primary gospel issues, Leslie sees them as affirmed enough times in Scripture in various places that she recognizes them as true miracles, “when God chooses to come down and interfere in the natural order of things.” She takes different issues and discerns “how important was it theologically and...the type of writing” to determine how much input science can have into it. This also comes from her belief that “the whole point of special revelation is to speak to those aspects that general revelation can’t touch on.” Once the participants understood the importance of Scripture as taught by the curriculum

that their parents initially chose, each participant began listing other resources that were also influential in their views.

Resources. Along with the books already listed in a previous section, there are a variety of resources that participants used to help them understand origins science. Once they knew what their parents believed and what Scripture said, participants were either given other resources or sought them out on their own to help answer remaining questions. Brian and Ella were the only young-earth creationist participants willing to entertain non-Christian resources, which aligns well with both of their college majors, Brian for engineering and Ella for anthropology. Both recognized their need for worldview preparation as they will confront opposing worldviews throughout college and career. Brian would check with “anti-creation websites and see...what’s their arguments?” In addition to explicitly anti-creation websites, Brian would also look at any “typical article from a university that’s maybe not in support of creation. So it’s not just a certain website, it’s whatever I can find.”

There was this same sense of “whatever I can find” in Ella’s responses as well. She was comfortable with “biblical archaeological digs” and “Sumerian texts” that have helped her trust the authority of Scripture. Ella has also read anthropological perspectives that are not from a biblical worldview. She claimed she had found value

in reading some...I’m starting to understand evidence that they don’t have special revelation for, but they definitely have general revelation for. And if you pick through parts that they’re trying to reason away, you kind of get some good stuff.

She likens this process to “intellectual mine digging...like you’re trying to get to the heart of what is really there, but you’re understanding they have a particular bias and a worldview.

You’re looking for truth.” Ella was comfortable with taking an explicitly non-creation source and

searching for the true aspects of it that cohered within a biblical worldview. Brian also recognized that there are some aspects of truth in secular resources. Concerning microevolution, Brian said, “I think that’s a very real thing. I think that’s a fact...there’s truth to Charles Darwin’s writings.” While Brian and Ella were comfortable searching through non-Christian resources, every other extra-biblical resource mentioned by other young-earth creationist participants was from a biblical worldview.

Adam mentioned church friends as influential. Specifically, these friends “grew up with the Bible, and so we talk about the Bible...sometimes we don’t agree on everything, but we still talk about it, and we’ll have discussions about some things.” Chloe mentioned apologists like Ray Comfort and Ken Ham as influential, both of whom are young-earth creationists. Deidre had previously said her mom would teach her from a young-earth creationist view but that she also had “science classes that were not taught by my mom, and my teachers always held a young-earth creationist view and were always proponents of Answers in Genesis too.” While many participants mentioned Answers in Genesis as a resource, Ella recognized that there were some “young-earth creation scientists [who] hold criticisms of Answers in Genesis...and I didn’t want to be fully naïve, but I also knew that they were taking a very biblical approach.” Still, Ella would use Answers in Genesis and Jonathan Park, both young-earth creationist advocates, as she grew up.

Some participants also viewed pastors as influential in their thinking. Felicia said her youth pastor

had a lot of good insights on helping me out when I had several philosophy classes that were sort of getting me confused, and he was a very important resource to help me find a logical way to go through my thought process.

Hannah said she had learned most about origins science from “apologetics lessons at youth groups” and a pastor who was known to do a yearly sermon on evolution. Jennifer had also stated that she “went and talked with [her] pastor about the doubts, and that helped too.” Leslie was also very influenced by her Sunday School teacher, where she “ended up getting to count Sunday School class as part of science curriculum because there was a lot of discussion of today’s scientific discoveries and how physics and chemistry and everything like that works.” She also went on to list one of her Sunday School teacher’s books as a recommended reading for someone else who wanted to understand old-earth creationism better.

Isaiah had a slightly different perspective on resources. While he is a young-earth creationist, he is more accepting of others being old-earth or evolutionary creationists than many of the other participants. He credits this mostly to learning about how William Lane Craig or John Stonestreet have treated the subject. Isaiah admitted,

when I found out that C. S. Lewis, for example, was a theistic evolutionist, that bothered me a little bit because at the time...we were listening to a speaker that said, “If you believe in evolution, you’re not a Christian.”

It was at this point that Isaiah was convinced that views on evolution were not salvation issues and recognized it as a “pivotal moment” for him. Isaiah was the only young-earth creationist participant to mention Christian people resources whom he knew were not explicitly young-earth creationists. Isaiah also thought Summit Ministries was influential and said, “they put out a number of different curricula...which touches on creationism,...typically the focus is...how do you apply the Bible to the world you see now?” Jennifer agreed that Summit Ministries was influential in her beliefs, but more because of the experiences she had with the organization.

Experiences. Jennifer said she learned to “navigate culture” because of Summit Ministries. She had recently attended a student conference in Colorado that she thoroughly enjoyed. Jennifer believed that Summit Ministries “helped a lot” in her thinking. She also recognized her personal testimony of “going through a lot of intellectual and emotional doubt” at a young age as crucial to why she felt stronger in her faith today. Ella said she grew up “going to museums a lot. I travel a ton, so I go to a ton of different museums.” She recognized, “the way that history and the facts of certain situations are displayed or worded in museums affect a lot of people’s viewpoints and worldview.” This was something she readily recognized and wanted to improve as an applied cultural anthropologist.

In describing his experience, Brian said that “God kept revealing to me...as I kept questioning these things, He kept revealing to me more or less what He had done.” Chloe felt that she had a personal experience that left an “incredible mark” on her:

I was learning about Hitler's eugenics and genocide of the people, and I was also learning about his connection to philosophers and Darwin’s theory of evolution...and I thought, “This is so sick. How can this be the basis for a worldview? If this is what it can lead to and has led to?” Darwin lived at the time when people really didn’t view anyone with darker colored skin as... fully human, and I really took that into account and...understanding where the creator of this [evolutionary] theory was coming from, and I think that’s what really convinced me that that was not something to accept.

For Chloe, seeing the results of naturalism played out to its logical conclusion caused her to believe that it was an unacceptable worldview. Because of this, Chloe concluded that evolution must not be the correct view of origins.

Leslie admitted her own experiences were influential. Primarily, she was in Sunday School class with a Christian scholar who advocated old-earth creationism. She explained her views of him at length:

I have the utmost respect for him as a Christian...he actually performed our wedding...he's not just a scientist who's also a Christian; he is a Christian scholar in addition to being a scientist, and he is a humble, gracious, godly man who is doing really good work for the kingdom and having a really impressive impact to an audience and to a field that doesn't have a lot of missionaries to it...you can't say that he's not a Christian and you can't say that he's leading people to Hell...and you should not make ad hominem attacks against him and the work that he is doing because he is really the kind of person that we should all strive to be when we are elderly and Christians in our character. And knowing him personally and then seeing a lot of the malicious arguments and attacks against him and his organization as a young person really did put me off of the entire [young-earth creationist] movement and what it believes.

She recounted some “unpleasant” televised debates and how she grew up “exposed to the malicious [young-earth creationists] because they were the ones who were attacking [him].” At the same time, Leslie also recognized that not all young-earth creationists are malicious and has “tried to become more loving and kind towards our brothers and sisters in the young-earth fold and recognizing that a lot of them are not malicious, just ignorant.”

Reflection

The final portion of the model deals with the reflections of the participants' beliefs. What has happened during the worldview development that has caused major or minor changes in beliefs in the past, and how easily could things change in the future? Participants frequently

showed confidence and humility about their views of others, leading to varying levels of bold faith.

Confidence. Every participant had significant confidence in their own beliefs, had never changed them in the past, and did not indicate that they thought they could change in the future, either in major or minor ways. Ironically, this was just as true for the young-earth creationist participants as it was for the old-earth creationist. When asked if any of his views may change in the future, Adam responded, “I don’t think so. I think everything...is probably going to stay the same; I don’t see anything changing at all.” Chloe and Ella agreed that they were “pretty set” in their beliefs. Deidre also felt “pretty settled,” and Kendrick was “pretty confident.”

Felicia attributes her convictions to her homeschooling background giving her critical thinking skills. She was willing to discuss things with people in one on one conversation and recognized that if she “really wanted to push on and follow up, they didn’t really have that much.” Felicia had learned enough about origins science and worldview analysis to discuss the topic with another person confidently. Hannah admitted during the focus group, “I don’t think about it often enough to have doubts about it. I’ve been pretty set in that because it’s just not something that I think about a lot.”

Gabrielle admitted that her views could change in the future, but it would unlikely be anything major. She explained,

I could probably see myself in little minute details possibly being like, “Oh, this could change here, or this could change,” but in general, the big pieces...and even some of the generalized details, they’re not going to change.

Isaiah said that he’s become “a lot more confident since [high school], especially in teaching it. When you teach something, you really have to know it inside out.” He recognized that a

“foundation was laid solidly through homeschooling...I became much more confident in [young-earth creationism] afterwards.” He felt he had looked into the topic enough that he concluded, “I think I have everything satisfied. I can’t think of a scenario where I would say ‘Oh no, I need to rethink this.’”

Jennifer recognized that she might not have “everything figured out,” but she stated that her “origins beliefs will stay pretty constant as I grow and through my career.” Because of her experiences in the past, she has already gone through the doubts in beliefs and has become settled in what she thinks. If anything would change in the future, she said it would only be growing deeper in [those beliefs] and knowing that I believe them for this, this, and this reason, not just because that’s what mom and dad told me. And now I know to go and search for myself and really dig deep into it.

Kendrick was confident in his views on origins. When I asked if his beliefs had ever changed in the past, he said,

I don’t think so. I think, certainly not that I can remember...I’ve maybe flirted with the idea of like a day age. I don’t know that I ever bought into the gap theory very much, so I’ve maybe flirted with those ideas or thought, “Hm, that kind of seems like it can work.” But I don’t know...that my understanding of creation has ever fundamentally been altered.

Leslie was also confident in her old-earth creationist views on origins. When I asked what it would take to change her mind to become a young-earth creationist, she quipped,

that one would probably require an angelic visitation...I think that the evidence at the moment is so overwhelming in favor of old-earth and that the scriptural evidence in favor of believing the scientific records is so overwhelming that it would really disturb my

view of Scripture and the inerrancy of Scripture and interpretations that seem to make sense in Scripture to have [young-earth creationism] end up being true. So it would take a...word of God.

Hannah had very succinct answers to questions about changing her beliefs. When asked if any beliefs could change in the future, she responded, “I don’t think so. No...at the moment, I don’t have any in particular that I think would change.” When I asked if any beliefs about origins had changed in the past, she also responded, “I don’t think so.” There was much confidence in her answers, but there was also much about origins science that she has never investigated. Her confidence, as well as that of many of the other participants, stemmed from her understanding of Scripture rather than her understanding of origins science. This recognition of her lack of knowledge of origins science has led her, and many of the participants, to a level of humility in their origins science beliefs.

Humility. There were many times throughout the interviews that participants acknowledged that they did not know significant portions of origins science. Chloe admitted that she had “not done the research. I have not looked into [other theories], so I don’t know what it would mean if that were true...when they say these theories about origins.” She also said there were things “outside of my scope of being able to know about,” including the age of the universe. Deidre believed that “most” of science is true. When questioned about her word choice, she responded, “‘most’ why not ‘all?’ I really do not have a concrete answer for you...I don’t really have the knowledge to speak on ‘most’ versus ‘all.’” When she later explained her understanding of how science and the Bible inform each other, she again stated, “I don’t have a specific example, but I also don’t have enough expertise to really...explain that or really delve deeper into that.” She added later that she only knew the “bare-bones, minimal, basic

information” about views that differed from hers. She continually admitted during the interview her lack of expertise in origins science fields and ultimately recommended a resource that “explains it better than I could.”

Ella was very open to different interpretations of the length of days mentioned in Genesis. She mentioned that she believed the days of creation were more of a thousand years...things kind of were fluid...I don't think we're supposed to say it was just like a day every single day because I think that is one of the things that's pretty. Also, I feel like I can believe that, and it won't hurt my salvation in any way...I mean, I'm not a big science person...I don't think I'm going to stake my life on this claim of “This is what I believe.” I am a very gray person. I don't see the world very black and white...so I think that also has to do with my interpretation of young-earth...there is ambiguity there that I can't say for sure because I'm not the person who created it.

