THE RELATIONSHIP BETWEEN SCIENCE LITERACY LEVELS AND RELIGIOUS BELIEF AMONG A SAMPLE OF COMMUNITY COLLEGE STUDENTS

by

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ABSTRACT

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The purpose of this study was to quantitatively explore how beliefs regarding creation and evolution are related. To this end, attitude structures, cognitive sociology, creation, evolution, science, status politics and world view are defined and related issues are explored. A questionnaire was administered to 348 North Lake College students. It was found that the controversy regarding creationists negating evolution is educational and political in nature. Implications suggest that a person's religious beliefs, academic understanding of evolution and science, and opinions regarding what can and cannot be taught in the science classroom are indicative of the creation-evolution controversy. Ultimately, this research explains why an education overhaul, political mobilization and public education campaigns are necessary to prevent creation pseudo-scientific claims from dominating U.S. politics, public opinion and the science classroom.

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CHAPTER 1

INTRODUCTION

The creation-evolution controversy is an emotionally charged and difficult topic to analyze. However, three established facts should preface any discussion. First, creationism is not a monolithic perspective, but consists of a variety of ideas, including creation science, intelligent design (hereafter ID), and "teaching the strengths and weaknesses of scientific controversy" (hereafter TSW). Second, no form of creationism is an appropriate topic in the science classroom because it is not scientific theory and has been struck down as such consistently in U.S. courts. Third, evolution is a validated scientific theory, not a belief system or theology.

The creation-evolution controversy is embedded within a network of related issues. However, the controversy can be elucidated through an application of key ideas from research on attitude structures, cognitive sociology, research on status politics and the concept of world view. In order for such an elucidation to make sense the precise nature of creation and evolution must be carefully defined.

The creation-evolution controversy is an ongoing and recurring dispute regarding the origins and age of Earth, humanity, life and the universe (Cooper and DeWolf 2005). We will argue here that the controversy has been caused primarily by conflict between cultural traditionalists and cultural modernists regarding what constitutes a truth claim (Eve and Harrold 1991). Cultural traditionalists include those who believe truth claims based upon authority, revelation and tradition (Eve et al 1991). This is the camp in which most creationists reside. Cultural Modernists are those who prefer truth claims based upon empiricism and scientific method (Eve et al 1991). This is the camp in which most evolutionists, and proponents of mathematical proofs, modernity, scientific method, statistics, technology, and so forth, reside.

Note that these two groups are ideal types and therefore not mutually exclusive. Not everyone who appears to fit into the latter group can actually be said to be a proponent of that group. Many people who appear to be cultural modernists are not, because they have compartmentalized their beliefs. They would argue that their religious beliefs are sacrosanct and therefore unrelated and/or impervious to academic categorization. In short, they have faith in literal interpretations of ancient religious texts that conflict with ancient and modern linguistic, theological and scientific evidence.

At this point, it is necessary to specify that the word “group” is used loosely through this paper because we are talking about ways of knowing more so than highly delineated physical groups. In other words, just like members of a social movement organization (hereafter SMO), membership only exists as long as the group's reasons for being (e.g. common threat, goals, et cetera) are salient to its members. For example, regarding cultural traditionalists and cultural modernists, it should be emphasized that these two “groups” are competing world views whose adherents prioritize certain truth claims over others (Eve et al 1991). Rather than viewing these two “groups” as irrefutably separate entities, consider membership to them conditional, fleeting and permeable because individuals compartmentalize facets of themselves or see these “groups” merely as separate roles (refer to role theory [Ebaugh 1988]) that they can adopt at a moment’s notice to cope or deal with beliefs, conflicts, truth, et cetera that are relevant to them. At the same time, some people may embrace a single role so completely as to be unable to enter the other role without some sort of epiphany.

It must be emphasized that intolerance applies to cultural modernists (i.e. evolutionists) as well as cultural traditionalists (i.e. creationists). As explained throughout this paper, creationists are prone to rejecting scientific claims that contradict their religious beliefs, especially those related to evolution (Eve et al 1994; Eve et al 1995; Kehoe 1995). Similarly, evolutionists are often prone to accepting arguments selectively based on individual preference (e.g. politics, religiosity, et cetera) (Alters 2005; Bybee 2004). An individual’s misconceptions

and misunderstanding of science (i.e. science education), such as how scientists use words like "theory" (i.e. semantics) are related to rejection of scientific claims (Alters 2005; Bybee 2004; National Academy of Science [hereafter NAS] 1998). Thus, among those for whom religion is not a deciding factor, inadequate science education may be at the heart of their propensity towards rejecting evolution in particular and science in general.

1.1 The Research Question

This paper sets out to explore three distinct but interrelated points regarding the creation-evolution controversy. One, what is the relationship between creationists and evolutionists in terms of their world views? Two, how is education related to the rejection of science? Three, can the difference between creationists and evolutionists be explained by education?

As explained in Chapter 3, previous research suggests that attitude structures, cognitive sociology, research on status politics and the concept of world view are significant to understanding the relationship between creationists and evolutionists. This paper's research question is: How do attitude structures, cognitive sociology, status politics and world view help us understand the relationship between creationists and evolutionists?

1.2 Statement Of Focus

Following a body of literature that includes articles, books and chapters by Eve, Harrold and Plunkett (1986), Eve and Harrold (1986, 1991, 1993, 1994, 1995 and 1999), Eve, Goede and Harrold (1995), Feder (1995), Hudson (1995), Eve, Roy and Shupe (1996), Forrest and Gross (2004) and Eve, Harrold and Taylor (2004), it appears that there may be more at risk in the creation-evolution controversy than science literacy. The means of cultural reproduction (e.g. public schools) may have become contested ground because those who perceive their lifestyles to be threatened (i.e. creationists) tend to be especially intolerant of other lifestyles (i.e. evolutionists).

CHAPTER 2

CONCEPTS

The significance of creation and evolution can only be understood by first explaining why evolution is a valid scientific theory rather than a belief system or theology. To this end, the article “Attitudes Toward Evolution” by McNew and Weld (1999) is important because it demonstrates that science teachers’ preference towards teaching evolution is related to their understanding of the nature and history of science, and the scientific use of the word “theory.” In other words, education’s significance to this paper is oriented towards one’s understanding of science rather than the highest level of general education completed.

This chapter covers four main questions. One, what is science? Two, what is creation? Three, what is evolution? Four, why should adherents and dissidents of creation science, ID, and the more recent proponents of TSW all be considered creationists?

2.1 What Is Science?

Science consists of knowledge formed by facts and theories which are the result of formal systemized investigation undertaken in order to test hypotheses and attempt to form general laws (Barrows 2001). A fact is an observation that has been repeatedly confirmed (NAS 1998). A theory is a well-substantiated explanation of some aspect of the natural world that can incorporate facts, laws, inferences, and tested hypotheses (NAS 1998). A hypothesis is a testable statement about the physical world that can be used to build more complex inferences and explanations (NAS 1998). A law is a descriptive generalization about how some aspect of the natural world behaves under certain circumstances (NAS 1998).

The formal methodology of science is commonly referred to as the scientific method. The four basic elements of scientific method are: (1) induction, (2) deduction, (3) observation and (4) verification (Shermer 2002). Induction consists of forming a hypothesis by drawing

general conclusions from existing data (Shermer 2002). Deduction consists of making specific predictions based on the hypotheses (Shermer 2002). Observation consists of gathering data; what those data consist of depends on the nature of the hypotheses tested (Shermer 2002). Verification consists of testing the predictions against further observation to confirm or falsify the initial hypotheses (Shermer 2002).

Religious rejection of science is a historically common theme in Western Cultures. Prior to the acceptance of scientific method, people believed that the Earth was flat and the center of the Universe, and that life remained unchanged once created. Galileo Galilei was forced to recant and spend the last twelve years of his life under house arrest by the religious powers of his time for supporting the heliocentric model of the solar system. By comparison, the censuring, censorship and persecution Charles Darwin experienced at the hands of his creationist detractors for suggesting and supporting evolution seem insignificant.

2.2 What Is Creation?

For the purposes of this paper, creation is the act of bringing the world into existence by supernatural means (Barrows 2001). Creation can occur through (1) special creation or (2) creation science (Barrows 2001). Special creation is a controversial position that posits that science played no role in the act of bringing the world into existence (Barrows 2001; Oxford 2005). Creation science is a controversial position that claims there is "scientific evidence" suggesting there was a worldwide flood and that the Earth is no more than a few thousand years old (Barrows 2001).

Creationism and creationist each have two definitions to reflect the dual nature of creation. Creationism consists of the belief (1) that all forms of life were created *de novo* (i.e. at the beginning) and have undergone little subsequent change or (2) that currently existing forms of life are the product of macroevolution, a process directed by god (Barrows 2001; Boxshall and Lincoln 1998; Oxford 2005). A creationist is (1) a proponent of special creation or (2) a person who believes that an "intelligent creator" (e.g. god) somehow brought about the origin of

life (Barrows 2001; Oxford 2005). Dissidents of creation science believe in special creation and consequentially disregard what established scientific facts and theory have to say regarding how the world was created. Adherents of creation science attempt to bring science into line with their religious beliefs, often by manipulating evidence to fit personal biases (Forrest and Gross 2004). In either case, and for reasons explained in detail below, three established facts should preface any discussion of creation. One, rejection of science suggests that creationists reject many mainstream scientific claims. Two, both adherents and dissidents of creation science reject many mainstream scientific claims. Three, creationism consists of a variety of ideas, including creation science, ID, and TSW.

Throughout this paper, "creationists" refers to adherents and dissidents of creation science, along with proponents of ID, and the more recent proponents of TSW (reasoning behind this is explained in section 2.4) (Eve and Harrold 1994; Forrest et al 2004). Adherents of creation science include a minority of various Protestant denominations and Roman Catholics (Eve et al 1994). Dissidents of creation science include at least most Seventh Day Adventists, a Protestant denomination, who follow the teachings of Prophet Ellen G. White (Eve et al 1994; Robinson 2007). It should be emphasized that Seventh Day Adventists entirely disregard what science has to say (Eve et al 1991).

Note that the above mentioned definition of creation follows the lay public use of the term as though it were unifying. Such a definition refers only to strict Christian creationists, and even then it assumes that there is a consensus on what that "strict" interpretation is. There are at least 10 common types of Christian creationists (Eve et al 1991; Shermer 2006).

2.3 What Is Evolution?

Evolution is a scientific theory positing that a gradual process of cumulative change causes complex organisms (e.g. multicellular) to rise from earlier and more primitive organisms (e.g. unicellular) over at least the last 3 billion years (Barrow 2001; Boxshall et al 1998; NAS 1998; Oxford 2005). Modern evolutionary theory incorporates discoveries in genetics made

since Darwin's time (Darwin 1979 [1859]; Oxford 2005). As explained above, scientific theories are well-substantiated explanations of some aspect of the natural world that can incorporate facts, laws, inferences, and tested hypotheses (NAS 1998). Therefore, evolutionism suggests only that evolution is a valid scientific theory, not a belief system or theology. Evolutionists are adherents of the theory of evolution.