This ambiguity was easily seen in her free word association form when she associated natural selection as “somewhat provable but not necessarily,” young-earth creationism was “more accurate, young is relative on who you ask,” and six days of creation was “open to interpretation.” These phrases hold a much more “fluid” role for Ella than for many of the other participants.

Felicia admitted that her young-earth creationism could take a slightly different form as well:

The age of the Earth in a certain way doesn't really cause me a problem because I say to myself, “If God created Adam and he was an adult, when God created rocks and water

and molecules God is out of time so He could make a rock, and the rock might be billions of years old.” And that wouldn’t really cause a problem to me.

Although she reiterated later that she does believe we live on a young earth, she is open to either herself or others believing it is much older. She admitted that she has not read from old-earth or evolutionary creationists but is “very curious to really see what they think because I don’t know anybody personally that comes to mind.”

Isaiah recognized that he has only “done a bit of Greek study, not a ton. I’m by no means a Greek or Hebrew scholar” but would consult the rest of Scripture to help him interpret difficult passages. While he has listened to people who seem to have different origins science beliefs than himself, he has not listened to what they have said about these topics. Isaiah remembered, “they’ll make a comment about [origins science], but then hearing how they think through things and why they’re okay with that concept has been helpful.” Jennifer ultimately admitted that much of what she knows about the opposing views are only how to refute them:

I believe that I do need to keep studying more on their beliefs. I know a lot of refutations to it, but I need to know more about their arguments, not necessarily just how to refute them. So that is definitely something I want to look into.

Leslie’s humility was just the opposite of the other participants. While the young-earth creationist participants were confident in their scriptural interpretation and humble in their knowledge of origins science, Leslie was quite confident in her origins science knowledge but more humble and willing to change scriptural interpretations. She reasoned that since her mind is fallible,

our interpretation of Scripture is no more infallible than our interpretation of general revelation. So, you know, it’s also possible that if we’re interpreting a book that is

absolutely the inerrant Word of God, but is also three thousand years old and written to a different culture and time and language, maybe there's some interpretation issues that we could do some more research on and maybe not understand.

She recognized that her interpretations of general revelation and special revelation could be inaccurate and so weight should be given to both in determining the truth of reality.

Others. When individuals have a set of beliefs about origin science, it is natural to consider why others have not settled on those same beliefs. Participants tended to view others who believed something different about origins science in one of two categories: non-Christians and Christians.

Others Who Are Non-Christians. Charles Darwin was on the free word association form, where more than half of the participants immediately associated his name with "evolution." Isaiah also associated him with "naturalism" while Chloe associated him and his legacy as a "theory of rebellion." Apart from Darwin, each participant went into more depth on how they viewed others who are non-Christians. Adam characterized others as people who "say that animals are equal to people." For him, these people are naturalists because they believe "everybody's got to start somewhere," and so there cannot be any eternally existent God who created all things. Brian stated that he believed science and other worldviews were "being pushed down other people's throats." He found it ironic that "in society...we're told to question a lot of things, question different beliefs, question all this stuff, but when it comes to evolution, when it comes to origins...you're not supposed to question that." For others who do not have a biblical worldview, Brian sees it as quite easy to believe what is continuously taught in the public sphere about origins science because competing views are not acknowledged. On her free word association form, Jennifer associated evolution in one of two ways: microevolution was

“fascinating,” while macroevolution was “unproven propaganda.” Kendrick simply associated evolution with “FALSE.”

Isaiah was keenly aware of the worldview implications of talking about origins science with people who are non-Christians and gave his explanation for why non-Christians do not believe young-earth creationism is correct:

That’s their worldview...of course they’re an evolutionist, that’s the best theory that people come up with, and if I’m going to propose to them that there was a young-earth creation, that completely shatters everything they’ve ever known...to have that creation with an atheist, you’re not just debating the origin of the universe, you’re essentially attempting to convert them...[evolution is] accepted as truth. They have no reason to think otherwise.

He recognized the futility in discussing origins science between a young-earth creationist and an atheist because the two are arguing from different worldviews. To get an atheist to believe young-earth creationism is correct, Isaiah realized that one would need first to convert them to Christianity. This suggests that discussions between believers and unbelievers about origins science are only profitable at a worldview level because the ultimate reason that non-Christians do not believe in young-earth creationism is relatively simple—they are non-Christians. Young-earth creationism is not simply a scientific perspective; it is a worldview perspective. An atheist cannot believe that young-earth creationism is correct because it does not fit within their worldview.

Others Who Are Christians. While it is simple to recognize why non-Christians are not young-earth creationists, explaining why other Christians are also not young-earth creationists had more nuance. It is important to note how Leslie viewed others who disagreed with her.

Throughout our conversation, Leslie rarely thought of others as being non-Christians. More often, when Leslie thinks of others who disagree with her views, she thought of either young-earth creationists or evolutionary creationists. She recognized a spectrum of beliefs that Christians could hold that was unfamiliar to many of the other participants.

Adam stated, “with the whole world being a billion years old, I don’t understand how that could be possible.” Chloe associated The Big Bang with an “attempt to replace God as Creator” on her free word association form. Interestingly, Chloe also associated old-earth creationism with the phrase “no one knows.” When asked about this during the interview, she explained that old-earth creationism is based on guesses that “could be possible because no one was there,” though she is not convinced. Deidre felt similarly when she associated old-earth creationism as “incompatible with literal interpretation of the Bible.” She expressed this incredulity:

“You believe the Earth is millions or billions of years old, but not in evolution...so...what do you believe?” And from there, I would just be confused and honestly...it just gets muddled...I’m like, “Oh, okay. What’s going on?”...I would just be confused, and I would ask them to explain, “Where are you coming from?” Or “What?”...to me, that just seems irreconcilable.

Deidre attributed these other Christian views to the fact that “they were taught that. I know that public schools, I’m not trying to make public school the enemy here, but I know that in public schools and in...secular universities that’s very pushed.” Felicia thought that Christians who are trying to reconcile the general revelation of science to the special revelation of Scripture are fighting an uphill battle:

I just think that it’s impossible in the sense that both [mainstream science and the Bible] have some points that are just not negotiable. So I find it hard to see a satisfactory

outcome for both sides...if you mix the two and neither sides are happy...it's not really productive...so I'd rather just be either one or the other.

By “one or the other,” Felicia was referring to either full dependence on mainstream science or on the Bible as she felt anything in between the non-negotiable sides would simply ruin both. Felicia agreed that she had more intellectual respect for an atheist evolutionist than a theistic evolutionist because she viewed the former as at least holding a coherent worldview, calling it “honorable and consistent” while the latter tries to deliberately twist God’s Word into saying something it does not.

Jennifer put her views of others very succinctly in her free word association form when she said that old-earth creationism was “a compromise. Not what I agree with.” Similarly, Kendrick responded in his free word association form that old-earth creationism was simply associated with the word “wrong.” When Christians hold other views, Isaiah thinks they are probably deluding themselves:

Few conversations I’ve had is usually, it’s a trying to fit in. “I’m in biology class, and I look stupid if I say something.” And usually, in that case, they might actually lean toward and have a tendency toward young creationism. But typically, it’s almost like they're trying to suppress it.

This theme of suppression was seen with other participants. Chloe said some Christians “don’t like to be naysayers or hold a different view from the majority. It’s not fun to be the different person.” Ella stated Christians might try to include evolution in the creation account because

a lot of times, they kind of just accept it...the millions of years model just because it was taught in schools and it’s kind of the only thing they know...the general persona or the general attitude towards creationism is ridicule...so a lot of times I feel like my friends

who are theistic evolutionists just either don't have the resources or the efforts to kind of relook or maybe even the desire to believe that the Earth is created differently than general scientists say.

When Leslie thinks of Christians who hold other views, she sees them as within the Christian fold if they have a high view of Scripture. She believes that evolutionary creationists "come into a few issues with the specialness of Adam and Eve...and dance around Scripture a little bit" but has become more accepting of them as long as they affirm the inerrancy of Scripture. On the other hand, she considers young-earth creationists as "brothers and sisters" but has yet to meet one "who has a high respect for general revelation as well as specific revelation." On her free word association form, she associated young-earth creationism with "dogmatic, simplistic, naïve, likely ignorant." She continued:

I think it's naïve and problematic to discount what God has said in one realm to support one's interpretation of what God says in another realm. I respect and admire [young-earth creationists'] love of Scripture. I think that some of their arguments are based on a naïve view of Scripture and a plain reading of the text. When your language that you're reading in is English, to me shows a level of either lack of knowledge or hubris. That makes me uncomfortable as an academic.

When it comes to credentialed scientists who also advocate for young-earth creationism, Leslie continued,

I would imagine that there's a lot of cognitive dissonance going on where they're like, "Well, the science seems to show this. But the Bible says it can't be trusted. And so I'm going to do the science, but I'm going to do it knowing that it really isn't telling me the truth"...if you're young-earth, then you're coming from a very strong faith tradition that

says, “The Bible over all, faith first, and we must hold fast to Scripture.” And that is very admirable, too. And so in that protectionist, not as science-literate, not as highly-educated in science...view of the world, [their conclusion is] “This is the world and Satan’s messing with things against what we know to be true. And so, therefore, we have latched on to what we know to be true, and we’ll reject...any attempts to change it.”

Kendrick touched on the dissonance that some Christians may experience when going against what mainstream scientists have to say about evolution:

I think it’s a very powerful deceit. Darwinianism [sic], at its core, is an ungodly, unbiblical belief. I mean, that’s why Darwin created it. He wanted to remove God from the equation because he knew that for the last 4500 years of science, science revolved around God. So knowing that, you’ve got to realize this is an unbiblical, this is a satanic deception. Satan is the father of lies; this is a lie. So there’s a very powerful deception going on there that I think is blinding [Christians]. There may be fear, whether it’s fear of acceptance, fear of being labeled one of “those people,” and probably a misplaced trust that science can solve all of our problems, that science can have the same authority as God.

Kendrick was quite bold in calling this belief “a satanic deception,” a claim that depends on his firm conviction in what Scripture says. Other participant responses further illustrate this boldness.

Bold Faith. The confidence from most of the participants came from their conviction in their understanding of Scripture; only Leslie’s confidence was based on her scientific understandings as well. The young-earth creationist participants remained humble about their lack of scientific knowledge or views different from theirs while remaining confident because of

the more important foundation they understood to be found in Scripture. Chloe exemplified this mixture of confidence and humility. When she considered if she would ever change her beliefs she answered,

I think I'm aware of pretty much most of [the theories of origins]. I'd say I'm pretty set. If someone were to bring something forward that matched Scripture, was a new development, I might accept that. But at the moment, I am set.

It was clear throughout the interview that Chloe had full confidence in what she knew and yet remained humble in various aspects that she did not know. Felicia admitted that while she had strong convictions about origins science, she was

not a big debate person. But usually, I felt pretty firm in what I had been taught, and I had confidence in...the Word of God and everything...my teachers would get really mad about the whole evolution/creation idea, so I didn't really want to get in trouble with them...I would usually ask them for an example, thank them, and then think through their answer alone afterwards.

Felicia recognized the importance of respecting teaching authorities in the classroom, a place that is typically not conducive to reasonable discussion and debate around these topics. Her quiet confidence in the classroom allowed her to be bold when questioning others but also humble in her responses as she rested on her faith.

Gabrielle also enjoyed having conversations with others and was open-minded about the results. Reflecting on high school conversations, she said,

I think one of the biggest pieces that I remember was conversation. And me saying "I'm willing to change my thoughts," it's me being willing to have a conversation and to evaluate and 90% of the time I'm going to come back to what I believe, but I'm willing

to take the time out of respect for the theory or the origin in itself or the person I'm having the conversation with [and] say, "Okay, I'm going to think about it."

Here again, there is a good mixture of Gabrielle's confidence in her own beliefs, along with the humility that they could change in the future. Kendrick shared the same confidence in his faith with little thought that he may be incorrect in his views. When I asked if any of his views may change in the future, he replied,

I don't think so...because that's the confidence of our faith, right?...how did Elmer Towns put it? "You got to know that you know that you know"...I think it's too straightforward. Reading Scripture and understanding it, if we can't understand [a day in Genesis as] a literal 24-hour day when God gives us two measuring devices within basically the same breath, "there was evening, and there was morning—the first day." If we can't understand that...what can we understand with Scripture? So no, I don't think there's anything in the particulars or in the broad picture either that could shake that.

Kendrick also knew quite a bit about the scientific content since he worked for a Christian science curriculum company. Kendrick spoke knowledgeably about origins science content, even able to distinguish between the one-way and two-way speed of light and how that has been a difficulty for scientists. His science content knowledge and his faith have both led to his confidence and boldness in speaking about what he believes.

Leslie has been learning "over the last decade to be much more quick to listen, slow to speak, and recognizing that origins issues are really not as important to most people." She also recognized the importance of faith in the discussion when she claimed, "the problem is that it is a matter of faith, no matter which of the three [main Christian views of origins science] you come down on." Because much of a person's beliefs about origins science rest on faith, she concluded,

“in terms of internal affairs of the church, it’s not a salvation issue. And if people are interested in it academically, then it’s great to talk about and fun to talk about, and interesting, but it’s not worth fighting inside the church.”

Research Question Responses

This section gives answers to the research questions that guided this study. There were three sub-questions designed to answer the central research question: How do homeschooled high school students integrate origins science into a biblical worldview? The three sub-questions focused on participants’ views on the relationship between the Bible and science, how their beliefs about origins science have changed, and how they view others with whom they disagree. These answers were grounded in the data and used to form a model that answered the central research question.

Central Question

The central research question for this study was: How do homeschooled high school students integrate origins science into a biblical worldview? The process students have taken is outlined in the model for biblical worldview development (Figure 1). Students integrate origins science into a biblical worldview by going through times of preparation, education, determination, and reflection. Homeschoolers experience two aspects of preparation before they learn about origins science in high school: they enjoy homeschooling and hold common beliefs with others. This preparation lays the groundwork for the times of education and determination. The education of students about origins science occurs in scientific and theological contexts. This separation of origins science into different courses is because participants believed that mainstream science is a conflation of different notions of science that deserve different treatments in different classes. The determination of what is true about origins science begins

with parents and is reinforced by Scripture, other resources, and experiences. After periods of preparation, education, and determination, participants have an opportunity for reflection. The participants reflect on their views and that of others, holding their views with a mixture of confidence and humility based on their knowledge of Scripture, science, and views of others, resulting in bold faith for many participants.

Sub-Question One

The first sub-question was: How do homeschooled high school students describe the relationship between the Bible and science? The key result here is that the participants define science differently than mainstream scientists. Participants had no concerns with combining the Bible with experimental science, as there are no conflicts between them. The difficulty came when describing the relationship between the Bible and historic science, a science that cannot be repeated experimentally. In that case, participants describe the relationship overwhelmingly in favor of using the Bible as a guide to understanding which historic science was correct. There was only one old-earth creationist who significantly disagreed and believed science should be given much more weight in understanding origins science from a biblical worldview. While all participants agreed that the Bible was the only ontological foundation for truth, participants were willing to give science varying amounts of authority over the epistemological foundation for truth; less authority according to the young-earth creationists and more authority according to the old-earth creationist.

Sub-Question Two

The second sub-question was: How do homeschooled high school students describe the process of changing or sustaining their beliefs about origins science? Participants overwhelmingly describe the process of changing their beliefs as non-existent. No participant

changed their beliefs about origins science in any significant way. Participants required significant evidence or supernatural events to convince them to change their beliefs about origins science in the future. The process of sustaining beliefs began with the beliefs laid down by their parents, beliefs that every participant still holds. As questions or doubts arise, students looked to Scripture, other resources, and experiences that have enabled them to grow more confident in their views and in generosity they gave to others with whom they disagree.

Sub-Question Three

The third sub-question was: How do homeschooled high school students perceive others with whom they disagree about origins science? The participants generally viewed others in one of two categories: non-Christians and Christians. If non-Christians held these other origins science views, participants could easily understand their views from a worldview level. That is, non-Christians do not believe young-earth or old-earth creationism is true, not for any reason based on evidence, but simply because they are non-Christians. To believe young-earth or old-earth creationism is true, non-Christians would first need to be converted.

If instead these other origins science views were held by Christians, the young-earth creationists thought others were wrong because of ignorance or deliberate suppression of truth. They believed Christians either do not know that there are good, rational, scientific, and theological arguments for young-earth creationism and are rejecting them or actually do know that there are good arguments and are deliberately suppressing their own beliefs for fear of ridicule. The old-earth creationist thought other Christians were wrong because of ignorance or pride.

Summary

This chapter explained the model for biblical worldview development (Figure 1). All the participants in the study were presented as individuals with representative quotations. The model for biblical worldview development was given along with explanations from each participant and how their views contributed to the overall creation of the model. The chapter concluded with answers to the central research question and sub-questions.

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this hermeneutic phenomenology was to understand the lived experience of how homeschooled high school students integrate origins science into a biblical worldview. Chapter Five begins with a summary of the findings and a discussion of the results. The following sections address the theoretical, empirical, and practical implications of the research, followed by the delimitations and limitations of the study. The chapter concludes with recommendations for future research.

Summary of Findings

The central research question for this study was: How do homeschooled high school students integrate origins science into a biblical worldview? After collecting data via free word association, interviews, and a focus group session, the model for biblical worldview development as presented in Chapter Four answers this question (Figure 1).

This model includes four components to biblical worldview development: preparation, education, determination, and reflection. Participants were prepared to integrate origins science into a biblical worldview by learning with like-minded peers during an enjoyable homeschooling experience. They then learned origins science from a scientific and theological perspective since they viewed experimental and historic science as two different disciplines. At the same time, truth about origins science was determined by parents, followed by Scripture, resources, and other experiences. Finally, participants combined their knowledge of Scripture and science to reach a level of bold faith in their beliefs about origins science.

The first sub-question for this study was: How do homeschooled high school students describe the relationship between the Bible and science? The relationship between the two

depends on how science is defined. Every participant viewed experimental science as agreeing with interpretations of the Bible, while historic science does not. Because they dismissed historic science, most participants learned about origins science from a theological perspective. If historic science rests on assumptions held by scientists, then it is essential to understand the scientists' worldview perspectives. Although many of the participants were able to dismiss historic science as inaccurate based on its unproven assumptions, the old-earth creationist was willing to dismiss interpretations of Scripture instead.

The second sub-question for this study was: How do homeschooled high school students describe the process of changing or sustaining their beliefs about origins science? No participant had changed their views on origins science in the past, nor did they see them changing in the future. Many participants stated that the only thing that changed about their beliefs on origins science was their increased confidence in them.

The third sub-question for this study was: How do homeschooled high school students perceive others with whom they disagree about origins science? During the reflection component, participants saw the views of others as either non-Christians who have different beliefs because of worldview differences or as Christians who have different beliefs because of ignorance, suppression of truth, or pride. In the end, many participants ended up having a level of bold faith in their beliefs as they interact with others.

Discussion

As identified in Chapter Two, Fowler's faith development theory was used as a theoretical framework during this study to direct the creation of the interview guide and understand participant responses from the perspectives of various faith stages. Additionally, worldview and worldview development literature contributed to the understanding of how the

participants have developed their biblical worldviews. There was also much literature on science from a biblical worldview and how origins science related to Christianity. Finally, homeschooling research and the importance of parents were explained in the literature review and are briefly discussed here as well. The following discussions compare the previous research on faith development theory, worldview, origins science, and homeschooling to the results of this study.

Theoretical Discussion

Fowler (1981) gave a definition of faith that allowed an individual to separate the form and content of their faith. The form of an individual's faith is the ontological, epistemological, and axiological structures that make sense of their faith, while the content of an individual's faith is the particular beliefs and religious views held by the individual. Individuals may then move through various stages of faith based on either the form or content of their faith evolving. It is important to understand that higher stages are not more valuable than lower stages (Fowler, 1987) but that each person should strive to live fully within their faith stage and to understand life's experiences within it (Fowler, 1981), living as closely as possible to the person, thing, or system around which that individual centers their life (Fowler, 2000, 2001).

Fowler's (1981) faith development theory has six stages of faith, three of which are pertinent to this study: stage three is synthetic-conventional faith where individuals begin synthesizing stories of others into their own; stage four is individuative-reflective faith where individuals individuate themselves from their parents and begin deeply reflecting on their worldview; stage five is conjunctive faith where individuals begin joining contradictory ideas together, finding truth in the tensions. Each of the participants is at a minimum of stage three because this is the stage for people of religious belief (McLean, 1986). It is also unlikely that any

of the participants have reached stage five as this stage requires individuals to embrace paradoxes and contradictions; none of the participants viewed origins science in this way. Also, stage five begins relativizing truth, finding truth in the synthesis of varying perspectives instead of in antithesis (Schaeffer, 1976), which makes it an unlikely stage in which Christians should find themselves. This stage also refers to some beliefs as myths, grounding reality in the paradox of competing relativistic truths (Botton, 1990). All of this suggests that each participant is in either stage three or stage four in the faith development theory.

Stage four faith is individuative-reflective faith, which is characterized by two major events: individuals must individuate themselves from their parents by going to college, entering the workforce, or leaving home (Fowler, 1981) and must reflect on their worldview assumptions and beliefs (Fowler, 1987). The individual's worldview does not need to change in its particular beliefs at this stage, but it should change in how those beliefs are grounded as individuals assume authority over their own beliefs rather than delegating the authority elsewhere (Fowler, 1987).

To understand participant responses from the theoretical framework of the faith development theory, it is necessary to understand first that it is impossible to determine a person's faith stage based solely on origins science beliefs. It is quite possible to have different faith stages for various aspects of an individual's faith, in which case an aggregate total must be determined (Fowler, 1981). At first glance, it appears that all participants may be in stage three because they all believe the same things about origins as their parents. However, while many of the participants initially believed something about origins science because of their parents, many now rely on Scripture to provide that foundation. Participants have exchanged the epistemological foundation of their parents for that of Scripture at some time later after homeschooling, meaning the form of their faith has changed but not its content. This has yet to

occur for some participants because they have not yet needed to go through this exchange—they have not encountered many others with opposing worldviews. Therefore, four participants are likely living out aspects of stage three faith because they have either not yet individuated themselves, reflected deeply on their worldview, or met individuals with other worldviews who have significantly challenged their beliefs.

The four components of the model for biblical worldview development align with various stages of Fowler's faith development theory. The first component in the model, preparation, was mainly for participants while in elementary and middle school, when they recognized that homeschooling was enjoyable and were only around others who shared their beliefs. This is a time that is characteristic of stage two faith. The transition out of stage two faith occurs either during conversion to religious faith or when an individual attempts to reconcile contradicting aspects of authoritative truth stories. Fowler (1981) explicitly mentions the truth accounts for origins given by scientists and the Bible as an example of one such contradiction.

The second and third components in the model, education and determination, were mainly for participants while in high school when they began learning the contradicting worldviews and opinions of others regarding origins science. Although the truth of origins science began with the parents' beliefs, it also included Scripture, resources, and experiences, aspects that require students to look outside of their immediate families and stories to try to understand some truth about reality.

The fourth component in the model, reflection, was mainly for participants after high school and would ultimately determine the form of each participant's faith stage. Those who thought critically about their worldview while individuating themselves were able to transition into stage four faith during the final component of the model. While an individual can have

confidence and humility in their own beliefs and occupy any stage in the faith development theory, a faith stage is determined by the foundation of that resulting confidence and humility. If the foundation is based on parents and friends, that is more characteristic of stage three faith; if that same foundation is instead based on conclusions drawn after meeting, interacting with, and being challenged by individuals with other worldviews, that is more characteristic of stage four faith. It is this difference that distinguishes four participants who are still in stage three faith rather than stage four.

The difficulty with stage three faith is that parents and friends end up as primary arbiters for what is true about reality. Eventually, children realize that other people think differently from them and their parents, beginning the transition from stage three to stage four by questioning their parents and friends. Jennifer was a prime example when she recognized that she might not have “everything figured out,” but she believed her “origins beliefs will stay pretty constant as I grow and through my career.” Because of her experiences in the past, she has already gone through the doubts in beliefs and has become settled in what she thinks, thus situating her in stage four. Her story illustrates how, even though the content of her beliefs may stay the same, the form and structure of those beliefs can change. Jennifer said she is

growing deeper in [those beliefs] and knowing that I believe them for this, this, and this reason, not just because that’s what mom and dad told me. And now I know to go and search for myself and really dig deep into it.