Evolutionary theory is frequently misunderstood and misconstrued as social darwinism (theory). To clarify the issue, Charles Darwin used the phrases "descent with modification" and "natural selection" (Darwin 1979 [1859]). Darwinian and modern Evolutionary theory both are frequently attacked due to the implications of the phrase "survival of the fittest." However that phase was actually coined by the polymath Herbert Spencer (1864-1867). As commonly understood, it is not related to Darwinian and modern evolutionary theory.

This definition of evolution follows the lay public use of the term as though it were unifying. Due to the nature of science, different theoretical models can explain the same observable phenomenon; therefore scientific facts can simultaneously support multiple scientific hypotheses (NAS 1998). There are at least 52 common types of evolution (Barrows 2001).

2.4 Why Should Adherents And Dissidents Of Creation Science, ID And The More Recent Proponents Of TSW All Be Considered Creationists?

2.4.1 Evidence Linking Creation Science And ID

The link between creation science and ID is overwhelming (Forrest et al 2004). Creation science literature often openly supports ID and some literature even demonstrates insider knowledge of ID (Forrest et al 2004). Early ID literature specifically and openly identifies itself as creation science (Forrest et al 2004). For reasons explained in detail below, the "distinction" between creation science and ID was deliberately manufactured as an attempt to keep ID from being barred from public school science classrooms as creation science was (Forrest et al 2004).

ID has "weak" and "strong" forms (Coyne 2006; Forrest et al 2004). The weak form is how ID advocates present their views in court, and the strong form is what most ID proponents

discuss with religious audiences (Coyne 2006; David, Dean and Thaxton 1993; Forrest et al 2004). Indeed, ID's strong form is outlined so well in ID's official supplemental science textbook *Of Pandas and People*, that one can trace its arguments back to those made by proponents of creation science (Davis, Kenyon and Thaxton 1993; Forrest et al 2004; Matzke and Scott 2007; New Scientist 2005). Early drafts of *Of Pandas and People*, written before 1987, are identical to the published book except that the phrase "creation science" was replaced with the phrase "intelligent design" (Davis, et al 1993; Forrest et al 2004; Matzke et al 2007; New Scientist 2005). Many of the authors, editors and publishers of *Of Pandas and People* were or are well known proponents of creation science, and simply shifted allegiances from creation science to ID after creation science lost several cases in the Supreme Court (Forrest et al 2004).

If that book, and the shifting loyalties of its authors, editors and publishers, is insufficient to clearly link ID to creation science, the proverbial smoking gun is "The Wedge Document" (Coyne 2006; Forrest et al 2004). The Wedge Document (archived at http://www.antievolution.org/features/wedge.html) is an internal memorandum of the Discovery Institute, a rightwing think tank based in Seattle, Washington, and a center for creation science, ID and TSW propaganda (Coyne 2006; Forrest et al 2004). The document states that the Discovery Institute's primary goal is to debunk scientific materialism and replace it with theistic and specifically Christian convictions (Coyne 2006; Forrest et al 2004).

2.4.2 Court Cases Linking Creation Science To ID To TSW

The evolution from creation science to ID was forced by the following court cases. First, creation science failed to prohibit evolution from being taught in public schools (i.e. Epperson v. Arkansas U.S. Supreme Court 1968; Eve et al 1991; NCSE 2008; Schafersman 2008; Wolf 2008). Then, creation science failed to get "equal time" in public schools because it was ruled to be religion dressed up in a lab coat (i.e. McLean v. Arkansas U.S. District Court 1982; Eve et al 1991; Robinson 2007**;** Schafersman 2008**;** Shermer 2002; Wolf 2008). Finally, it was ruled that "creation science" could not be taught in public schools even along side of evolution because it

promoted supernatural causes (i.e. Edwards v. Aguillard U.S. Supreme Court 1987; Eve et al 1991; Forrest et al 2004; NCSE 2008**;** OYEZ 2008; Schafersman 2008**;** Shermer 2002 and 2006; Wolf 2008).

Proponents of ID and TSW have learned from creation science's mistakes (Forrest et al 2004). Today, they make creationist arguments without using the precise term "god" (Eve et al 1991; Forrest et al 2004). Moreover, unlike proponents of creation science, proponents of ID and those who want to TSW are focusing their efforts specifically towards debunking and/or invalidating evolution by any means possible (Eve et al 1991; Forrest et al 2004).

Due to losing the following court cases, the evolution from ID to TSW is well under way. De facto upheld by the U.S. Supreme Court since it declined to hear the appeal, a case recognized ID to be the equivalent of "creation science" and banned it from being taught in public schools (i.e. Freiler v. Tangipahoa Parish Board of Education U.S. District Court 1997; NCSE 2008; Schafersman 2008; Wolf 2008). Furthermore, ID was ruled to be no more science than its predecessor, creation science (i.e. Kitzmiller, et. al. v. Dover Area School District, et. al. US District Court 2005; Forrest et al 2004; NCSE 2008; Schafersman 2008; Wolf 2008).

Given the legal precedents set by the above mentioned court cases, one would think it would be clear that, no matter how oblique, teaching theological arguments in public school science classrooms is invalid and untenable. However, the fringe groups that comprise creationism refuse to give up. The most recent incarnation of their arguments, TSW, already has a ruling against it being allowed to be taught in public schools (i.e. Rodney LeVake v. Independent School District 656, et al U.S. District Court 2000; NCSE 2008; Schafersman 2008).

To summarize, creation science, ID and TSW are linked by argument, authors, court cases, institutions, publishers, and key concepts, phrases and words (Forest et al 2004). Examples demonstrating this relationship include the transition from "god" to "intelligent creator", the book *Of Pandas and People* and the Discovery Institute, which has been involved

in all three movements (Forrest et al 2004). Therefore, TSW is merely the newest argument made by the Discovery Institute since ID's defeat in court (Forrest et al 2004). The TSW argument represents the same sort of transition ID made when it attempted to separate itself from creation science (Forrest et al 2004). It is yet another sophistic argument made by Christian Fundamentalists trying to violate the First Amendment by camouflaging their religious beliefs as fair, rational and reasonable (Forrest et al 2004).

CHAPTER 3

THEORY

3.1 Attitude Structures

Attitude structures are a facet of social psychology's functional approach (Herek 1987). According to Katz (1960), attitude structures consist of: (1) beliefs, (2) attitudes and (3) behavioral inclinations. Beliefs are a person's ideas regarding what is real and/or true. Attitudes are a person's affective orientation, preference and/or response toward things. Behavioral Inclinations are what a person is inclined to actually do.

Note that the transition from belief and attitude to behavior is nuanced. It may appear that the primary issue regarding this transition relates to causality. However, causality is always preceded by defining the chronological order in which an issue is made salient. Salience overshadows causality because, in order for belief or attitude to determine behavior, one must first have knowledge of the relevant subject. Moreover, whether a person formed their political or religious beliefs first is independent of their motivation to act in defense of their beliefs.

A great example of salience is demonstrated by W.E.B. Du Bois' (2004 [1903]) explanation of double consciousness. His being black was not a salient issue to him until he realized some of his classmates were racist (Du Bois 2004 [1903[). A person can have beliefs that have yet to become attitudes or behavioral inclinations because they have yet to face whatever diversity makes them salient. Of course, as exemplified by racism, attitudes and behavioral inclinations can be motivated by a variety of rational and non-rational formulations.

Attitudes serve four primary functions: (1) utilitarian, (2) social identity, (3) self-esteem maintenance and (4) knowledge (Fazio 1989; Herek 1987; Katz 1960; Shavitt 1989 and 1989 [1990]). The utilitarian function is a disposition towards maximizing rewards and minimizing punishments. The social identity function suggests that an individual has a positive disposition

towards things (e.g. truth claims, social institutions, et cetera) that express/symbolize one's core values and self concept. Self-esteem maintenance is a defense mechanism for coping with internal conflict by distancing the self from threatening others, projecting unacceptable impulses onto others, associating the self with things one considers positive, et cetera (e.g. status politics section 3.3). The knowledge function consists of how one organizes and structures their perceptible environment, and it provides a consistent frame of reference (i.e. world view section 3.4), which allows one to maintain a consistent and simple view of complex issues.

Note that attitudes suggest a person has a variety of reasons to believe what they do. This helps explain why people sometimes have beliefs that appear to contradict one another, yet are quite logical according to them. Moreover, regarding social identity, attitudes emphasize that a person has a variety of private and public identity goals. Because people frequently act differently in various social situations, people will sometimes act in ways that appear or actually are inconsistent with their beliefs. This is important because it helps explain why the beliefs of creationists and evolutionists are not always consistent with their actions.

Consider the following four examples of how the functions of attitude relate to (1) creationists and (2) evolutionists. One, the utilitarian function is exemplified by (1) following god's laws in order to go to heaven or to maintain one's status as a "good Christian," or (2) supporting science because it improves one's living standards and promotes rational understanding. Two, the social identity function is exemplified by using (1) god's moral imperatives or (2) pragmatics, science and skepticism to decide what is right or wrong because that confirms the individual's self-concept as a "spiritual" or "rational" person. Three, the self-esteem function is exemplified by acting positively towards those who do and critically towards those who do not (1) share your belief's regarding god or (2) understand science. Four, the knowledge function is exemplified by organizing experience based on what (1) tradition and scripture dictate or (2) scientific theory and empirical evidence validate. The following table

summarizes the relevance of attitude structures for understanding support for creation or evolution.

Table 3.1 Explanation Of Attitude Functions

	Utilitarian Function	**Social Identity**	**Self-Esteem**	**Knowledge Function**
Dominant features	Maximize rewards, minimize punishments.	Expression of core values and self concept.	Defense mechanism for coping with internal conflict.	Organize and structure one's environment and provide a consistent frame of reference.
Motivations and Implications for Creationist	Follow God's laws to go to heaven.	God's moral imperatives dictate what is right, wrong and what one should strive to be.	Critical of those who do not and positive to those who do share your beliefs regarding God.	Tradition and scripture dictate what is tenable and valid; *Traditionalist (world view).*
Motivations and Implications for Evolutionist	Utilize science to improve living standards and promote understanding.	Pragmatics, science and skepticism decide what is right, wrong and what one should strive to be.	Critical of those who do not and positive to those who do understand science.	Scientific method and research decide what is tenable and valid; *Modernist (world view).*

3.2 Cognitive Sociology

Cognitive sociology is essentially the philosophy of perception (theory [Coren, Enns and Ward 2003]) operationalized for use in social science research. Cognitive individualism (i.e. subjective), cognitive sociology (i.e. intersubjective) and cognitive universalism (i.e. objective) represent a continuum from subjective to objective understandings of human behavior (Zerubavel 1997). Cognitive individualism is a highly personalized and subjective view of the mind positing that a person's thoughts are the products of his or her own unique personal experience and idiosyncratic thought patterns (Zerubavel 1997). Cognitive universalism is a highly universalized and objective view of the mind that posits that a person's thoughts are the products of commonalities and consequentially posits that there is a universal foundation of human cognition (Zerubavel 1997). Cognitive sociology is an intersubjective view of the mind

positing that a person's thoughts are the products of conventional cognitive traditions and consequentially tries to explain why our thinking is different (i.e. individualism/subjective) and similar (i.e. universalism/objective) to the way other people think (Zerubavel 1997).