She has realized that, while they provided a crucial scaffolding in the formation of intellect, character, and beliefs, parents are an inadequate foundation on which to build an individual’s life.

Empirical Discussion

The results of this study add to the little research done on biblical worldview and homeschooling, both of which are areas in which research is difficult to accomplish; biblical worldviews are defined more than developed in the literature and homeschoolers as a population are difficult to locate. In addition, this study adds to the literature on origins science, particularly how science is defined by homeschoolers with a biblical worldview. Finally, the importance of parents is supported through the results of this research.

Biblical Worldview Development

Worldviews consist of three parts: beliefs, behaviors, and heart orientation. For individuals to claim they are living from a biblical worldview, they must have beliefs that are in line with Scripture, behaviors that flow out of those beliefs, and desires to live those behaviors out of a genuine heart response to God. For a Christian, this looks like having fundamental beliefs in Christ's identity and work (Romans 10:9), behaving in a way that is consistent with those beliefs (Romans 12:1), and desiring to follow after Christ for His own sake (Matthew 16:25). While all participants scored good or very good results for these three dimensions on the worldview survey (Appendix I), many of the participants mentioned beliefs and behaviors from a biblical worldview with few mentioning desires.

Most participants saw a biblical worldview as merely assenting to a list of biblical facts. Participants mentioned the gospel, the Trinity, or believing the Bible to be inerrant as necessary components to a biblical worldview. One participant was close to mentioning behaviors by saying a biblical worldview includes knowing "who decides what's right and wrong" while falling short of anything more than merely believing that Scripture supplies those answers. Many participants saw a biblical worldview as including behaviors as well, living according to what

Scripture says instead of merely intellectually assenting to it. One participant included work ethic as a component of a biblical worldview, understanding that a biblical worldview includes acting on what you say you believe. Few participants included desires as part of a biblical worldview. Heart orientation desires include having trust in Christ and love for others because of Christ first loving us (1 John 4:19).

A biblical worldview consists of beliefs, actions, and values based on the Bible that are grounded in Christ and seek the establishment of His kingdom (Pearcey, 2004; Schultz, 2005; Sire, 2015). While recounting their time in homeschooling, many participants mentioned their faith and their beliefs as part of their responses. The participants' actions were evidenced in the stories they gave about interactions with others in the past. Participants mentioned standing up for what they believed as they tried to give young-earth or old-earth creationism a fair hearing in the minds of others. Additionally, merely taking the time out to participate in this study showed their care for the topic and concern for seeing it treated justly. Finally, the participants' values were seen in their explanations for why they continue to have their beliefs and why others do not share them. They overwhelmingly spoke about Scripture, its inerrancy, and its ability to plainly speak truth to the larger society as values that helped shape and solidify their own beliefs. Indeed, while many Protestants can be accused of loving a worldview and theology more than a personal Savior (Naugle, 2002), most of these participants had a thriving relationship with Christ and saw their beliefs about origins science as crucially connected to that relationship.

Biblical worldviews can develop actively or passively (Sire, 2015). About half of the participants were actively developing their worldview while the other half only passively. The distinction between active and passive development correlated strongly with age; the older participants were more active as they were no longer under their parents; the younger

participants were more passive as they had not yet needed to develop their biblical worldview on their own. Some participants were also evidential in their worldview development (i.e., they believed their worldview to be true because of evidence) while others were more presuppositionalist in nature (i.e., they believed their worldview to be true because it was the only possible option to understand reality).

Worldviews develop during difficult moments in life (Sire, 2015). There were a few participants who mentioned pivotal experiences in life as crucial to their biblical worldview development. These experiences included having severe doubts as a young teenager, interacting with others who had different worldviews, seeing the evil that naturally flows from other worldviews, or even experiencing hurt at the hands of other Christians. Worldview development can also be hindered for two important reasons. One, individuals tend to be around like-minded people (Smith, 2015). It then may be difficult for the participants to continue to grow in their worldview if they remain only around people who think the way they do. This is likely the case because many participants began actively developing their worldview only after they got older, left home, and interacted with others who held different worldviews. The second reason worldview development can be hindered is that it is difficult to change an individual's already held worldview (Smith, 2015). This was seen in every participant as all agreed their views on origins science had not changed in the past and will not change in the future. They had an unshakable confidence that what they believed cohered with what Scripture says.

Origins Science

The definition of science is one of the most striking distinctions in understanding origins science from a biblical worldview. Rather than understanding science as merely the study of the natural world (Fishman, 2009), many authors from a biblical worldview recognize two areas of

science: experimental and historic science (Ham & Hodge, 2014; Mortenson, 2016; Pearcey, 2004; Rau, 2012; Turek, 2014). These authors claim that experimental science has no bearing on a person's worldview; experimental science is repeatable, testable, falsifiable, provable, and worldview independent. Every participant recognized the advantages of experimental science, likely because modern advances in medicine, technology, and transportation are all a result of experimental science. These advances are not the results of interpretation or opinion but experimental fact.

Experimental science is quite different from the historic science reflected in the literature (Ham & Hodge, 2014; Mortenson, 2016; Pearcey, 2004; Rau, 2012; Turek, 2014). These same authors claim that historic science is worldview-laden and includes interpretations that are based on unproven assumptions. Because no one has been alive long enough to confirm the age of the Earth, assumptions must first be made, for example, about the amounts of parent and daughter radiometric isotopes present in a material as well as consistency regarding tree ring growth, half-lives, ice core deposition, and the speed of light. These assumptions, the authors and many participants contend, are what makes historic science a philosophy. Because it is a realm of philosophy, historic science should be discussed from theological and philosophical perspectives.

Leslie, the old-earth creationist, had not heard of the two distinctions of experimental and historic science but readily agreed with their tenets. She also anthropomorphized science, along with most of the participants, but never mentioned the worldviews of the scientists who interpret that science. The main difference between the old-earth creationist and the others is that the former saw science and Scripture as occupying two different spheres of knowledge, similar to Gould's (1999) concept of non-overlapping magisterial (NOMA). If the biblical concern of interest is a foundational gospel doctrine, then Scripture has the authority. For all other

secondary or tertiary issues on which Scripture does not seem to be quite as firm, general revelation can and should be used to determine which interpretation is most likely correct. Leslie stated, “if there’s not a clear indication that God is doing a miracle, then one should be able to trust the natural order of things.” This is opposed to what many young-earth creationists have said, some of whom would not entertain any example of general revelation speaking into how special revelation should be interpreted. The distinction between the different Christian views of origins science may then be less about the evidence and more about the hermeneutic presuppositions that each individual holds, specifically, how much general revelation can affect the interpretation of special revelation.

Early scientists recognized that God is the author of two books: the special revelation of Scripture and the general revelation of nature (Pearcey, 2004). The key difference between various Christian views on origins science is how much epistemological weight is given to general revelation in understanding origins. If, like young-earth creationists, an individual gives very little or no weight to what general revelation contributes, then strict adherence to a plain reading of Scripture is understandable. To be sure, young-earth creationists rightly ignore general revelation for several reasons: it rests on unproven assumptions, it can easily change with new information in the future, and it relies on man’s word instead of God’s Word. In contrast, special revelation rests on reasonable presuppositions, will not change with new information in the future, and is entirely reliant on God’s Word.

Once the decision is made to rely solely on special revelation to understand the truth of other special revelation and reality, it is understandable and admirable to see how young-earth creationists then interpret all of reality through those firm convictions. If they are correct in relying solely on special revelation, they should be heralded as prophets advocating a minority

view that relies on God's Word amid a world that ridicules and marginalizes them. However, the one old-earth creationist participant in this study encouraged a position that is readily denounced by young-earth creationists, allowing general revelation to speak into her understanding of special revelation and reality. Herein lies the distinction between these two subcamps of origins science from a biblical worldview; can general revelation ever speak into special revelation? An individual's answer to this question determines how they view the rest of origins science discussions.

Homeschooling

There is little research done on homeschooling, making it difficult to build upon any previous research (Howell, 2013; Marks & Welsch, 2019). Homeschooling is growing and is still ripe for future research opportunities but is more complicated than public or private school research. To illustrate, it was challenging to locate gatekeepers that could share contact information during the initial recruitment phase because there are thousands of homeschooling gatekeepers in the United States. Homeschool networks are so varied in size, bureaucracy, and focus that it was challenging to find participants at all. In total, 700 gatekeepers were contacted around the United States to find willing homeschooled participants; only 13 participants were located. Several gatekeepers responded with reasons for not being able to provide contact information, but there were dozens more who never responded.

Public schools have been called "the established secular church" (Ray, 2013, p. 335), where students are taught to "place their faith and hope in Democracy" (Glanzer, 2013, p. 351). These schools allow the government to convince children that their whole goal in life is to become productive members of society (Mazama & Lundy, 2015). This distrust for public schools was seen during this study. Participants viewed public schools negatively in terms of

quality and enjoyment. They also recognized the pleasure of developing a biblical worldview during homeschooling, something that could not have been encouraged in the public school setting. Ultimately, the participants viewed public school peers as gullible when it comes to learning evolution. It was understood that public school students probably believe that neo-Darwinian evolution is an accurate description of origins science because they are not taught to question the views of others. Instead, public school students are frequently encouraged to have open, inclusivist, and pluralist minds toward the views of those around them. The participants in this study saw the influence of public schools as detrimental to critical thinking, attributing much of the views of Christians who are not young-earth creationists to ignorance and deliberate suppression of truth. Young-earth creationist participants also believed that Christians who do not believe the Earth is young are merely trying to avoid ridicule, something they themselves were able to avoid because they were only around students and teachers who shared those same beliefs.

Critics of homeschooling claim that participants in this study do not believe in evolution because they have been shielded from the state's ability to disseminate important cultural and civic identities (Ray, 2013). To this critique, participants would likely agree. Many participants acknowledged that they did not believe evolution was true because they were taught from a biblical worldview. The very thing that critics identify as a detriment of homeschooling is the very thing that homeschooled students identify as crucial in learning origins science, namely, understanding the purpose of education. The critique of homeschooling is not based on empirical evidence of student success because this type of research is difficult or impossible to do for a variety of reasons. Instead, the critique of homeschooling is based more on the philosophical purpose of education (Ray, 2013). If education is about convincing all citizens to believe the

same things while not being indoctrinated by religious fundamentalism (Gray, 2018), it is easy to understand why homeschooling critics advocate for public school. This secular view of the purpose of education also explains why some parents choose to homeschool their children.

Homeschooled students enjoy much academic freedom compared to their public or private school peers (Thomas, 2016). It then came as little surprise that the homeschoolers in this study used a variety of curricula and activities to learn about origins science. However, about half of the participants participated in the same nationally recognized homeschooling program, leading many of them to use the same resources as each other. Still, many parents had the freedom to choose the curriculum or books from which their children would learn. Most parents picked explicitly young-earth creationist curriculum, textbooks that are unlikely to be found in private schools and are illegal for teachers to use in public schools. Parents also picked complementary books written from theological and philosophical perspectives that many students read before learning origins science in a science course in high school.

It seemed that parents and homeschool curriculum writers recognized how important origins science is in the minds of children. They then took the conservative approach of convincing students in middle school that much of origins science is based on an atheistic worldview and, therefore, foolish. The students were then able to avoid learning evolution altogether because it did not make sense for them to learn what they knew was not true. These participants had been protected from opposing views of young-earth creationism for most of their life and had little to say when asked to comment on old-earth or evolutionary creationism, both allegedly Christian views that accept portions of the evolutionary paradigm to varying degrees. Even the participants who were more familiar with atheistic evolution and could defend their views against naturalism had difficulty responding to old-earth or evolutionary creationism.

The rebuttals toward any Christian view other than young-earth creationism rested mainly on issues of interpretations, not issues of evidence.

Of interest here is the fact that the old-earth creationist learned from a different set of resources. The parents, in this case, had used secular science textbooks and augmented chapters on evolution with discussions about the views of others. The old-earth creationist also had the privilege of sitting in on Sunday School classes led by one of the world's foremost advocates of old-earth creationism.

Importance of Parents

This study illustrates the importance of parents in the lives of their children. It has already been known that the religious commitments of children are similar to their parents (ASA, 2015; Pew Research Center, 2016) but here even the particular views of origins science are passed on to their children; every participant had the same beliefs about origins science as their parents. This similarity between parents and children even included two young-earth creationists who were unconcerned about the topic, much like their parents, and an old-earth creationist whose parents chose secular science textbooks from which their daughter would learn. Participants also cited experiences with their parents as influential in their learning process.

Implications

The results of this study have theoretical, empirical, and practical implications. The theoretical implications contribute to the body of research on faith development theory. The empirical implications further the literature on how biblical worldviews develop, how science is defined, and the nature of homeschooling research. Finally, practical implications are given based on stakeholders in biblical worldview development, science education, and homeschooling.

Theoretical Implications

The theoretical implications of this study support Fowler's faith development theory (1981). Faith development theory coincided with the resulting model from this study in stage growth and in understanding participants' responses in terms of three major stage characteristics: locus of authority, form of world coherence, and bounds of social awareness. While faith development theory has been criticized for its stage characteristics (Fernhout, 1986; Parker, 2010), they were found to be appropriate for this study and validated in its parallels with the resulting model for biblical worldview development. In this way, Fowler's (1981) assertion that his theory could also be called a worldview development theory is appropriate.

The little research that has been done on biblical worldview development is supplemented by the four main components from the resulting model of this study: preparation, education, determination, and reflection. Each of these four components can be explored further to understand their relative importance in the overall model. The combination of this model and faith development theory may assist future researchers in studies on biblical worldview development.

Empirical Implications

The empirical implications of this study expand the research done on biblical worldview development, science education, and homeschooling. First, this study adds to the research on biblical worldview development. While much of the literature illustrates the content of a biblical worldview, there is little apart from Fowler's faith development theory to suggest how a person's biblical worldview develops. The resulting model of this study, in combination with Fowler's faith development theory, adds to the literature on the content and development of biblical worldviews.

The second area of research to expand due to this study is science education. The research here suggests the importance of how science is presented to students. Most of the participants ended up with distrust or ignorance of science because they viewed it as antithetical to their religious beliefs. The primary empirical implication is that students who are developing a biblical worldview understand science in two categories: experimental and historic. Because historic science is viewed as a philosophy, students may disagree with the results of geology or biology because of philosophical disagreements rather than disagreeing with the scientific evidence. To this end, science educators and curriculum writers should understand the goal of science education, which is to teach students how to think instead of teaching them what to think. Even in public schools where constructivism has been the prominent paradigm for science education in recent decades, this research may help educators understand why students reject portions of the science curriculum a priori.

The final area of research this study supports is that of homeschooling. There is little research done on homeschooling, primarily because it is challenging to conduct. Finding participants and convincing them that homeschooling research is important is a time-consuming process. Still, homeschooled parents will find affirmation in this research for the importance of their role in the lives of their children. While there is much research on the influence of parents on their children, this study also suggests the underlying importance that parents have in guiding their children in determining what is true about reality.

Practical Implications

The primary practical implication of this study is the importance of educating children to be well-informed about any important issue in life; rather than merely telling them what to think about an issue, educators should teach children how to think. It would be unwise to deliberately

withhold information from children, even if that information is undesirable, evil, or false. Just as it would be prudent to have children understand other world religions, cultures, and historical events for purposes of greater understanding of an individual's own worldview, so also educators should present students with multiple perspectives and interpretations of reality, if for no other reason than to clarify one's own position. When his son came and told him that he was not sure if he believed Christianity was true, apologist Josh McDowell confidently responded:

Son, I am glad to see you exploring your faith seriously, because you can't live on my convictions. You have to know for yourself what you think is true. If you genuinely seek truth, I am confident you will follow Jesus, because He is the truth. Only walk away from what you have learned growing up if you conclude it is false. And know that your mom and I will love you no matter what you believe. (McDowell & Wallace, 2019, p. 63)

It is this same confidence that homeschooling parents can and should approach the education of their own children.

In addition to the importance of exposing students to multiple worldviews, there are many practical implications from this research for those interested in biblical worldview development, science education, and homeschooling. Aspects of all three of these implications involve the importance of the parents.

Importance of Parents

It cannot be stressed enough how important parents are in the lives of their children. Jay Seegert is the keynote speaker for an organization called The Starting Point Project. I had contacted Seegert while looking for participants, hoping he might know possible participants. During the conversation, Seegert explained his faith journey that involved going to school for a physics degree with professors who were telling him that his faith was wrong. Interestingly,

Seegert was able to retain his faith because of the relationship he had with his parents. He reasoned that, because he trusted his parents, he could believe what they said about the Bible. This reasoning caused him to take a more in-depth look at the evidence to determine how it supported his previous beliefs. Since then, Seegert has approached origins science evidence as a presuppositionalist, an approach that understands evidence deductively rather than inductively (personal communication, May 12, 2020).

A Barna survey from 2004 indicated that almost half of all Americans who become Christians do so before age 13, while more than half do so before age 18 (Barna, 2004). Additionally, a survey by the National Association of Evangelicals found that most respondents became Christians by the time they were 14, with an average age of conversion of 11 (NAE, 2015). This means a majority of conversions occur while the child is still at home. If parents desire to instill in their children a biblical worldview that consists of beliefs, actions, and values based on the Bible that are grounded in Christ and seek the establishment of His kingdom (Pearcey, 2004; Schultz, 2005; Sire, 2015), the best time for that to occur is when they are young. The literature, this study, and Scripture are all clear that parents have an essential earthly role in the passing on of the faith tradition to their children.

Biblical Worldview Development

It would behoove parents who want to instill biblical worldviews in their children to be deliberate about the four main components of the resulting model of this study, particularly the preparation and determination components. First, if parents want their children to grow up with a biblical worldview, it is important that schooling is enjoyable, and their children are around others who also have biblical worldviews. These relationships with parents and peers of similar worldviews pay dividends throughout the rest of their lives. Even if children do not fully develop

a biblical worldview before leaving the house, the foundation laid is necessary for the future, evidenced by Seegert's testimony and echoed throughout Scripture (Luke 15:11-32; Proverbs 22:6).

Second, if parents want their children to grow up with a biblical worldview, they need to show their children how Scripture, resources, and experiences in their lives can be interpreted through that worldview. If a worldview is a commitment that is expressed as a series of presuppositions (Sire, 2015), then there is no arguing with children or reasoning with them through evidence about the veracity of a biblical worldview; there is only showing children what a biblical worldview looks like by both modeling and teaching how it should look (McDowell & Wallace, 2019) and how it coheres internally and externally to the world around them.

Science Education

Individuals have the intellectual ability to believe anything about origins science so long as they can reasonably defend how they have come to their conclusions, explaining special revelation and general revelation consistently. What is concerning, in this case, is the process individuals took to come to their beliefs about origins science. If young-earth creationists are correct and the majority of individuals have been misinterpreting scriptural and scientific evidence, young-earth creationists need to be able to defend themselves in the public sphere against people who disagree with them. Although any of the participants in this study may be accurate in what they think about origins science, only two or three would be able to defend their views in the face of opposition. This lack of preparation may lead many of the participants either to change their views about origins when they encounter opposition, which may or may not be desirable, or simply dismiss the views of others without knowing the evidential or presuppositional reasons for doing so.

The participants were influenced by their parents to believe evolution was foolish during middle school without ever learning evolution or allowing an evolutionist to respond to common arguments. Many participants thought of evolution as “monkeys to man,” a common misconception against evolution that is routinely ridiculed by its advocates as revealing the ignorance of Christians. Proponents of evolution never claim that man descended from monkeys, but rather that man and apes descended from the same common ancestor. In addition, participants disregarded evolution and the Big Bang as mere theories to be dismissed as easily as a layperson’s hunch. In reality, scientific theories are supported by incredible amounts of evidence that seek to explain a given phenomenon. Young-earth creationists would likely face more ridicule if they discounted germ theory, quantum theory, or Einstein’s theories of special and general relativity simply because they were labeled as theories.

Granted, if parents honestly thought that believing in Darwinian evolution was evil and contributed to the moral decline of society, it is understandable that they would do anything to keep their children from believing in it, certainly not allowing equal voice for it in the curriculum. Although this may work as a starting point, children will eventually hear the confident voice that espouses evolutionary views, and they will not have been prepared to deal with it. It seems that the hope for most parents is that either their children will never meet someone who can knowledgeably defend evolution, or if that person is ever encountered, their child will have enough faith in Scripture to ignore them. It would be prudent to have children struggle through these issues when they are still at home, hearing and responding to the very best arguments against their beliefs so they can knowledgeably defend their views later. In other words, when they are ready, parents must teach their children the very best that secular science has to offer; if secular scientists are wrong in their understanding of the world, someone with a

biblical worldview will readily see through its façade. Parents should have the same confidence in a biblical worldview that Josh McDowell had when his son approached him claiming that he was questioning everything he believed.

Homeschooling

If parents want their children to grow up learning through a biblical worldview, it is important to keep them around others who share the same values. While homeschooling easily allows for this control, parents should recognize that homeschooling does not save their children or guarantee that they remain in the faith. At the same time, it may also be of interest for homeschooling parents to note that a recent survey (NHERI, 2015) suggested the following:

The frequency of church attendance while growing up, the quality of a teenager's relationship with both of his/her father and mother, and the number of years homeschooled are consistently positively related with (the dependent variables of) the adult study participants' Christian orthodoxy, general Christian beliefs, biblical behaviors, satisfaction in life, and civic and community involvement, and the similarity between the participants' beliefs and those of their father and mother.

Even homeschool critic Lubienski et al. (2013) admitted, “it is not the act of homeschooling itself, but instead being the type of family that is interested in homeschooling, that is more closely associated with better outcomes” (p. 384). This means that simply being parents who are invested in their children, whether or not they homeschool, is more important than actually homeschooling. The literature, this study, Scripture, and anecdotes all remind parents of their importance in the education of their children. McDowell and Wallace (2019) recently wrote, “if we want the next generation to know the faith, we have to teach, model, and incarnate truth in our relationship with them. It is not truth *or* relationship—it is truth *and* relationship [emphasis

in original]” (p. 64). Homeschooling families have a unique opportunity to do this in the lives of their children regularly.

At the same time, homeschooling families can suffer from living within their own echo chamber, only hearing from, and interacting with, like-minded people. It is disconcerting to know that evolution was cut out of some of the curriculum for the participants. Leslie, the old-earth creationist, had interactions with her mom explaining why they chose to keep it in:

“Mom, why do we have to read this when it isn’t true?” “Well it’s because it’s what most people think, and you need to understand what most people think, and you need to understand why they think it, and you need to know the best arguments for it and which parts are right so that you can understand how best to counter those arguments and make a stand for what you believe in intelligently.”

Most of the participants did not grow up with someone who thought differently from themselves; while this may be beneficial when instilling a biblical worldview, it is detrimental when trying to strengthen it.

In regards to origins science, there is only one homeschool curriculum that affirms old-earth creationism and one that affirms evolutionary creationism, both of which are created by each view’s advocacy group. Even if homeschooling parents wanted to teach science without a biblical worldview, it is challenging to find homeschooling curriculum that would do so; parents would likely need to use resources made available for public schools because most homeschooling curriculum is Christian in nature. For this reason, it is difficult to blame homeschooling parents for how origins science was presented to their children. Parents themselves may not think critically about the topic and merely pass on how origins science is presented in the curriculum. Isaiah was the only participant to listen to Christians who were not

explicitly young-earth creationists, likely explaining why he was open to having others believing in old-earth or evolutionary creationism. Most of the other participants seemed to conflate Christianity with young-earth creationism because that was how it was presented in the homeschooling curriculum.