Because cognitive sociology rejects both cognitive individualism and cognitive universalism, the following three concepts must also be understood to grasp its significance. Mindscapes consist of the mental scenes created through language to bridge the gaps between different individuals' senses and personal experiences (Zerubavel 1997). Thought communities are distinct social worlds in which members share a common perspective or way of thinking (e.g. biology publication for a biologist, church publication for a creationist, freethinker publication for a philosopher, et cetera) (Zerubavel 1997). Optical pluralism is a concept denoting that there are many different lenses, fostered through thought communities, through which one can see or approach any given object or subject (Zerubavel 1997).

Note that the above mentioned concepts have three important points of their own. One, regarding mindscapes, although language is impersonal it is not universal because of semantic variances between thought communities (Zerubavel 1997). Two, because individuals are members of multiple thought communities our individual cognitive makeup tends to be unique (Zerubavel 1997). Three, optical pluralism does not preclude objective reality; it merely suggests that what is correct or true is nuanced (i.e. situational and universal) (Zerubavel 1997). For example, humans universally need protein but some people have restricted diets because of beliefs (e.g. being religious or vegetarian) and/or medical issues (e.g. having allergies, chemical imbalances or enzyme deficiencies).

Consider the following three examples an explanation of how the cognitive sociology relates to (1) creationists and (2) evolutionists. One, people think about things as members of thought communities. For example, whether a person usually looks to (1) religious or (2) academic publications to understand what is going on is significant. Two, conventional cognitive traditions inform how a person feels about a given subject. For example, deciding something is

right or wrong (1) because their preacher told them so or (2) because of established scientific fact is significant. Three, cultural, historical and subcultural cognitive differences explain people's differing conclusions. For example, deciding evolution is (1) "patently unconstitutional" because religious media and non-peer reviewed religious books told them so or (2) deciding evolution is constitutional because of legal precedence and peer reviewed scientific texts is significant. The point is people tend to "hold in higher esteem those who think alike than those who think differently" (Nietzsche and Kaufmann 1977 [1954]). While like-minded constituencies can promote one's self esteem, they limit one's opportunities for self education and exploration. The following table summarizes the difference between cognitive individualism, cognitive sociology and cognitive universalism.

Table 3.2 Explanation Of Cognitive Sociology

Cognitive Individualism	**Cognitive Sociology**	**Cognitive Universalism**
Thinking as individuals.	Thinking as members of Thought Communities.	Thinking as human beings.
Subjectivity. Personal experience.	Intersubjectivity. Conventional cognitive traditions.	Objectivity. Logical inevitability.
Personal cognitive idiosyncrasies.	Cultural, historical and subcultural cognitive differences.	Universal cognitive commonalities.

3.3 Status Politics

Class politics is not equal to status politics. In the tradition of Marx and Weber, class politics refers to the unequal distribution of economic power, material goods and opportunity (Bendix 1962; Eve et al 1996; Gusfield 1986 [1963]). However, Weber rightly concluded that Marx was mistaken when he said economic determination exhausted the conditions of group formation (Bendix 1962). In the tradition of Weber, status politics (i.e. German: *stände*) refers to positive or negative social estimation of honor, influence and power (Bendix 1962; Gusfield 1986 [1963]).

Class politics and status politics can both be ranked hierarchically from high to low. However, hierarchy in status politics is decided by subjective rather than objective means (Gusfield 1986 [1963]). Moreover, status politics cuts across indicators of class politics because

status issues tend to be unrelated to economic or material factors (Eve et al 1996). Therefore class politics and status politics are often called horizontal and vertical social cleavages respectively (Eve et al 1996).

The following illustrates the difference between class politics and status politics. A person who makes $100,000 a year and owns a house will be judged to be higher class compared to a person who makes $20,000 and rents an apartment (i.e. class politics). However, if a person is a Democrat (i.e. status politics), how positively or negatively he or she will be viewed depends on the political affiliations of the perceiver. Additionally, a person can be a Democrat regardless of their income, level of education or social class. In general, class politics focuses on who has more tangible goods while status politics focuses on how the beliefs and opinions of others are valued.

In the tradition of Lipset and Hofstader, conflict and struggle are well established in the analytical apparatus of class and status politics in political science, history and sociology (Gusfield 1986 [1963]). In class politics, conflicts arise over material goals and the aspirations of different social groups (Gusfield 1986 [1963]). In status politics, conflicts arise over status aspirations and discontents (Gusfield 1986 [1963]). In periods of economic recession, class politics are more pronounced, while in periods of relative prosperity, status politics are more pronounced (Gusfield 1986 [1963]). Status politics is characterized by attacks on democratic procedure, hostility to out groups and ultra-dogmatism (i.e. authoritarianism) (Gusfield 1986 [1963]). Status discontents are likely to appear when the prestige accorded to them, as individuals or a group, is perceived as less than that which they expect (Gusfield 1986 [1963]). In short, perceived failure of others to appropriately approve, admire, defer and respect them constitutes an attack on their self-esteem (section 3.1) (Gusfield 1986 [1963]). On a final note, while status politics is often motivated by fear of status decline, it also has to do with a group ensuring that their lifestyle and world view dominate.

Consider the following an explanation of why creationists and evolutionists are

examples of status politics. Creationism is a religious belief system. Evolution is a validated scientific theory. Since many postulates of evolution invalidate many tenets of creation, creationists frequently oppose evolution in education and politics. In regards to social identifiers, creation is related to politics, religion and world view, and evolution is related to politics and world view. Note that evolution is related to understanding rather than level of education, therefore it is not hierarchical and consequentially not class politics. The following table summarizes the difference between class and status politics.

Table 3.3 Explanation Of Status Politics

Politics	**Cleavage**	**Theorist**	**Social Identifier**	**Significance**
Class	Horizontal	Marx	Class, Education, Income, Wealth, et cetera	Hierarchical from high to low
Status	Vertical	Weber	Politics, Religion, World View, et cetera	Cuts across indicators of class

3.4 World View

World view consists of culturally shared symbols, truth claims and concerns over controlling the means of cultural reproduction (Eve et al 1991). Culturally shared symbols include currency, gestures, language, monuments and the meaning of any other social object (Eve et al 1991; Greenberg, Pyszczynski and Solomon 1986). Truth claims decide what you believe about the world (Eve et al 1991). The means of cultural reproduction include any institution utilized to teach the next generation a world view (e.g. familial, educational, political and religious institutions) (Eve et al 1991; Greenberg et al 1986). For this paper's purposes, public school is the most important means of cultural reproduction because it influences the largest number of people. Note that threatened world views will fight to maintain their way of life (Eve et al 1991).

The world view espoused by creationists is cultural traditionalism. Cultural traditionalism is a world view with a symbol system that places great emphasis on authority, tradition, and the revelation of god's truth through the Bible (Eve et al 1991). People espousing this world view perceive morality as an explicitly religious term and tend to consider any exclusion or omission

of god to be offensive (Eve et al 1991). Cultural traditionalists include those who believe truth claims based upon authority, revelation and tradition (Eve et al 1991). Note that while fundamentalists are cultural traditionalists, they are likely a minority of cultural traditionalists because they believe in literal interpretations of religious documents.

The world view espoused by evolutionists is cultural modernism, which grew out of the 18th century Enlightenment. Cultural modernism is a world view with a symbol system that places great emphasis on bureaucracy, humanism, improving the human condition, rationality and hypothesis-testing against observations gleaned from the physical world (i.e. scientific method section 2.1) (Eve et al 1991). People espousing this world view do not perceive morality as an explicitly religious term, and, if they consider religious documents at all, it is tempered with an understanding of the ancient cultural context in which those documents were produced (Eve et al 1991). Cultural modernists are those who prefer truth claims based upon empiricism and scientific method (Eve et al 1991). The following table summarizes the difference between traditional and modern world views.

Table 3.4 Explanation Of Relevant World Views

World Views	**Dominant features**	**Equality/hierarchy**	**Exemplified in paper by**
Traditional	Authority, Religion	Hierarchy based on tradition	Creationists
Modern	Humanism, Empiricism, Scientific Method	Equality based on sameness	Evolutionists

3.5 Significance Of Attitude Structures, Cognitive Sociology, Status Politics And World View

Attitude structures are significant for two reasons. One, status politics, social identity and self-esteem maintenance suggest that most people will attempt to maintain their self-esteem. Since most religions are ethnocentric (e.g. “outsiders are heathens”), to some degree they lose status in today’s increasingly polarized culture. While there are more conservative Christians, there are also a record number of agnostics and atheists. In this sense attitude can be seen as a primary motivation for creationists acting out against evolutionists. Two, certain attitude structures are central components of a world view, which support the knowledge

function of the world view. Thus, a world view is the frame of reference people use to organize and structure their understanding of events.

Attitude structures state that salience overshadows causality regarding the relationship between beliefs, attitudes and behavioral inclinations. Cognitive sociology states that an individual's mindscapes are informed by their thought communities. World view states that cultural traditionalists (creationists) and cultural modernists (evolutionists) accept different truth claims. Status politics states that inter-group controversy unrelated to economic and material factors results from perceived disrespect and threats to a way of life. The proposed relationship can be understood as (1) semantic biases and (2) perceived threat.

Regarding semantic biases, people who are members of multiple religious groups (i.e. social identity/thought communities sections 3.1 and 3.2) are likely to be creationists. People who are members of multiple scientific groups (i.e. social identity/thought communities sections 3.1 and 3.2) are likely to be evolutionists. As such each group will differ regarding how they define and use language (i.e. semantics; mindscape section 3.2); therefore each group may define any given situation differently (i.e. knowledge function/world view sections 3.1 and 3.4). For example, scientists define evolution as a theory (i.e. not a guess or hunch) while creationists define evolution as a belief system or theology and consequentially challenge it in court because it "clearly" violates the First Amendment (refer to section 2.4.2 for court cases that explore this point). Because they define the situation differently, one group accepts what the other group vehemently rejects. Thus, creationist media (i.e. social identity/thought communities/world view sections 3.1, 3.2 and 3.4) perpetuate views that suggest evolution is controversial, invalid, et cetera and that teaching creation is legal, scientifically valid, et cetera, despite the fact neither pro-creationist position is tenable.

Regarding perceived threats, an increasing number of people and institutions accept methodological, statistical and/or scientific explanations for and as responses to political and social problems. A byproduct of evaluating a situation is at least the de-emphasis of theological

and traditional explanations and responses. For cultural traditionalists (creationists) this calls into question many of their deeply held beliefs. Therefore, cultural traditionalists perceive this as a threat to the prominence and respectability of their religion (i.e. maintenance of self-esteem/world view sections 3.1 and 3.4).

In order to maintain and sustain a world view, it must be passed from generation to generation (i.e. social identity section 3.1). Therefore ensuring that public education and social institutions (i.e. the means of cultural reproduction section 2.1 and 3.4) confirm a given world view's beliefs is important. From recent court battles, it should be clear that creationists perceive the U.S. public education system to favor evolution over creation, at least in science classrooms. This is a status politics motive for the creation-evolution controversy that is unrelated to distribution of economic power, material goods or opportunity.