The participants could easily dismiss atheistic evolution because origins science had been presented to many of them in terms of black and white; it was a worldview issue. The participants found it more challenging to deal with Christians who held views different from theirs, primarily because many of the participants had never encountered this subset of people. It was troubling how confident many of the participants were in their own beliefs while also recognizing how little they knew about other views. This is not to say that their views are wrong, but many of their views currently have little solid grounding. What happens to insulated homeschoolers when they eventually meet someone who can articulate an opposing view? Because young-earth creationism is conflated with Christianity, students may unfortunately correlate later doubts of young-earth creationism with doubts about Christianity itself (Kinnaman, 2011). Indeed, most of the reasons young Christians cite for leaving the faith involve “unanswered, intellectual skepticism” (McDowell & Wallace, 2019, p. 36), which involves skepticism about origins science. If they are not exposed to other Christian views of origins science during homeschooling courses, students will end up falling into one of two categories later in life: walking away from the faith because they have not learned how to defend young-earth creationism against a variety of opposing views or becoming headstrong in their young-earth creationist views, academically martyring themselves for what they perceive to be the sake of the gospel. Again, homeschooled students should be exposed to the very best that secular science has to offer, if for no other reason than to understand opposing worldviews so they can

more adequately defend their own. Homeschooling parents are in a unique position to do just this because they have much more academic freedom than their private or public-school counterparts (Thomas, 2016).

Delimitations and Limitations

Delimitations are decisions deliberately made by the researcher to limit a study (Theofanidis & Fountouki, 2018). In this study, participants needed to be at least 18 years old because it was necessary to have individuals who had taken high school science courses, had time to reflect on what they learned and had time to consider how their learning was incorporated into a biblical worldview. The search for participants only included the United States because the country has a tradition for how science is taught in public schools that may be important for the self-selected homeschoolers. The one participant from Canada was still used because her explanation of Canadian culture made it apparent that the public schools there were similar to United States schools.

This study was also delimited to homeschooled students because they are the only United States students who can learn the variety of origins science views, specifically young-earth creationism. Because public schools do not allow the breadth of options to understand all aspects of origins science (*Edwards v. Aguillard*, 1987; *Kitzmiller v. Dover Area School District*, 2005) and Christian schools integrate the Bible by having it in a separate class (Knight, 2006) or by sprinkling religious activities over otherwise secular content (MacCullough, 2016; Pearcey, 2004), only homeschoolers were used. Additionally, there is little research done on homeschoolers (Wilkins et al., 2015), so this provided an opportunity to add to that literature.

The final delimitation was requiring participants to have a biblical worldview. This was important because the purpose of the study was to understand how biblical worldviews develop,

which is not possible unless a biblical worldview is already in place. There is also very little research done on biblical worldview development, so this provided another opportunity to add to the literature.

Many limitations emerged during this study. Participants had to have Internet access, including the time and willingness to fill out forms and take part in an interview. It is possible that this process filters out participants and only allows for a particular type of respondent, limiting the generalizability of the results. Many of the participants were found by searching for gatekeepers through national homeschooling networks, meaning many of the participants were taught in similar ways, perhaps accounting for the similarity in responses. Additionally, all the participants were White Protestants, limiting any racial, cultural, and religious heritages that likely contribute to biblical worldview development.

Recommendations for Future Research

Further research could be done on the model for biblical worldview development with similar studies involving larger sample sizes or more diverse participants to increase generalizability. This model also provides four components that would be of interest for future research: preparation, education, determination, and reflection. For instance, further studies could be done on how biblical worldviews develop for individuals who do not enjoy being homeschooled or do not have the same beliefs about origins as their parents. It would also be beneficial to have more diversity in origins science beliefs in participants, including more old-earth and evolutionary creationists, to determine if the model still applies to them. To increase validity, Catholic or Eastern Orthodox participants could be used to determine the effect of religious affiliation on views of origins science. This could also include people outside the

United States to determine how the geographic and cultural heritage of a country affects how biblical worldviews develop.

Because parents are crucial during the biblical worldview development process, it would be of interest to know how many other non-salvific beliefs children share with their parents. Many studies can be done in other areas of theology to determine why individuals hold to any number of secondary beliefs.

Finally, including public school students in future research would make the model more general and applicable. It may be, as a homeschooling critic noted, that it is not homeschooling that accounts for various outcomes but being the type of family who would choose to homeschool. There are many families committed to the education of their children who have decided to send their children to public schools. Their contributions to future studies may provide more validity to individual components of the resulting model from this study.

Summary

This hermeneutic phenomenology contributes the model for biblical worldview development to the literature on faith development theory, biblical worldview development, science education, and homeschooling. Participants went through components of preparation, education, determination, and reflection that coincide with stages of the faith development theory. Participants enjoyed homeschooling and were around others with similar beliefs, leading to similar beliefs about origins as their parents as they discerned the extent to which science can speak into matters of faith. The results show that participants have a mixture of confidence and humility in their beliefs, leading to bold faith. The results of this study assist stakeholders in biblical worldview development, science education, and homeschooling.

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APPENDIX A

IRB Approval

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

March 24, 2020

Charleton King
David Vacchi

Re: IRB Exemption - IRB-FY19-20-188 A Grounded Theory for How Homeschooled High School Students Integrate Origins Science Into A Biblical Worldview

Dear Charleton King, David Vacchi:

The Liberty University Institutional Review Board (IRB) 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 no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46: 101(b):

Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:

The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Your stamped consent form can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. This form should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document should be made available without alteration.

Please note that this exemption only applies to your current research application, and any modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

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

Sincerely,

G. Michele Baker, MA, CIP

Administrative Chair of Institutional Research

Research Ethics Office

APPENDIX B

Letter to Homeschooling Groups for Participants

Dear _____,

My name is Charleton King and I am a doctoral candidate at Liberty University working on my dissertation entitled, "A GROUNDED THEORY FOR HOW HOMESCHOOLED HIGH SCHOOL STUDENTS INTEGRATE ORIGINS SCIENCE INTO A BIBLICAL WORLDVIEW." The reason I am writing is to ask if you would consider providing me with the names of individuals who you feel may be a good fit for my study or forwarding my recruitment letter onto your contacts.

The criteria for being a participant are as follows. Participants will:

1. Be an American and at least 18 years old
2. Possess a biblical worldview
3. Have taken at least one science class while they were homeschooled that taught about origins

Participants will be asked to:

1. Complete an online demographic survey and worldview assessment – 35 minutes
2. Complete a free word association form – 5 minutes
3. Participate in a one-on-one interview with me via Zoom – 1 hour
4. Read the transcript from the interview and providing me with feedback – 30 minutes
5. Participate in a follow-up focus group discussion via Zoom – 1 hour

Participation is voluntary, and I have secured approval from Liberty University's Institutional Review Board to conduct this research. All participants will be asked to sign a consent form.

If you know of any individuals who fit the above criteria and whom you believe would be a good fit for participation in my study, would you consider returning this form with names and contact information? If you prefer to send my information to your contacts so that they can contact me directly, would you send them a copy of my recruitment letter (attached)? I appreciate your willingness to consider helping me with my dissertation and contributing to an important area of inquiry.

Thank you for your help. Please feel free to call me at (610) 513-9918 or email me at cking55@liberty.edu if you have any questions.

The individual overseeing this research is the dissertation committee chair, Dr. David Vacchi. You can reach him with any questions at dvacchi@liberty.edu

APPENDIX C

Informational Letter to Potential Participants

Dear potential participant,

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to understand how homeschooled high school students integrate origins science into a biblical worldview, and I am writing to invite eligible participants to join my study.

Participants must be Americans of at least 18 years of age or older, have learned an origins science while homeschooled, and have a biblical worldview. Participants, if willing, will be asked to do the following:

1. Complete an online demographic survey and worldview assessment – 35 minutes
2. Complete a free word association form – 5 minutes
3. Participate in a one-on-one interview with me via Zoom – 1 hour
4. Read the transcript from the interview and provide me with feedback – 30 minutes
5. Participate in a follow-up focus group discussion via Zoom – 1 hour

Names and other identifying information will be requested as part of this study, but the information will remain confidential.

To participate, please complete the online demographic survey and worldview assessment found at the following links:

Demographic survey: <https://tinyurl.com/kingdemographics>

Worldview assessment: <https://tinyurl.com/kingworldview>

If selected, you will receive a consent document that contains additional information about my research. An interview will be scheduled as soon as the consent document is texted or emailed back to me.

Sincerely,

Charleton King
(610) 513-9918
cking55@liberty.edu
Liberty University's School of Education doctoral candidate

APPENDIX D

Consent Form

Title of the Project: A Grounded Theory for How Homeschooled High School Students Integrate Origins Science Into a Biblical Worldview

Principal Investigator: Charleton King, doctoral candidate, Liberty University

Invitation to be Part of a Research Study

You are invited to be in a research study. In order to participate, you must be an American of 18 years of age or older, were homeschooled while you learned origins science, and possess a biblical worldview. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why is it being done?

The purpose of this study is to generate a theory or model for how homeschooled high school students integrate origins science into a biblical worldview. This research is being done because there is little research on biblical worldview development or homeschooling. In addition, origins science can be a volatile subject, so this research seeks to add to the conversation about why people arrive at their particular beliefs.

What will happen if you take part in this study?

If you agree to be in this study, I would ask you to do the following things:

1. Complete a free word association form which will take approximately 5 minutes. This form serves to better understand your initial reactions toward key words associated with origins science.
2. Participate in an interview about your own experiences with learning origins science. The interview will last approximately 1 hour and will be audio and video recorded. It may occur in person or online.
3. Review interview transcriptions for accuracy and correct misunderstandings. This review should take approximately 30 minutes to complete.
4. Participate in a focus group of which will take approximately 1 hour and will be audio and video recorded.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study. Benefits to society include pedagogical techniques for homeschooling advocates, science educators, and those interested in instilling biblical worldviews within themselves and others.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life. The researcher is a mandatory reporter for child abuse and child neglect in Pennsylvania.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. Data collected from you may be shared for use in future research studies or with other researchers. If data collected from you is shared, any information that could identify you, if applicable, will be removed before the data is shared.

- Participants responses will be kept confidential through the use of pseudonyms. Interviews will be conducted in a location where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.
- Interviews and the focus group will be recorded and transcribed. Recordings will be stored on a password locked computer for three years and then erased. Only the researcher will have access to these recordings.
- Confidentiality cannot be guaranteed in focus group settings. While discouraged, other members of the focus group may share what was discussed with persons outside of the group.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether 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.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you, apart from focus group data, will be destroyed immediately and will not be included in this study. Focus group data will not be destroyed, but your contributions to the focus group will not be included in the study if you choose to withdraw.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Charleton King. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at cking55@liberty.edu or

(610) 513-9918. You may also contact the researcher's faculty sponsor, Dr. David Vacchi, at dvacchi@liberty.edu.

Whom do you contact if you have questions about your rights as a research participant?

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., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Your Consent

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

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

The researcher has my permission to audio/video record me as part of my participation in this study.

Printed Subject Name

Signature & Date

APPENDIX E

Free Word Association

For each of the following words or phrases, write down a word or phrase that you immediately associate with it.

1. Creation

2. Charles Darwin

3. The Big Bang

4. The Bible

5. Old-Earth creationism

6. Evolution

7. Natural selection

8. Genesis

9. Young-Earth creationism

10. Six days of creation

APPENDIX F

Demographics Questionnaire

This questionnaire will be used to gather basic demographic data on the participants. This is to ensure diversity of responses and enhance the generalizability of the findings. Additionally, this questionnaire will serve as an initial filter to determine if students are eligible for the study.

1. Name:
2. Email address:
3. Are you a resident of the United States?
4. Are you 18 years of age or older?
5. Which of the following best describes your religious affiliation? Choose all that apply.
 - a. Assembly of God
 - b. Baptist
 - c. Catholic
 - d. Church of the Brethren
 - e. Church of Christ
 - f. Church of the Nazarene
 - g. Episcopalian
 - h. Evangelical
 - i. Lutheran
 - j. Mennonite
 - k. Methodist
 - l. Non-denominational
 - m. Orthodox
 - n. Pentecostal
 - o. Presbyterian
 - p. Quaker
 - q. Reformed
 - r. Seventh-Day Adventist
 - s. Other (please specify): _____
 - a. Presbyterian
6. How many homeschooled science classes did you take in high school that mentioned origins science (e.g. origin of universe, life, humanity, morality, or consciousness)?
 - a. 0
 - b. 1
 - c. 2
 - d. 3
 - e. 4+

APPENDIX G

3DWS – Form C

3-Dimensional Worldview Survey – Form C

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As you respond to the survey questions, do not spend too much time trying to determine any “right” answer. There is much disagreement among Christians over these answers. Instead, consider how you would truthfully answer these questions right now, without being overly critical or generous with yourself.

Section 1

Respond to each of the following statements with your current level of agreement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. History is a random series of events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. There is a constant spiritual battle between the forces of good and the forces of evil.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Jesus Christ physically rose from the dead.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. If confronted with a moral dilemma, I figure it out by discovering what will help the most people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. The Holy Spirit is a symbol of God's presence rather than a living being.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. We can interpret current events as expressions of God's will.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Jesus Christ is important in my life today.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. The best source for determining if something is morally right or wrong is the law of the land.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. The Bible is more like a good story that teaches moral lessons than a historic record of real people and events.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. A person can earn eternal salvation by being good, for example by doing good things for other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. God created everything.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. I am the one who ultimately determines what is right or wrong for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. There is no way to decide which of the many competing worldviews is true.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. All medical research that promotes our knowledge of science is valuable, especially if it results in future medical advances that benefit people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Sexual behavior outside marriage is wrong.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Every life has value, whether unborn, disabled, sickly, or in any other way limited.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Muslims, Christians, Jews, and all other people pray to the same God, even though they use different names for their God.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Two people could define truth in conflicting ways and both still be correct.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. If people will only work hard enough, their cooperation could result in a perfect society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I can know what is morally right and wrong for other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Entertainment has great power to captivate the imagination, and should therefore be treated with great respect and thought.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. If someone wrongs me, then I will want to get even.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. The Bible is true because I believe it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. A well-run government can solve all problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25. I can tell if something is morally right by whether or not it works in my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26. I am waiting to have sex until I am married, no matter what.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28. The meaning of words depends on each reader's interpretation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29. I have made a personal commitment to Jesus Christ.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30. Most people are basically good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31. God is a personal being.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32. Everything belongs to God: for example, my computer, my phone, my clothes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33. Medical treatment should be given based on who would bring the greatest benefit to society.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34. The best source for determining if something is morally right or wrong is the Bible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35. God is important primarily because faith in Him makes us more civilized and psychologically healthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36. I would marry someone of another faith if I were in love.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37. Every woman should have a right to abort her fetus.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38. All cultures are morally equal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39. I believe that when I die I will go to Heaven because I have been a good person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40. God is actively involved in the universe today.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41. The Bible is true in all its teachings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42. I feel that no one has the right to tell me what to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43. The devil is a symbol of evil rather than a living being.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

44. I believe that when I die I will go to Heaven because I have been going to church pretty much all my life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45. God is one God who exists in three persons: Father, Son, and Holy Spirit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46. God holds all human beings accountable for their behavior.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
47. When Jesus Christ was on earth, He lived a sinless life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
48. The standard for truth is when I feel it to be true in my heart.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Section 2

Respond to each of the following statements with your current time devoted to each activity.

49. I read or study the Bible.	About 10 hours or less a year <input type="radio"/>	About 1-2 hours a month <input type="radio"/>	About 1 hour a week <input type="radio"/>	About 15-30 minutes a day <input type="radio"/>	More than 30 minutes a day <input type="radio"/>
50. I attend a church worship service.	Less than once a month <input type="radio"/>	About once a month <input type="radio"/>	About 2 times a month <input type="radio"/>	About 3 times a month <input type="radio"/>	Every week <input type="radio"/>

Section 3

Respond to each of the following statements with your current frequency levels.

	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently
51. I work with other Christian believers for the purpose of introducing unchurched people to Jesus Christ.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
52. My interactions with non-Christians are likely to demonstrate that I am a Christian.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
53. I enjoy talking with one or more of my friends about spiritual things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
54. I feel frustrated when my individual right to choose what I want to do is limited.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
55. I question the goodness of God because I know that evil exists.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
56. In everyday activities, for example, doing homework, I deepen my relationship with God.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
57. I look forward to the time when I can take a break from going to church.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
58. When I watch a sporting event, I get more involved than when I attend a worship event.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

59. When I see inconsistencies at church between what people say and what they do, I want to stay away from church.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
60. When I make decisions, the biggest factor is how it will affect my relationship with God.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
61. I stand up for what is right even if my friends don't join me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
62. When I have questions about how I should live my life, I look for answers in the Bible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
63. I freely forgive those who hurt me even when the hurt they have caused is very great.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
64. I only spend my money on what will benefit me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
65. When something offends me, it keeps irritating me whenever I think about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
66. I find the Bible is relevant to my daily life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
67. In my prayers, I actively seek to discover the will of God.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
68. When I do something wrong, I respond cheerfully and humbly to discipline.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
69. I enjoy participating in a worship service with other believers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
70. Repentance is a part of my private prayers to God.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
71. I think about passages I read in the Bible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
72. I enjoy being with other believers, whether or not we are doing religious activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
73. I spend time thinking about the sermon after I have left the church building.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
74. I do without things I want in order to give sacrificially to the work of God.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
75. Beauty is only a matter of personal opinion: there is no such thing as objective beauty.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
76. When I hear about natural disasters, I do something to help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APPENDIX H

Sample 3DWS – Form C Report (used and reproduced with permission)

3D Worldview Survey Results

Name: Liam
Participant ID: CHARL2020.06162

Survey Date: February 1, 2020
Group Number: Vanguard

Propositional Dimension **very good**

Your responses tend in the direction of a Biblical worldview on 36 out of 40 propositional items. That indicates that you probably have a very good knowledge of Biblical truth.

Behavioral Dimension **good**

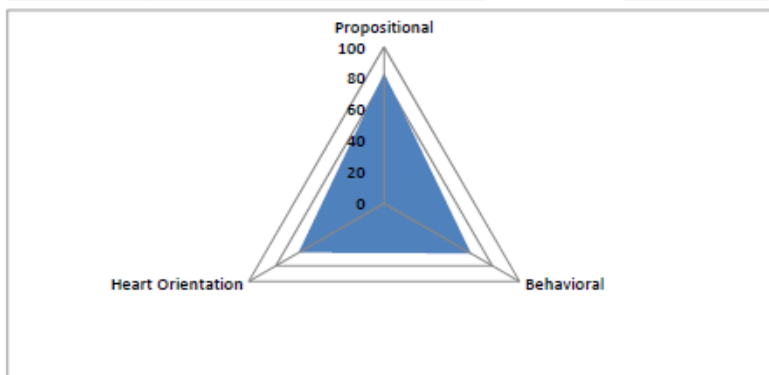
Your responses tend in the direction of a Biblical worldview on 9 out of 13 behavioral items. That indicates that you probably have a good record for living out Biblical truth.

Heart Orientation Dimension **good**

Your responses tend in the direction of a Biblical worldview on 14 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.

Propositional	Behavioral	Heart Orientation	Composite
83	64	63	210



Comments:

Your highest dimension subscore is for the Propositional Dimension at 83.
 Your lowest dimension subscore is for the Heart Orientation Dimension at 63.
 Your average dimension subscore is 70.

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 heart-orientation dimension is your lowest score, it would probably be good to remember that "the good man brings good things out of the good stored up in his heart, and the evil man brings evil things out of the evil stored up in his heart" (Luke 6:45).
 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 heart-orientation dimension, think about the role model of Jesus, "Your attitude should be the same as that of Christ Jesus who, being in very nature God, did not consider equality with God something to be grasped, but made himself nothing" (Philippians 2:5-7).

APPENDIX I*3DWS – Form C Participant Results*

Name	Propositional		Behavioral		Heart Orientation		Composite
	Score	Rating	Score	Rating	Score	Rating	
Adam	75	Very good	66	Very good	68	Very good	209
Brian	69	Good	68	Very good	68	Very good	205
Chloe	75	Very good	67	Very good	75	Very good	217
Deidre	75	Very good	63	Good	61	Good	199
Ella	75	Very good	85	Very good	76	Very good	236
Felicia	76	Very good	70	Very good	71	Very good	217
Gabrielle	69	Very good	78	Very good	76	Very good	223
Hannah	80	Very good	56	Good	71	Very good	207
Isaiah	82	Very good	74	Very good	76	Very good	232
Jennifer	83	Very good	75	Very good	71	Very good	229
Kendrick	85	Very good	66	Very good	72	Very good	223
Leslie	80	Very good	74	Good	77	Very good	231

APPENDIX J

Interview Questions

- I. Introduction and Worldview
 1. Please tell me about yourself, your experiences with homeschooling, and why you agreed to be part of this study.
 2. Explain some of your answers on your free word association form.
 3. If someone asked you to identify the key components of a biblical worldview, how would you respond?
 4. Many people are unaware of their worldview. Explain how often you think about your worldview.
- II. Relationship Between Bible and Science
 5. If an unbelieving friend asked you to describe to them what the Bible is about, how would you respond?
 6. Give me a definition for science.
 7. What are your beliefs about the scientific method and its ability to apprehend truth about reality?
 8. Explain the process you go through when you try to determine whether a truth claim about origins is accurate.
 9. Some Christians will speak of God authoring two books: Scripture and nature. Please tell me what you think about this view of God's authorship and how much authority each has in determining the truth about reality.
- III. Changing or Sustaining Beliefs
 10. Origins science has several parts to it. Of interest here are two main areas: the age of the universe/Earth and evolution of humans/animals. Explain what you were taught in your homeschooling curriculum about these two areas of origins.
 11. Tell me about your current beliefs about origins science.
 12. Explain what resources or people have influenced you in your current beliefs about origins science.
 13. Explain any understandings about origins science that you think may change in the future.
- IV. Perception of Others
 14. How much do you know about the views that disagree with your own?
 15. Explain how much you think someone can disagree with your views on origins science and still have a biblical worldview.
 16. What do you believe is holding other Christians back from committing themselves to what you believe is the most accurate interpretation of origins science?
 17. What resources would you recommend to others to have a greater understanding of your own views on origins science?
- V. Conclusion
 18. What else would you like to tell me that would help me understand how you have integrated origins science into a biblical worldview?

APPENDIX K

Focus Group Questions

I. Introduction and Worldview

1. Here are the most common answers given during the free word association prompt. Why do you think these were the most common?
2. Here are the most common answers given for key components of a biblical worldview. What components need to be added or removed?

II. Relationship Between Bible and Science

3. Please place yourselves somewhere on the origins science spectrum. Remember, it is a spectrum and you may find yourself in between some areas. What reasons do you have for placing yourself there?

III. Changing or Sustaining Beliefs

4. Please identify where you have been on the origins science spectrum in the past. What has caused you to change your beliefs?
5. What would it take to change your position on the origins science spectrum?

IV. Perception of Others

6. What do you think of those who are above you on the origins science spectrum? What do you think of those below you?
7. What are the commonalities between all Christians on the origins science spectrum?

APPENDIX L

Member Checking Instructions

Thank you for participating in this research study. An important part of the study process is providing you an opportunity to review your interview transcript and provide feedback. Attached to this email is a Word document of your interview transcript. Please review your transcript, save a copy, and return the edited document back to my email.