3.6 How The Above Mentioned Theories Will Be Used To Make Predictions And Hypotheses

To summarize how the above mentioned theories relate, consider the following. Status politics arise when a group feels threatened (i.e. self-esteem function section 3.1) (Eve et al 1991). Cultural traditionalism's influence has gradually declined as consumerism, materialism, rationalism, secularism and urbanization have increased. At the same time, cultural modernism's influence has gradually increased. Therefore cultural traditionalism perceives itself to be a threatened world view and cultural modernism is seen as the center of that change (i.e. mindscape section 3.2). Creationists are attempting to reassert dominance by protecting the cultural means of reproduction (e.g. public schools) from evolutionary views (Eve et al 1991; Forrest et al 2004). That distinction is significant because it means creationists' primary motivations are status (i.e. world view section 3.4) rather than class (i.e. economic) issues. Therefore, creationism cannot be adequately described or understood in class political terms (Eve et al 1991).

To demonstrate the relevance of status politics and world view to the creation-evolution controversy, evidence of a dichotomy between creationists and evolutionists on most

hypotheses should be found. Finding evidence of such a dichotomy would indicate that creationists and evolutionists have divergent beliefs and opinions, as status politics and world view would predict.

This theoretical model consists of three points. One, creationists are cultural traditionalists and evolutionists are cultural modernists. Two, creationists and evolutionists are likely to be intolerant towards teaching or accepting the other group's viewpoint. Three, rejection of science is an important aspect of creationism and cultural traditionalism. Verifying these points is important because they underline how the creation-evolution controversy can be understood in terms of status politics and world view.

Figure 3.1 Theoretical Model Of Relationship Between Variables

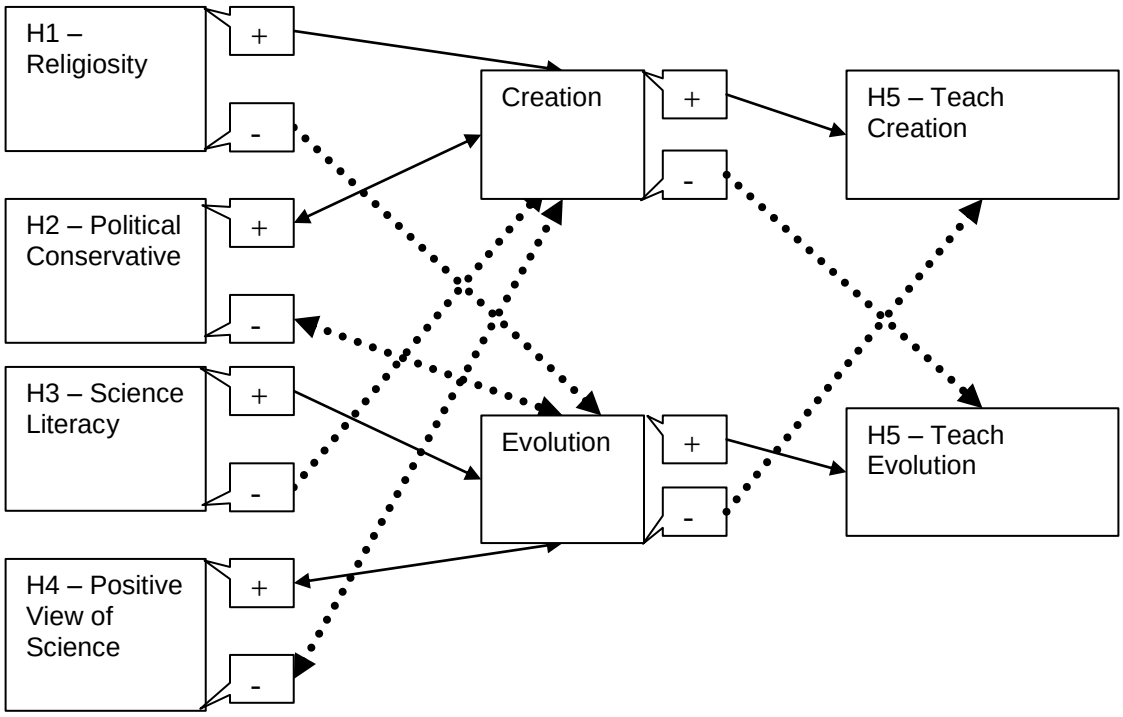


Figure 3.1 depicts the theoretical model that guides the analysis of this thesis. Note that the dotted lines represent negative relationships. Based on this model, the data should show that cultural traditionalists are more religious, more politically conservative, less science literate, more negative regarding their views of science and intolerant of the opposing view being taught

in public school. The opposite should be found in cultural modernists on all points except possibly the one regarding intolerance. To confirm the first point, data should demonstrate that creationists and evolutionists to hold the same views cultural traditionalists and cultural modernists hold, respectively. There may be a deviation from the dichotomy model just suggested. Since there is supposed to be controversy between creationists and evolutionists, it would be inconsistent to find that only creationists or evolutionists are intolerant of the opposing view being taught. Thus, to confirm the second point, data should demonstrate creationists and evolutionists are both intolerant of one another.

Note that Hypotheses 3, 4 and 5 are all related to rejecting science. If creationists have low science literacy, negative views of science and are intolerant of evolution being taught in public school, then there is a strong argument for rejection of science being a prominent feature of creationist thinking. Furthermore, this will solidify the link between creationism and traditionalism in the current data set. However, the relevance and strength of this argument will be questionable if evolutionists do not have a dichotomous pattern on at least Hypotheses 3 and 4.

On a final note regarding this argument, the relevance of status politics is assumed by this research model because creationists, evolutionists, cultural traditionalists and cultural modernists can come from any level of class, education, income, et cetera. Therefore, if the politics scale proves to be insignificant, then the argument that creationists are cultural traditionalists and evolutionists are cultural modernists is weakened. It does not negate the relevance of status politics in any way.

3.7 Further Elaboration Of Hypotheses

3.7.1 Status Politics And Religiosity

Confirming what has already been said about status politics, acceptance of evolution among cultural traditionalists is unrelated to income, education and other social indicators; however it is related to religiosity (Eve et al 1994). Pulling from world view, it would be

interesting to see if there is an opposite trend in evolutionists. Since creationists believe truth claims based upon authority, revelation and tradition and cultural modernists believe truth claims based upon empirical and replicable results (i.e. scientific method section 2.1), it is logical that evolutionists might express lower levels of religiosity, at least when compared to creationists. From this series of postulates, Hypothesis 1 (i.e. Respondents with high levels of religiosity are more likely to be creationists than evolutionists) is derived.

Key ideas suggested from research on attitude structures apply to the proposed relationship between status politics and religiosity. Specifically, since salience is more important than causality, the proposed model is not oriented towards suggesting causality. Instead, it is oriented towards identifying issues of salience, such as pointing out that creationists and evolutionists can be identified by their differing political and religious beliefs.

3.7.2 "Moral Majority" And Status Politics

As explained in the introduction, though the "Moral Majority" as a SMO has ceased to be a significant political force, the conservative politics that gave rise to it still exist in other SMOs. In past studies creationism and the "Moral Majority" were correlated (Eve et al 1986). From this postulate, Hypothesis 2 (i.e. Respondents who are highly politically conservative are more likely to be creationists than evolutionists) is derived. The point is to see if creationism can still be identified via politics as status politics would predict.

3.7.3 Creationists And Science Literacy

As explained in section 1, evolutionists are prone to incorrectly assume that those who disagree with their scientific views do so because of individual preferences like politics or religiosity (Alters 2005; Bybee 2004; NAS 1998). On a similar note, Eve and Harrold (1986, 1991, 1993, 1994 and 1995) repeatedly suggest that anti-evolution propaganda may be more readily accepted by those with little actual understanding of what evolution really is. Therefore, we must decipher whether a lack of scientific education explains the divide between creationism and evolutionism.

Confirming that creationists have low science literacy levels is important. Data results could suggest creationists cannot be effectively argued with because they ignore or misinterpret (e.g. fail to learn or reject) and are consequentially ignorant of what they disagree with. Consequently, they do not understand what constitutes science or a scientific argument in the first place. From these postulates, Hypothesis 3 (i.e. Respondents with high levels of science literacy are more likely to be evolutionists than creationists) is derived.

3.7.4 Rejection Of Science May Be The Most Salient Issue In The "Controversy" Between Creationists And Evolutionists

As stated previously, creationists often reject any scientific conclusion that is contradictory to what they believe (i.e. self-serving bias section 6.3) (Eve et al 1994; Eve et al 1995; Kehoe 1995). For example, despite decades of being struck down in U.S. high courts for unconstitutionality, 55% of creationists still support teaching creation in public schools (Eve et al 1986; Forrest et al 2004). Therefore, establishing the relationship between creation, negative views of science and intolerance is important (Kehoe 1995).

A few of the central tenets creationists believe in are: (1) an intelligent creator (e.g. god), (2) a young earth, (3) the fossil record not containing evidence of transitional species (i.e. there is no evidence for evolution of species), (4) micro-evolution being valid and macro-evolution being invalid (i.e. evolution between "kinds" is valid but evolution beyond species boundaries is not), and (5) irreducible complexity (Discovery Institute 2008; Eve et al 1994; Forrest et al 2004; Matzke et al 2007; Religious Tolerance 2007; Shermer 2006; TBSC 2008). The consensus of mainstream scientists is that creationists make a poor case (Eve et al 1991; Forrest et al 2004). As explained in section 2.1, the first argument is a non-scientific claim (refer to scientific method section 2.1). The latter four are flatly contradicted by scientific evidence (Crawford and Dodge 1969; Dieckmann 2003; Forrest et al 2004; Shermer 2006; Shubin 2006; Steenhuysen 2008).

This illustrates that, because they reject science in general, creationists are often unable to make or evaluate the validity of a scientific argument. In other words, they make

arguments like irreducible complexity and then ignore or misinterpret the scientific evidence contradictory to their arguments (Dawkins 2006; Dennett 2006; Eve et al 1995; Forrest et al 2004; Kauffman 2006). Rather than accepting that they are wrong, many creationists use such "evidence" to argue that there is widespread "controversy" regarding widely accepted scientific facts and theories, especially regarding evolution (Dennett 2006; Eve et al 1995; Forrest et al 2004).

This group of postulates is particularly fertile ground. Two hypotheses have been derived from these observations. Hypothesis 4: Respondents with a positive view of science are more likely to be evolutionists than creationists. Hypothesis 5a: The stronger a respondent's belief in evolution, the less tolerant they are of creation being taught in public schools. Hypothesis 5b: The stronger the respondents belief in creation, the less tolerant they are of evolution being taught in public schools.

3.8 Hypotheses And How They Relate To One Another

It will be remembered that this paper's five hypotheses are as follows.

Hypothesis 1: Respondents with high levels of religiosity are more likely to be creationists than evolutionists.

Hypothesis 2: Respondents who are highly politically conservative are more likely to be creationists than evolutionists.

Hypothesis 3: Respondents with high levels of science literacy are more likely to be creationists than evolutionists.

Hypothesis 4: Respondents with a positive view of science are more likely to be creationists than evolutionists.

Hypothesis 5a: The stronger a respondent's belief in evolution, the less tolerant they are of creation being taught in public schools.

Hypothesis 5b: The stronger the respondent's belief in creation, the less tolerant they are of evolution being taught in public schools.

Hypotheses 1 and 2 explore the relationship between creationists and evolutionists, and establish to which world view each adheres. Hypothesis 3 explores how education is related to rejection of science. Hypotheses 4 and 5 explore what sort of controversy exists between the two world views (i.e. cultural traditionalists versus cultural modernists section 3.4).

The proposed model will prove the salience of attitude structures and cognitive sociology for the following four reasons. One, the majority of questions found in the North Lake College (hereafter NLC) questionnaire (listed in section 4.4) measure people's affective orientations (i.e. attitudes section 3.1) towards a given subject. Two, world view and the knowledge function are synonymous in that both provide frames of reference, organization and structure to one's environment. Three, because mindscapes define situations semantically, they can be understood in terms of why one would reject a theory and embrace a certain world view. Four, because thought communities emphasize how people think individually and in groups, they can be understood in terms of why one would adopt controversial thinking and embrace a certain world view.

CHAPTER 4

METHODOLOGY

4.1 Clarifying Statement Of Focus

This paper uses a modified version of the questionnaire (see Appendix A) found in the Appendix of Eve and Harrold's (1995) book, *Cult Archeology and Creationism*. To facilitate a diachronic comparison, the original questionnaire is followed as closely as possible. However, this paper is focused on explaining why people answer as they do in the current data; therefore, if any diachronic comparison of current to previous data is made, it will be part of a separate project.

The current sample consists of community college (e.g. certificate or 2 year) students, whereas all previous data samples consisted of university (e.g. 4+ year) students. Therefore, this sample's data cannot be directly compared to previous data without a similar sample of university students for existing data to be compared to first. While no such data set exists, a survey project is currently under way at the University of Texas at Arlington that may provide such a data set, thus allowing a diachronic research project to be made at a later time.

4.2 Defining And Exploring The Population And Sample

This paper's population consists of students from NLC, a Dallas County Community College District (hereafter DCCCD) campus. Only students available at Student Program And Resources (hereafter SPAR) sanctioned events were surveyed. All sanctioned events took place at NLC's main campus and were listed on the SPAR calendar. In 2007, NLC (2008) had 9,314 students – 46.8% male and 53.2% female. NLC's (2008) median student was 21-25 years old, and the campus was comprised of 14.9% African American, 0.5% American Indian, 11.4% Asian/Pacific Islander, 40.4% Caucasian, 24.5% Hispanic and 8.3% other/unspecified. This paper's data sample contains 348 cases. All respondents are NLC students, speak English, are

least 18 years old and filled out an informed consent form.

According to table 4.1, this paper's sample does not significantly deviate from NLC's population on age, race or sex. The only apparent discrepancy is the sample's median age. Since NLC does not provide a detailed numerical breakdown of data, this discrepancy can only be addressed in the following manner. In data analysis programs like SPSS, different frequencies can be found by breaking down age categories in different ways. NLC uses the age category 21-25, whereas the sample's questionnaire uses the age categories 18-22 and 23-25 (Table 4.2). Therefore, the conflicting results may simply be a matter of conflicting operationalization.

According to table 4.3, there are 97 valid cases in the high creation subset. The median age of 18-25 (81.4%) follows the same trend found in the sample. An unexpectedly high percentage of African Americans (26.8% versus 11.24% in the sample) appear to be in the high creation subset. An unexpectedly high percentage of Asian/Pacific Islanders (29.36% versus 17% in the sample) appear to be in the high evolution subset. A high percentage of females (58.76% versus 51.15% in the sample) appear to be in the high creation subset. An unexpectedly high percentage of males (58.72% versus 47.41% in the sample) appear to be in the high evolution subset.

The high creation subset represents (97) 27.9% of the aggregate sample (348 100.0%). The high evolution subset represents (109) 31.3% of the aggregate sample. When these two subsets are combined, they represent (206) 59.2% of the sample. While neither subset dominates our sample, the two combined constitute a majority of the sample. That majority could suggest a polarity consistent with our creation-evolution controversy model (section 3.6).

Table 4.1 Comparing NLC's Population To Sample

		NLC Population	NLC Sample
Number of Cases		9,314	348
Median	Age	21-25 (No Data on %)	18-22 (71.6%)

Table 4.1 - *Continued*

Mean	Race	14.9% African American 0.5% American Indian 11.4% Asian/Pacific Islander 40.4% Caucasian 24.5% Hispanic 8.3% other/unspecified	11.24% African American 2.02% American Indian 17% Asian/Pacific Islander 39.48% Caucasian 25.36% Hispanic 5.19% other/unspecified
Mean	Sex	46.8% male 53.2% female	47.41% male 51.15% female 1.44% missing

Table 4.2 SPSS Age Output For Sample

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-22	249	71.6	71.6	71.6
	23-25	42	12.1	12.1	83.6
	26-29	17	4.9	4.9	88.5
	30-39	19	5.5	5.5	94.0
	40+	21	6.0	6.0	100.0
	Total	348	100.0	100.0	

Table 4.3 Comparing NLC Sample Subsets: High Levels Of Belief In Creation To Evolution

		High Creation	High Evolution
Number of Cases		97	109
Median	Age	18-25 (81.4%)	18-25 (78.9%)
Mean	Race	**26.8% African American** 2.06% American Indian **10.31% Asian/Pacific Islander** 38.14% Caucasian **19.59% Hispanic** 2.1% other/unspecified 1.03% missing	**3.67% African American** 1.83% American Indian **29.36% Asian/Pacific Islander** 41.28% Caucasian **16.51% Hispanic** 7.34% other/unspecified 0.00% missing
Mean	Sex	39.16% male **58.76% female** 2.06% missing	**58.72% male** 38.53% female 2.75% missing

4.3 Questionnaire

This paper's questionnaire utilizes a 5-answer Likert-type scale (strongly agree, agree, undecided/the evidence is inconclusive, disagree and strongly disagree). It does not ask for any information usable to identify respondents. However, due to requirements by NLC's Institutional

Review Board (hereafter IRB), the survey contains a signed consent form. After keeping the consent forms for 3 years (i.e. 11/01/2012), as legally required, they will be destroyed.

4.4 Hypotheses, Variables And Survey Questions

4.4.1 What Is The Relationship Between Creationists And Evolutionists In Terms Of Their World View?

4.4.1.1 Hypothesis 1: Respondents With High Levels Of Religiosity Are More Likely To Be Creationists Than Evolutionists

Creation is defined in the same way it was in section 2.2. Creation is measured by three of the eight questions found in chapter five of *Cult Archeology and Creationism* (Hudson 1995). All included questions were identified as reliable measures of creation (Eve et al 1986). The "creation" scale is composed of the following questions: (1) Adam and Eve, the first human beings, were created by God, (2) Everything written in the Bible is literally true, and (3) The Bible's account of creation should be taught in public schools as an explanation of origins.

Evolution is defined in the same way it was in section 2.3. Since the 1859 (1979) publication of *On the Origin of Species* by Charles Darwin, despite having been tested for close to 150 years, the theory of evolution has yet to be refuted, although it certainly has been clarified and updated in that time (Forrest et al 2004; Sulloway 2006). Like creation, evolution is measured by three of the five questions found in Chapter five of *Cult Archeology and Creationism* (Hudson 1995). The "evolution" scale is composed of the following questions: (1) The world is at least 4 billion years old, (2) The theory of evolution correctly explains the development of life on earth, and (3) The theory of evolution should be taught in public schools as an explanation of origins.

Note that question one is rephrased. The original form of question one is: "The world is between 4 and 5 billion years old" (Eve et al 1995). The question was rephrased to be open ended because the original phrasing may discourage some people from answering affirmatively.

Religion is a social institution designed to provide a shared, collective way of dealing with the unknown and unknowable aspects of life, death and the difficult dilemmas that arise in

the process of making moral decisions (Johnson 2000). Religiosity is the degree to which one believes in and is involved with a formal religion, or at least as a strong belief in a supernatural power or powers that control the unknown and unknowable aspects of life, death, et cetera (Johnson 2000; Merriam-Webster 2008). The “religiosity” scale is composed of three questions found in the original "Student Opinion Questionnaire" found in the Appendix of *Cult Archeology and Creationism* (Eve et al 1995). Religiosity will be measured by a scale comprised of the following questions: (1) On a scale of 1-10, how important is religion in your life?, (2) About how often do you attend church per month?, and (3) How often do you pray on an average every week?

Note that measuring religiosity precludes an error-proof method of measurement. Regarding question two, some people may attend church more often to date, meet with friends, et cetera, rather than out of piety, which is what this scale aims to measure.

4.4.1.2 Hypothesis 2: Respondents Who Are Highly Politically Conservative Are More Likely To Be Creationists Than Evolutionists

Creation and evolution are defined and operationalized the same way they were in sections 2.2, 2.3 and 4.4.1.1.

Politics is the power base of a state that specializes in activities involving collective conflict and its resolution (Bealey and Johnson 1999). Politics is (1) oriented towards running most governmental institutions on short and long terms scales, and (2) oriented towards allegiances and opinions. In other words, politics plans facets of how we act (legality), how we distribute resources (bureaucracy), and our stance towards domestic and foreign affairs (diplomacy) (Bealey et al 1999).

Political attitudes range from conservative to liberal (Bealey et al 1999). Conservatives are people who generally value authority, law, order, pragmatism, security, strong leadership and military, tradition, and have a predisposition against change because its implications can not accurately be predicted (Bealey et al 1999). Liberals are people who value autonomy, freedom, individuality, human rights, progressivism, rationalism, utilitarianism, and have a

predisposition towards change because static models do not improve (Bealey et al 1999). Politics are measured by four of the five questions found in the original "Student Opinion Questionnaire" found in the Appendix of *Cult Archeology and Creationism* (Eve et al 1995). The “Politics” scale is composed of the following questions: (1) Which of the following best describes your political philosophy?, (2) A woman should have the right to birth control at any age, (3) Sex education should be taught in public schools, and (4) A woman should have the right to a legal abortion.

Note that the former Moral Majority scale is included in this paper’s politics scale. The SMO known as the “Moral Majority” has been subsumed into conservative politics in general (Eve et al 1986; Eve et al 1986). However the public sentiment that gave rise to said SMO still exists even though the SMO itself no longer does. For these reasons, the former “Moral Majority” scale, which included opposing sex education and opposing abortion, has been included in the status politics scale on the conservative end of the spectrum. Current SMO's that share aspects of the Moral Majority's views include: Focus on the Family, The Religious Round Table and The 700 Club.

4.4.2 How Is Education Related To The Rejection Of Science?

4.4.2.1 Hypothesis 3: Respondents With High Levels Of Science Literacy Are More Likely To Be Evolutionists Than Creationists

Creation and evolution are defined and operationalized the same way they were in sections 2.2, 2.3 and 4.4.1.1.