What I am looking for:

Show me the changes by highlighting them, inserting comments, or tracking the changes
Review it asking yourself if it is a fair representation of your ideas and thoughts

What I am not looking for:

Fixing grammar or correct spelling
Overly critical on responses

APPENDIX M

Initial Codes

1. Acknowledged ignorance
2. Age of Earth and universe
3. Age of Earth confidence
4. Age of humanity
5. Answering others' questions
6. Answers in Genesis
7. Anti-creation websites for validation
8. Apathy
9. Apologetics
10. Archaeology as proof for Bible
11. Articles
12. Avoid contradictions
13. Beliefs are deeper
14. Beliefs are more well-rounded
15. Beliefs influence interpretations
16. Believing what you're taught
17. Bias
18. Bible
19. Bible is about God and man
20. Bible is about the gospel
21. Bible is God's written word
22. Big Bang Theory
23. Book resources
24. Challenged
25. Changing beliefs
26. Charles Darwin is a theoretical scientist
27. Charles Darwin is about naturalism
28. Charles Darwin is about rebellion
29. Charles Darwin is an old man
30. Christianity is identity
31. Close-minded views
32. Cognitive dissonance
33. College courses
34. College forces worldviews
35. Comparing to creationism
36. Components
37. Confidence in own views
38. Confidence in Word of God
39. Conflict avoidance
40. Considering the worldviews of others
41. Creation claims

42. Creation is about completeness
43. Creation is about creativity
44. Creation is about God's love for us
45. Creation is about the Beginning
46. Creation is about the Bible
47. Creation is about the world
48. Creation is all about Genesis
49. Creation is all about God
50. Creation is all about humanity
51. Creation-based sources for validation
52. Credentials
53. Critical thinking
54. Curriculum
55. Death
56. Define your terms
57. Definition
58. Definition of evolution
59. Definition of God
60. Definition of science
61. Definition of terms
62. Definition of theory
63. Design in nature
64. Determining Truth
65. Difficulty with Answers in Genesis
66. Disagreement over age of Earth
67. Doesn't affect my life
68. Doubts
69. Early Genesis is poetic
70. Education
71. Everyone I know agrees with me
72. Evidence
73. Evolution false, not just because of the Bible
74. Evolution ignorance
75. Evolution is about Charles Darwin
76. Evolution is everywhere
77. Evolution knowledge
78. Evolution lack of belief
79. Evolution should have been mentioned if true
80. Evolutionary creationism
81. Experiences
82. Familiarity with other views
83. Flaws with science
84. Frequency of worldview consideration
85. Future plans
86. General revelation
87. Genesis is about cosmology

88. Genesis is about Genesis 1 and creation
89. Genesis is about the beginning
90. Genesis is about truth
91. God desires a relationship with us
92. God is Creator
93. God is the main character of the Bible
94. God's character
95. Grew up in secular environment
96. Harmony of Scripture and science
97. Hebrew language is important
98. Homeschool arrogance
99. Homeschool experience
100. Homeschool makes finding God easier
101. Homeschool provided background
102. Homeschooling is about character
103. Hugh Ross Sunday School
104. Humility of ignorance
105. Hypocrisy in science
106. If it's not a miracle, trust science
107. Ignorant of own worldview
108. Ignoring origins
109. Importance of Darwin's life
110. Importance of Genesis
111. Importance of six day creation
112. Incredulity of other beliefs
113. Indifference
114. Influence of science on worldview
115. Insulated Christian environment
116. Intelligent Design
117. Interpretation difficulties
118. Interpretation of Scripture is fallible
119. It's not fun to be the different person
120. Just for you question mark
121. Lack of exposure to creation science
122. Lack of questioning what one has been taught
123. Learning from others
124. Limitations of science
125. Limited exposure to creation science
126. Macroevolution
127. Man cannot know all truth, but can know Truth
128. Micro-evolution
129. My sin
130. Naive
131. Natural selection and cliff joke
132. Natural selection is a result of the Fall
133. Natural selection is about Charles Darwin

134. Natural selection is about evolution
135. Natural selection is possible
136. Natural selection is that the fittest survive
137. Nature changes
138. Navigating culture
139. No conflict until college
140. No specific process for discernment
141. NOMA
142. Non-creation websites for validation
143. Not an important issue
144. Old-earth creationism knowledge
145. Old-earth creationism misconception
146. Old-earth creationism possibility
147. Old-earth creationism views
148. Old-earth creationism ignorance
149. Origins is a philosophy
150. Other ways of aging the Earth
151. Other worldviews
152. Others are ignorant
153. Owning faith
154. Parents protect kids
155. People
156. People are influenced by their worldview
157. Presuppositions
158. Primary issues
159. Private school is expensive
160. Public schools
161. Purpose of Bible
162. Questioning
163. Questioning everything
164. Questioning scientific assumptions
165. Reasons to Believe
166. Refutations
167. Room for difference
168. Science and Bible agree
169. Science and God go together
170. Science articles
171. Science can understand certain truth
172. Science exposure
173. Science is practical
174. Science to prove creationism
175. Scientific doubt
176. Scientific ignorance
177. Scientific knowledge
178. Scientific truth is found in science
179. Scientific worldview

180. Scientists don't like God
181. Scientists ignore others
182. Scriptural context
183. Scriptural harmony
184. Scripture
185. Scripture interprets Scripture
186. Scripture is not a science textbook
187. Secondary issues
188. Secular textbooks
189. Six days of creation is a resume
190. Six days of creation is biblical
191. Six days of creation is face value
192. Six days of creation is in the beginning
193. Six days of creation is literal
194. Six days of creation is not salvation issue
195. Six days of creation is open to interpretation
196. Six days of creation is true
197. Slippery slope
198. Sonlight curriculum was global
199. Special revelation
200. Supremacy of Christ
201. Supremacy of Scripture
202. Taught from a biblical worldview
203. The Bible is about Jesus
204. Theological ignorance
205. Theological knowledge
206. Theological truth is found in Scripture
207. There are not actual discrepancies between science and God
208. Truth depends on importance of issue
209. Truth is found in accordance with my beliefs
210. Truth is what we see
211. Two different types of science
212. Two ways to determine truth
213. Verses
214. Worldview change
215. Worldview importance
216. Worldview questions
217. Young-earth creationism
218. Young-earth creationism
219. Young-earth creationism ridicule
220. Young-earth creationists take the Bible literally

APPENDIX N

Initial Categories

Biblical Worldview	References
Components	23
Worldview questions	21
Definition	13
Christianity is identity	2
Navigating culture	1
Confidence	References
Confidence in own views	28
Young-earth creationism	17
Conflict avoidance	12
Evidence	12
Age of Earth confidence	10
Young-earth creationism ridicule	5
Just for you question mark	4
Frequency of worldview consideration	3
Owning faith	3
Avoid contradictions	2
Beliefs are deeper	2
Bias	2
Changing beliefs	2
Cognitive dissonance	2
Naive	2
Death	2
Doubts	2
Other ways of aging the Earth	2
Worldview importance	2
Beliefs are more well-rounded	1
Close-minded views	1
Confidence in Word of God	1
It's not fun to be the different person	1
Disagreement over age of Earth	1
Evolution lack of belief	1
Indifference	1
Natural selection is a result of the Fall	1
Questioning	1
Questioning everything	1

Refutations	1
Room for difference	1

God	References
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Bible is about the gospel	8
Creation is all about God	6
God's character	6
God is Creator	5
Definition of God	2
God desires a relationship with us	2
My sin	2
Creation is about completeness	1
Creation is all about humanity	1

Homeschool	References
-------------------	-------------------

Homeschool experience	19
Public schools	7
Everyone I know agrees with me	5
Challenged	3
Homeschool provided background	3
No conflict until college	3
Parents protect kids	3
College courses	2
Critical thinking	2
Believing what you're taught	1
Grew up in secular environment	1
Homeschool arrogance	1
Homeschool makes finding God easier	1
Homeschooling is about character	1
Hugh Ross Sunday School	1
Insulated Christian environment	1
Private school is expensive	1
Secular textbooks	1
Sonlight curriculum was global	1
Taught from a biblical worldview	1

Ignorance	References
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Acknowledged ignorance	40
Scientific ignorance	23
Evolution ignorance	23
Ignorant of own worldview	12
Humility of ignorance	11
Old-earth creationism ignorance	6

Ignoring origins	3
Theological ignorance	3
Man cannot know all truth, but can know Truth	1
Apathy	1
Doesn't affect my life	1
Lack of questioning what one has been taught	1
Natural selection is possible	1
Others are ignorant	1

Others	References
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Other worldviews	66
Evolutionary creationism	19
Big Bang Theory	15
Evolution false, not just because of the Bible	12
Evolution is about Charles Darwin	9
Incredulity of other beliefs	9
Apologetics	8
Old-earth creationism knowledge	8
Young-earth creationism	7
Old-earth creationism misconception	6
Old-earth creationism possibility	6
Old-earth creationism views	5
College forces worldviews	3
Considering the worldviews of others	2
Credentials	2
Learning from others	2
Natural selection is about Charles Darwin	2
Not an important issue	2
Answering others' questions	1
Evolution is everywhere	1
Familiarity with other views	1
Intelligent Design	1
Natural selection and cliff joke	1
Scientists don't like God	1
Scientists ignore others	1

Science	References
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Two different types of science	35
Definition of science	18
Science can understand certain truth	7
Origins is a philosophy	5
Definition of evolution	4
Flaws with science	4

Limitations of science	4
Scientific worldview	3
Hypocrisy in science	2
Questioning scientific assumptions	2
Science exposure	2
Scientific doubt	2
Define your terms	1
Definition of terms	1
Definition of theory	1
Influence of science on worldview	1
Lack of exposure to creation science	1
Limited exposure to creation science	1
Science is practical	1
Science to prove creationism	1

Scientific knowledge	References
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Age of Earth and universe	19
Scientific knowledge	16
Evolution knowledge	15
Microevolution	8
Macroevolution	6
Age of humanity	5
Charles Darwin is an old man	2
Future plans	2
Natural selection is about evolution	2
Natural selection is that the fittest survive	2
Charles Darwin is a theoretical scientist	1
Charles Darwin is about naturalism	1
Charles Darwin is about rebellion	1
Importance of Darwin's life	1
Design in nature	1

Truth	References
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Book resources	55
People	54
Supremacy of Scripture	48
Bible	25
General revelation	12
Experiences	11
Curriculum	10
Verses	10
Bible is God's written word	8
Genesis is about Genesis 1 and creation	6

Interpretation difficulties	6
Special revelation	6
Theological knowledge	6
Bible is about God and man	5
Creation claims	5
Two ways to determine truth	5
Science and God go together	4
Scripture interprets Scripture	4
Articles	4
Creation-based sources for validation	4
No specific process for discernment	3
Importance of six day creation	3
NOMA	3
Slippery slope	3
Answers in Genesis	3
Difficulty with Answers in Genesis	3
Non-creation websites for validation	3
Creation is all about Genesis	2
Genesis is about the beginning	2
Purpose of Bible	2
Scriptural context	2
Scriptural harmony	2
Scripture	2
Six days of creation is literal	2
Young-earth creationists take the Bible literally	2
Truth depends on importance of issue	2
Reasons to Believe	2
Archaeology as proof for Bible	1
Beliefs influence interpretations	1
Education	1
Genesis is about truth	1
If it's not a miracle, trust science	1
Interpretation of Scripture is fallible	1
Nature changes	1
People are influenced by their worldview	1
Presuppositions	1
Primary issues	1
Scientific truth is found in science	1
Secondary issues	1
Comparing to creationism	1
Creation is about creativity	1
Creation is about God's love for us	1
Creation is about the Beginning	1

Creation is about the Bible	1
Creation is about the world	1
Determining Truth	1
Early Genesis is poetic	1
Evolution should have been mentioned if true	1
Genesis is about cosmology	1
God is the main character of the Bible	1
Hebrew language is important	1
Importance of Genesis	1
Science and Bible agree	1
Harmony of Scripture and science	1
There are not actual discrepancies between science and God	1
Scripture is not a science textbook	1
Six days of creation is a resume	1
Six days of creation is biblical	1
Six days of creation is face value	1
Six days of creation is in the beginning	1
Six days of creation is not salvation issue	1
Six days of creation is open to interpretation	1
Six days of creation is true	1
Supremacy of Christ	1
The Bible is about Jesus	1
Truth is found in accordance with my beliefs	1
Worldview change	1
Theological truth is found in Scripture	1
Truth is what we see	1
Anti-creation websites for validation	1
Science articles	1

APPENDIX O

Sample Memo

Memo – April 13, 2020

I can appreciate a bit of what Brian had to say. He definitely had more to say than Adam and spoke more knowledgeably about certain topics, and definitely has an interest in the topic with his Acts in Facts magazine readily accessible, but he still didn't know some of the more common talking points of creationists. He didn't know what special/general revelation were and he didn't know about the two books God created (though I had never heard of this either until I started teaching college). But I know both of these are fairly common within the literature.

I got my first theoretical sampling question. I want to know if the participants have ever read about something they disagree from someone who disagrees with them. For instance, you can listen to what a Muslim says about their own religion. Have you ever heard what an evolutionist has to say about evolution? Maybe it's just me valuing the perspectives of others a little more than these kids, but it seems like their curriculum is just setting up easily disarmed strawmen to help them see how silly evolution is. While I may agree with the end conclusion, I don't agree with the means to reach them. It seems to set these kids up for failure when they inevitably meet someone who cannot be as easily defeated as they strawmen.