What constitutes a fact and scientific method are defined in section 2.1. Science literacy is a respondent’s knowledge of scientific fact (e.g. what constitutes scientific method) (Merriam-Webster 2008). Science literacy is operationalized as a series of questions and true or false statements intended to estimate how aware and/or knowledgeable of science an individual respondent is. Science literacy is measured by the same fourteen questions and true or false statements found in the original "Student Opinion Questionnaire" located in the Appendix of *Cult Archeology and Creationism* (Eve et al 1995).

The “science literacy” scale is composed of the following questions: (1) How long does it take the earth to go around the sun?, (2) If a coin is tossed, the probability that it will land “heads up” is one half. In four successive tosses, a coin lands “heads up” each time. What is most likely to happen when the coin is tossed a fifth time?, (3) The earth revolves around the sun, (4) Radioactive milk can be made safe by boiling it, (5) The earliest humans lived at the same time as the dinosaurs, (6) Human beings, as we know them today, developed from earlier species of animals, (7) The continents on which we live have been moving their location for millions of years and will continue to move in the future, (8) Antibiotics kill viruses as well as bacteria, (9) Electrons are smaller than atoms, (10) Lasers work by focusing sound waves, (11) It is the father’s gene that decides whether the baby is a boy or a girl, (12) The oxygen we breathe comes from plants, (13) All radioactivity is man-made, and (14) The center of the Earth is very hot.

4.4.3 Can The Relationship Between Creationists And Evolutionists Be Explained By Education?

4.4.3.1 Hypothesis 4: Respondents With A Positive View Of Science Are More Likely To Be Evolutionists Than Creationists

Creation and evolution are defined and operationalized the same way they were in sections 2.2, 2.3 and 4.4.1.1.

As explained in section 2.1, science consists of knowledge formed by facts and theories which are the result of formal systemized investigation undertaken in order to support hypotheses and form general laws (Barrows 2001). View of science is a scale intended to assess how positive or negative a respondent’s views of science (e.g. scientific method section 2.1) are (Merriam-Webster 2008). The “view of science” scale is composed of three questions found in the original "Student Opinion Questionnaire" found in the Appendix of *Cult Archeology and Creationism* (Eve et al 1995). The “view of science” scale is composed of the following questions: (1) The decline of spiritual values in American life is largely due to the spread of science and technology, (2) Science is too expensive, and (3) Science makes our way of life

change too fast.

4.4.3.2 Hypothesis 5a: The Stronger A Respondent's Belief In Evolution, The Less Tolerant They Are Of Creation Being Taught In Public School

Creation and evolution are defined and operationalized the same way they were in sections 2.2, 2.3 and 4.4.1.1.

Tolerance is a series of variables intended to measure how indulgent or sympathetic a respondent is regarding beliefs or practices differing from their own (Merriam-Webster 2008). The idea is simple: if people are willing to accept a given ideation in schools (i.e. means of cultural reproduction sections 2.1 and 3.4), it should be readily accepted elsewhere. Tolerance is measured by three questions found in the original "Student Opinion Questionnaire" located in the Appendix of *Cult Archeology and Creationism* (Eve et al 1995). Tolerance is composed of the following questions: (1) The theory of evolution should be taught in public schools as an explanation of origins, (2) The theory of evolution and the Bible's account of creation should both be taught in public schools as explanations of origin and let the student decide what they believe, and (3) The Bible's account of creation should be taught in public schools as an explanation of origins.

Note that Tolerance is not a scale because the creation and evolution scales each include the above mentioned question regarding teaching their view of origins in public school. Were this scale permitted results would be unreliable due to singularity (i.e. identical variables).

4.4.3.3 Hypothesis 5b: The Stronger A Respondent's Belief In Creation, The Less Tolerant They Are Of Evolution Being Taught In Public School

Details explained in section 4.4.3.2.

4.5 Procedure Of Analysis

Data were analyzed with SPSS 17.0 statistical analysis software. Chronbach's alpha (α) was the test of internal consistency reliability used to test all scales and variables (Field 2005; Garson 2009; George and Mallery 2006; Gray and Kinnear 2006 and 2008; Lolonde, Zummerman and Zumbo 1993). Gamma (G), Kendall's tau-b (tau-b) and Kendall's tau-c (tau-C)

were the tests of significance used to explore the strength and direction of relationships because all variables and scales are at least ordinal (Babbie 2007; Field 2005; Frankfort-Nachmias, and Leon-Guerrero 2002; George et al 2006; Gray et al 2006 and 2008; Healey 2005; Norušis 2005). Gamma was used on hypothesis 1 regarding creation only, hypothesis 3 regarding evolution only, and on all of hypothesis 2 and 4. Tau-b was used on hypothesis 1 regarding evolution only and on hypothesis 3 regarding creation only. Tau-c was used on all of hypothesis 5. All hypotheses and Likert-type scales were derived from previous literature (Eve et al 1986, 1994 and 1995) and verified independently (Babbie 2007; Outhwaite and Turner 2007; Wysocki 2004).

Gamma is invalid, or at least highly suspect, when 0 appears in the corner of a table (Gray et al 2006 and 2008; Norušis 2005). In such cases Kendall's tau-a, tau-b or tau-C should be used instead (Gray et al 2006 and 2008; Norušis 2005). Kendall's tau-a is only used to identify pairs so expounding the subject is irrelevant to this analysis (Gray et al 2006 and 2008; Norušis 2005). Kendall's tau-b is used when a table has an equal number of rows and columns (i.e. is a square) (Gray et al 2006 and 2008; Norušis 2005). Kendall's tau-c is used when a table has an uneven number of rows and columns (i.e. rectangular but not a square) (Gray et al 2006 and 2008; Norušis 2005).

Unless otherwise noted, all scales were similar to the following eight-variable example. This paper's scales are built with questions similar to the Likert-scale. Each variable in the scale has five categories. Thus each variable can contribute 1 to 5 points towards the scale. In such a scale, 30-40 points is high (e.g. pro-creation), 19-29 points is medium (e.g. neutral) and 8-18 is low (e.g. pro-evolution).

Finally, here is an example question coding: A) Agree strongly = 5, B) Agree somewhat = 4, E) Undecided; the available evidence is inconclusive = 3, C) Disagree somewhat = 2, and D) Disagree strongly = 1. The remaining category, F) Never heard of it/don't know enough to have an opinion, is excluded (system missing in SPSS). Said respondents are identifying that

they have no opinion because they are unaware of or unwilling to discuss the subject. The number, percentage and significance of responses excluded in this manner are discussed in section 6.4 and appendix b.

CHAPTER 5

DATA ANALYSIS

5.1 What Is The Relationship Between Creationists And Evolutionists, And Which World View Does Each Adhere To?

5.1.1 Hypothesis 1: Respondents With High Levels Of Religiosity Are More Likely To Be Creationists Than Evolutionists

According to tables 5.1 and 5.2, religiosity's chronbach's standardized alpha (hereafter α) (=0.808) demonstrates a high level of internal consistency reliability. According to tables 5.3 and 5.4, creation's α (=0.715) demonstrates a good level of internal consistency reliability. According to tables 5.5 and 5.6, evolution's α (=0.664) demonstrates an acceptable level of internal consistency reliability.

As seen in tables 5.7, 5.8 and 5.9, when the religiosity and creation scales are analyzed in cross-tabular analysis, 281 (80.7%) of 348 cases are found to be valid. Since the 2 scales are comprised of 6 questions and an excluded answer on any question invalidates the case, an invalidation of 67 (19.3%) cases is surprisingly low. Religiosity and creation's gamma coefficient (=0.711) suggests a strong association and direct relationship. Religiosity and creation's cross-tabular analysis reveal a clear cut case of same order pairs. Those who score high on pro-creation have a strong tendency to be religious.

As seen in tables 5.10, 5.11 and 5.12, when religiosity and evolution scales are analyzed in cross-tabular analysis, 192 (55.2%) of 348 cases are found to be valid. Since the 2 scales are comprised of 6 questions and an excluded answer on any question invalidates the case, an invalidation of 156 (44.8%) cases is within acceptable parameters. Religiosity and evolution's tau-b (=-0.356) suggests a moderate association and inverse relationship. Religiosity and evolution's cross-tabular analysis reveal a negative skew. Those who score high on pro-evolution have a moderate tendency to not be religious.

To conclude the discussion of hypothesis 1, the sample demonstrates the creation scale has a strong direct and the evolution scale has a moderate inverse relationship with religiosity. Those who score high on pro-creation tend to be more religious than those who score high on pro-evolution. The results support the hypothesis that respondents with high levels of religiosity are more likely to be creationists than evolutionists.

Table 5.1 Religiosity: SPSS Derived α

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.807	.808	3

Table 5.2 Religiosity: SPSS Derived Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Importance of religion	5.6565	5.293	.725	.534	.659
Church Attendance	7.0790	6.835	.574	.334	.816
Frequency of Prayer	5.7812	4.915	.688	.502	.706

Table 5.3 Creation: SPSS Derived α

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.715	.715	3

Table 5.4 Creation: SPSS Derived Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Adam And Eve	5.8048	7.106	.525	.277	.637
Bible Literally True	6.7329	6.691	.555	.309	.600
Teach Creation	6.6678	7.336	.524	.276	.640

Table 5.5 Evolution: SPSS Derived α

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.672	.664	3

Table 5.6 Evolution SPSS Derived Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
World's Age	7.1244	6.729	.344	.130	.736
Explains Life On Earth	7.7861	3.919	.610	.387	.391
Teach Evolution	7.4677	4.550	.537	.342	.504

Table 5.7 Religiosity And Creation: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Religiosity Scale * Creation Scale	281	80.7%	67	19.3%	348	100.0%

Table 5.8 Religiosity And Creation: SPSS Derived Crosstabulation

		Creation Scale			
		Low	Moderate	High	Total
Religiosity Scale	Low	**40**	25	2	67
		59.7%	37.3%	3.0%	100.0%
	Moderate	23	**61**	36	120
		19.2%	**50.8%**	30.0%	100.0%
	High	4	35	**55**	94
		4.3%	37.2%	**58.5%**	100.0%
Total		67	121	93	281
		23.8%	43.1%	33.1%	100.0%

Table 5.9 Religiosity And Creation: SPSS Derived G

	Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal Gamma	.711	.047	11.655	.000
N of Valid Cases	281			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 5.10 Religiosity And Evolution: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Religiosity Scale * Evolution Scale	192	55.2%	156	44.8%	348	100.0%

Table 5.11 Religiosity And Evolution: SPSS Derived Crosstabulation

		Evolution Scale			Total
		Low	Moderate	High	
Religiosity Scale	Low	0	13	**36**	49
		0.0%	26.5%	**73.5%**	100.0%
	Moderate	7	29	**52**	88
		8.0%	33.0%	**59.0%**	100.0%
	High	**19**	**20**	16	55
		34.5%	**36.4%**	29.1%	100.0%
Total		26	62	104	192
		13.5%	32.3%	54.2%	100.0%

Table 5.12 Religiosity And Evolution: SPSS Derived Tau-B

	Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal Kendall's Tau-B	-.356	.057	-5.920	.000
N of Valid Cases	192			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

5.1.2 Hypothesis 2: Respondents Who Are Highly Politically Conservative Are More Likely To Be Creationists Than Evolutionists

As seen in tables 5.13 and 5.14, politics' standardized α (=0.557) demonstrates a minimally acceptable level of internal consistency reliability.

As seen in tables 5.15, 5.16 and 5.17, when status politics and creation scales are analyzed in cross-tabular analysis, 275 (79.0%) of 348 cases are found to be valid. Since the 2 scales are comprised of 7 questions and an excluded answer on any question invalidates the case, an invalidation of 73 (21.0%) cases is surprisingly low. Status politics and creation's gamma coefficient (=0.363) suggests a moderate association and direct relationship. Status politics and creation's cross-tabular analysis reveal a positive skew. Those who score high on pro-creation have a moderate tendency to be politically conservative.

As seen in tables 5.18, 5.19 and 5.29, when status politics and evolution scales are analyzed in cross-tabular analysis, 189 (54.3%) of 348 cases are found to be valid. Since the 2 scales are comprised of 7 questions and an excluded answer on any question invalidates the cases, an invalidation of 159 (45.7%) cases is within acceptable parameters. Status politics and evolution's gamma coefficient (=-0.613) suggests a strong association and inverse relationship. Status politics and evolution's cross-tabular analysis reveal a negative skew. Those who score high on pro-evolution have a strong tendency to be politically liberal.

To conclude the discussion of hypothesis 2, the sample demonstrates the creation scale has a moderate direct and the evolution scale has a strong inverse relationship with politics. Those who score high on the pro-creation are more politically conservative than those who score high on pro-evolution. Therefore the results support the hypothesis that respondents who are highly conservative politically are more likely to be creationists than evolutionists.

Table 5.13 Politics: SPSS Derived α

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.555	.557	4

Table 5.14 Politics: SPSS Derived Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Politics	6.1850	9.497	.220	.050	.577
Sex Education	7.5204	10.244	.324	.114	.509
Legal Abortion	6.6176	6.860	.441	.209	.385
Birth Control	6.7429	7.613	.408	.191	.421

Table 5.15 Politics And Creation: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Status Politics Scale * Creation Scale	275	79.0%	73	21.0%	348	100.0%

Table 5.16 Politics And Creation: SPSS Derived Crosstabulation

		Creation Scale			Total
		Low	Moderate	High	
Status Politics Scale	Liberal	**53**	**61**	46	160
		33.1%	**38.1%**	28.8%	100.0%
	Moderate	8	**53**	30	91
		8.8%	**58.2%**	33.0%	100.0%
	Conservative	2	8	**14**	24
		8.3%	33.3%	**58.4%**	100.0%
Total		63	122	90	275
		22.9%	44.4%	32.7%	100.0%

Table 5.17 Politics And Creation: SPSS Derived G

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Gamma	.363	.085	4.065	.000
N of Valid Cases		275			

Table 5.17 - *Continued*

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 5.18 Politics And Evolution: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Status Politics Scale * Evolution Scale	189	54.3%	159	45.7%	348	100.0%

Table 5.19 Politics And Evolution: SPSS Derived Crosstabulation

		Evolution Scale			
		Low	Moderate	High	Total
Status Politics Scale	Liberal	12	28	**88**	128
		9.4%	21.9%	**68.7%**	100.0%
	Moderate	6	**26**	14	46
		13.1%	**56.5%**	30.4%	100.0%
	Conservative	**7**	**6**	2	15
		46.7%	**40.0%**	13.3%	100.0%
Total		25	60	104	189
		13.2%	31.8%	55.0%	100.0%

Table 5.20 Politics And Evolution: SPSS Derived G

	Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal Gamma	-.613	.082	-5.559	.000
N of Valid Cases	189			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

5.2 How Is Education Related To The Rejection Of Science

5.2.1 Hypothesis 3: Respondents With High Levels Of Science Literacy Are More Likely To Be Evolutionists Than Creationists

As seen in tables 5.21 and 5.22, science literacy' standardized α (=0.542) demonstrates a minimally acceptable level of internal consistency reliability.

As seen in tables 5.23, 5.24 and 5.25, when the science literacy and creation scales are analyzed in cross-tabular analysis, 249 (71.6%) of 348 cases are found to be valid. Since the 2 scales are comprised of 17 questions and an excluded answer on any question invalidates the case, an invalidation of 99 (28.4%) cases is surprisingly low. Science literacy and creation's tau-b (=-0.272) suggests a weak association and inverse relationship. Science literacy and creation's cross-tabular analysis reveal a negative skew. Those who score high on pro-creation have a weak tendency to not be Science Literate.

As seen in tables 5.26, 5.27 and 5.28, when the science literacy and evolution scales are analyzed in cross-tabular analysis, 178 (51.1%) of 348 cases are found to be valid. Since the 2 scales are comprised of 17 questions and an excluded answer on any question invalidates the case, an invalidation of 170 (48.9%) cases is within acceptable parameters. Science literacy and evolution's tau-b (=0.222) suggests a weak association and direct relationship. Science literacy and evolution's cross-tabular analysis reveal a positive skew. Those who score high on pro-evolution have a weak tendency to be science literate.

To conclude the discussion of hypothesis 3, the sample demonstrates the creation scale has a weak inverse and the evolution scale has a weak direct relationship with science literacy. Those who score high on pro-evolution are more science literate than those who score high on pro-creation. The results support the hypothesis that respondents with high levels of science literacy are more likely to be evolutionists than creationists.

Table 5.21 Science Literacy: SPSS Derived α

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.514	.542	14

Table 5.22 Science Literacy: SPSS Derived Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
V1	9.6199	4.010	.242	.163	.482
V2	9.6404	4.162	.148	.098	.506
V3	9.4007	4.310	.256	.187	.489
V4	9.4349	4.274	.223	.114	.491
V5	9.6952	4.123	.154	.065	.505
V6	9.7637	4.339	.036	.055	.537
V7	9.4863	4.051	.319	.175	.468
V8	9.9007	4.069	.173	.115	.500
V9	9.5822	4.223	.136	.067	.508
V10	9.6918	3.753	.360	.170	.448
V11	9.5925	4.180	.156	.100	.503
V12	9.4281	4.308	.206	.150	.494
V13	9.5890	4.215	.138	.064	.507
V14	9.4041	4.338	.222	.118	.493

Table 5.23 Science Literacy And Creation: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Science Literacy Scale * Creation Scale	249	71.6%	99	28.4%	348	100.0%

Table 5.24 Science Literacy And Creation: SPSS Derived Crosstabulation

	Creation Scale			
	Low	Moderate	High	Total
Science Literacy Scale Failing (Below 29 out of 100%)	0	**1**	**1**	2
	0.0%	**50.0%**	**50.0%**	100.0%

Table 5.24 - *Continued*

	Failing (Between 29 and 64 out of 100%)	8	33	**36**	77
		10.4%	42.9%	**46.8%**	100.0%
	Passing (At least 71 out of 100%)	51	**82**	37	170
		30.0%	**48.2%**	21.8%	100.0%
Total		59	116	74	249
		23.7%	46.6%	29.7%	100.0%

Table 5.25 Science Literacy And Creation: SPSS Derived Tau-B

	Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal Kendall's's Tau-B	-.272	.054	-4.845	.000
N of Valid Cases	249			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 5.26 Science Literacy And Evolution: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Science Literacy Scale * Evolution Scale	178	51.1%	170	48.9%	348	100.0%

Table 5.27 Science Literacy And Evolution: SPSS Derived Crosstabulation

		Evolution Scale			Total
		Low	Moderate	High	
Science Literacy Scale	Failing (Between 29 and 64 out of 100%)	16 27.1%	17 28.8%	**26** **44.1%**	59 100.0%
	Passing (At least 71 out of 100%)	8 6.7%	36 30.3%	**75** **63.0%**	119 100.0%
Total		24 13.5%	53 29.8%	101 56.7%	178 100.0%

Table 5.28 Science Literacy And Evolution: SPSS Derived Tau-B

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Kendall's Tau-B	.222	.073	2.979	.003
N of Valid Cases		178			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

5.3 Can The Relationship Between Creationists And Evolutionists Be Explained By Education

5.3.1 Hypothesis 4: Respondents With A Positive View Of Science Are More Likely To Be Evolutionists Than Creationists

As seen in tables 5.29 and 5.30, view of science's standardized α (=0.653) demonstrates an acceptable level of internal consistency reliability.

As seen in tables 5.31, 5.32 and 5.33, when the view of science and creation scales are analyzed in cross-tabular analysis, 257 (73.9%) of 348 cases are found to be valid. Since the 2 scales are comprised of 6 questions and an excluded answer on any question invalidates the case, an invalidation of 91 (26.1%) cases is surprisingly low. View of science and creation's gamma coefficient (=-0.251) suggests a weak association and inverse relationship. View of science and creation's cross-tabular analysis reveal a negative skew. Those who score high on pro-creation have a weak tendency to have a negative view of science.

As seen in tables 5.34, 5.35 and 5.36, when the view of science and evolution scales are analyzed in cross-tabular analysis, 181 (52.0%) of 348 cases are found to be valid. Since the 2 scales are comprised of 6 questions and an excluded answer on any question invalidates the case, an invalidation of 167 (48.0%) cases is within acceptable parameters. View of science and evolution's gamma coefficient (=0.040) suggests an insignificant relationship. Evolution has no relationship with view of science.

To conclude the discussion of hypothesis 4, the sample demonstrates the creation scale has a weak inverse and the evolution scale has no relationship with view of science. Those who score high on pro-creation have a more negative view of science than those who

score high on pro-evolution. The results partially support the hypothesis that respondents with a positive view of science are more likely to be evolutionists than creationists.

Caution must be given regarding the interpretation of evolution's lack of relationship with view of science. Science is just a tool. In the hands of the wrong person any tool can be bad. Therefore, evolutionist's lack of relationship with view of science may reflect an awareness that a tool's user (i.e. human intent) decides whether the outcome is positive or negative.

Table 5.29 View Of Science: SPSS Derived α

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.653	.653	3

Table 5.30 View Of Science: SPSS Derived Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Spiritual Decline	5.7755	6.646	.387	.155	.657
Science Expensive	5.6939	6.131	.474	.255	.542
Life Changes Fast	6.1088	5.811	.535	.296	.457

Table 5.31 View Of Science And Creation: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
View of Science * Creation Scale	257	73.9%	91	26.1%	348	100.0%

Table 5.32 View Of Science And Creation: SPSS Derived Crosstabulation

	Creation Scale			Total
	Low	Moderate	High	
View of Science Negative	6	**33**	**35**	74
	8.1%	**44.6%**	**47.3%**	100.0%

Table 5.32 - *Continued*

	Neutral	29	**55**	31	115
		25.2%	**47.8%**	27.0%	100.0%
	Positive	**26**	**27**	15	68
		38.2%	**39.7%**	22.1%	100.0%
Total		61	115	81	257
		23.7%	44.8%	31.5%	100.0%

Table 5.33 View Of Science And Creation: SPSS Derived G

	Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal Gamma	-.251	.053	-4.705	.000
N of Valid Cases	257			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 5.34 View Of Science And Evolution: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
View of Science * Evolution Scale	181	52.0%	167	48.0%	348	100.0%

Table 5.35 View Of Science And Evolution: SPSS Derived Crosstabulation

		Evolution Scale			Total
		Low	Moderate	High	
View of Science	Negative	9	17	**32**	58
		15.5%	29.3%	**55.2%**	100.0%
	Neutral	10	27	**39**	76
		13.2%	35.5%	**51.3%**	100.0%
	Positive	5	15	**27**	47
		10.6%	31.9%	**57.5%**	100.0%

Table 5.35 - *Continued*

Total	24	59	98	181
	13.3%	32.6%	54.1%	100.0%

Table 5.36 View Of Science And Evolution: SPSS Derived G

	Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal Gamma	.040	.110	.364	.716
N of Valid Cases	181			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

5.3.2 Hypothesis 5a: The Stronger A Respondent's Belief In Evolution, The Less Tolerant They Are Of Creation Being Taught In Public School

As explained in section 4.4.3.2, tolerance is not a scale because the creation and evolution scales each include the teach creation and teach evolution questions, respectively. Were this scale permitted results would be unreliable due to singularity (i.e. identical variables). As seen in tables 5.39 and 5.40, when treated as a scale, the 3 tolerance questions resulted in a standardized α (=0.369) that demonstrates an unacceptable level of internal consistency reliability. These results suggest that the tolerance questions should not be a scale because they measure different things. Therefore the tolerance questions will be dealt with individually.

As outlined in table 5.37 below, certain analyses are important, invalid and misnomers. Important analyses are so because they measure whether creationists are tolerant of evolution being taught in public school and vice versa. Invalid analyses are not performed because any variable compared to itself will result in perfect correlation (e.g. singularity). Misnomers are so because, rather than measuring tolerance, they measure whether creationists or evolutionists believe both views should be taught in public school. Note that "teaching both" is a primary argument levied by creationists in several court cases (refer to section 2.4.2). Therefore creationists supporting teaching both actually supports the view that they are at least against evolution being taught by itself in the science classroom.

Table 5.37 Explanation Of “Tolerance” Questions’ Analyses

“Tolerance” Questions	Creation	Evolution
V1 Teach Creation	Invalid*	Important
V2 Teach Evolution	Important	Invalid*
V3 Teach Both	Misnomer	Invalid* Misnomer

* Creation and evolution scales include teach creation and evolution, respectively.

As seen in tables 5.41, 5.42 and 5.43, when the teach evolution variable and creation scale are analyzed in cross-tabular analysis, 245 (70.4%) of 348 cases are found to be valid. Since the variable and scale are comprised of 4 questions and an excluded answer on any question invalidates the case, an invalidation of 103 (29.6%) cases is surprisingly low. Teach evolution and creation’s tau-c (=-0.206) suggests a weak association and inverse relationship. The teach evolution variable and creation scale’s cross-tabular analysis reveal a negative skew. Those who score high on pro-creation have a weak tendency to oppose teaching evolution in public school.

As seen in tables 5.44, 5.45 and 5.46, when the teach both variable and creation scale are analyzed in cross-tabular analysis, 287 (82.5%) of 348 cases are found to be valid. Since the variable and scale are comprised of 4 questions and an excluded answer on any question invalidates the case, an invalidation of 61 (17.5%) cases is surprisingly low. Teach both and creation’s tau-c (=0.359) suggest a moderate association and direct relationship. The teach both variable and creation scale’s cross-tabular analysis reveal a positive skew. Those who score high on pro-creation have a moderately strong tendency to support teaching both creation and evolution in public school.

As seen in tables 5.47, 5.48 and 5.49, when the teach creation variable and evolution scale are analyzed in cross-tabular analysis, 190 (54.6%) of 348 cases are found to be valid. Since the variable and scale are comprised of 4 questions and an excluded answer on any question invalidates the case, an invalidation of 158 (45.4%) cases is within acceptable parameters. Teach creation and evolution’s tau-c (=-0.276) suggest a weak association and inverse relationship. The teach creation variable and evolution scale’s cross-tabular analysis

reveal a negative skew. Those who score high on pro-evolution have a weak tendency to oppose teaching creation in public school.

As seen in tables 5.50, 5.51 and 5.52, when the teach both variable and evolution scale are analyzed in cross-tabular analysis, 191 (54.9%) of 348 cases are found to be valid. Since the variable and scale are comprised of 4 questions and an excluded answer on any question invalidates the case, an invalidation of 157 (45.1%) cases is within acceptable parameters. Teach both and evolution's tau-c (=-0.014) suggests an insignificant relationship. Evolution has no relationship with the teach both variable.

To conclude the discussion of hypothesis 5, the sample demonstrates the creation scale has a weak inverse relationship with teaching evolution, and a moderate direct relationship with teaching both. Those who score high on pro-creation have a weak tendency to oppose teaching evolution and moderately strong tendency to support teaching both in public school. The sample demonstrates the evolution scale has a weak inverse relationship with teaching creation, and no relationship with teaching both. Those who score high on pro-evolution have a weak tendency to oppose teaching creation.

While evolution has no relationship with teach both, creation has a moderate direct relationship with teaching both. Those who score high on pro-creation support teaching both in public school. Unfortunately teaching both is not tolerance per se. Instead it is indicative of the pro-creation position that creation can be taught in public school. At the same time, creationists are more tolerant than evolutionists (-0.206 versus -0.276) of the opposite ideation being taught in public school. Those who score high on pro-creation oppose evolution being taught in public school, and vice versa. The results support two hypotheses: (1) both creationists and evolutionists are somewhat intolerant of the opposite ideation being taught in public school and (2) that evolutionists are more intolerant of creation than vice versa.

Caution must be given regarding the interpretation of tolerance. Tolerance questions measure tolerance in public school (general) rather than in specific classrooms. To explain this

contextually, consider the following. This study has already established why creation should remain out of the science classroom. However, the same cannot be said regarding courses focusing on history, literature or social studies. In other words, future questionnaires should also ask some variant of the following two questions to clarify results. One, do you accept that religious beliefs have no place in the science classroom? Two, do you accept that religious beliefs can be explored and examined in the likes of history, literature and social studies courses?

5.3.3 Hypothesis 5b: The Stronger A Respondent's Belief In Creation, The Less Tolerant They Are Of Evolution Being Taught In Public School

Details explained in section 4.4.3.2.

Table 5.38 Explanation of "Tolerance's" Conclusions

"Tolerance"	Creation	Evolution
V1 Teach Creation	Invalid*	Tau-C=-0.276 Weak inverse
V2 Teach Evolution	Tau-C=-0.206 Weak inverse	Invalid*
V3 Teach Both	Tau-C=0.359 Moderate direct	Tau-C=-0.014 No relationship

* Creation and Evolution Scales each include Teach Creation and Evolution, respectively.

Table 5.39 "Tolerance:" SPSS Derived α

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.399	.369	3

Table 5.40 "Tolerance:" SPSS Derived Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Spiritual Decline	5.7755	6.646	.387	.155	.657
Science Expensive	5.6939	6.131	.474	.255	.542
Life Changes Fast	6.1088	5.811	.535	.296	.457

Table 5.41 Teach Evolution And Creation: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Teach Evolution * Creation Scale	245	70.4%	103	29.6%	348	100.0%

Table 5.42 Teach Evolution And Creation: SPSS Derived Crosstabulation

		Creation Scale			
		Low	Moderate	High	Total
Teach Evolution	Strongly Disagree	2 4.9%	**20** **48.8%**	**19** **46.3%**	41 100.0%
	Neutral	5 11.6%	**25** **58.2%**	13 30.2%	43 100.0%
	Agree	24 30.8%	**29** **37.2%**	**25** **32.0%**	78 100.0%
	Strongly Agree	**32** **38.6%**	28 33.7%	23 27.7%	83 100.0%
Total		63 25.7%	102 41.6%	80 32.7%	245 100.0%

Table 5.43 Teach Evolution And Creation: SPSS Derived Tau-C

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Kendall's Tau-C	-.206	.054	-3.799	.000
N of Valid Cases		245			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 5.44 Teach Both And Creation: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Teach Both * Creation Scale	287	82.5%	61	17.5%	348	100.0%

Table 5.45 Teach Both And Creation: SPSS Derived Crosstabulation

		Creation Scale			Total
		Low	Moderate	High	
Teach Both	Strongly Disagree	**31**	25	5	61
		50.8%	41.0%	8.2%	100.0%
	Disagree	10	**25**	6	41
		24.4%	**61.0%**	14.6%	100.0%
	Neutral	2	**7**	**6**	15
		13.3%	**46.7%**	**40.0%**	100.0%
	Agree	10	**32**	25	67
		14.925%	**47.761%**	37.313%	100.0%
	Strongly Agree	15	35	**53**	103
		14.6%	34.0%	**51.4%**	100.0%
Total		68	124	95	287
		23.7%	43.2%	33.1%	100.0%

Table 5.46 Teach Both And Creation: SPSS Derived Tau-C

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Kendall's Tau-C	.359	.050	7.244	.000
N of Valid Cases		287			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 5.47 Teach Creation And Evolution: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Teach Biblical Creation in School * Evolution Scale	190	54.6%	158	45.4%	348	100.0%

Table 5.48 Teach Creation And Evolution: SPSS Derived Crosstabulation

	Evolution Scale	Total

Table 5.48 - *Continued*

		Low	Moderate	High	
Teach Biblical Creation in School	Strongly Disagree	3	8	**41**	52
		11.5%	13.1%	**39.8%**	27.4%
	Disagree	2	12	15	29
		7.7%	19.8%	14.6%	15.3%
	Neutral	0	**19**	7	26
		0.0%	**31.1%**	6.8%	13.7%
	Agree Somewhat	7	11	26	44
		26.9%	18.0%	25.2%	23.2%
	Strongly Agree	**14**	11	14	39
		53.9%	18.0%	13.6%	20.4%
Total		26	61	103	190
		100.0%	100.0%	100.0%	100.0%

Table 5.49 Teach Creation And Evolution: SPSS Derived Tau-C

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Kendall's Tau-C	-.276	.064	-4.281	.000
N of Valid Cases		190			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Table 5.50 Teach Both And Evolution: SPSS Derived Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Teach Both * Evolution Scale	191	54.9%	157	45.1%	348	100.0%

Table 5.51 Teach Both And Evolution: SPSS Derived Crosstabulation

	Evolution Scale			Total
	Low	Moderate	High	

Table 5.51 - *Continued*

Teach Both	Strongly Disagree	7	10	**27**	44
		15.9%	22.7%	**61.4%**	100.0%
	Disagree Somewhat	3	**11**	**12**	26
		11.5%	**42.3%**	**46.2%**	100.0%
	Undecided	3	**7**	3	13
		23.1%	**53.8%**	23.1%	100.0%
	Agree Somewhat	1	17	**27**	45
		2.2%	37.8%	**60.0%**	100.0%
	Strongly Agree	12	17	**34**	63
		19.0%	27.0%	**54.0%**	100.0%
Total		26	62	103	191
		13.6%	32.5%	53.9%	100.0%

Table 5.52 Teach Both And Evolution: SPSS Derived Tau-C

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	Kendall's Tau-C	-.014	.067	-.209	.835
N of Valid Cases		191			

a. Not assuming the null hypothesis.

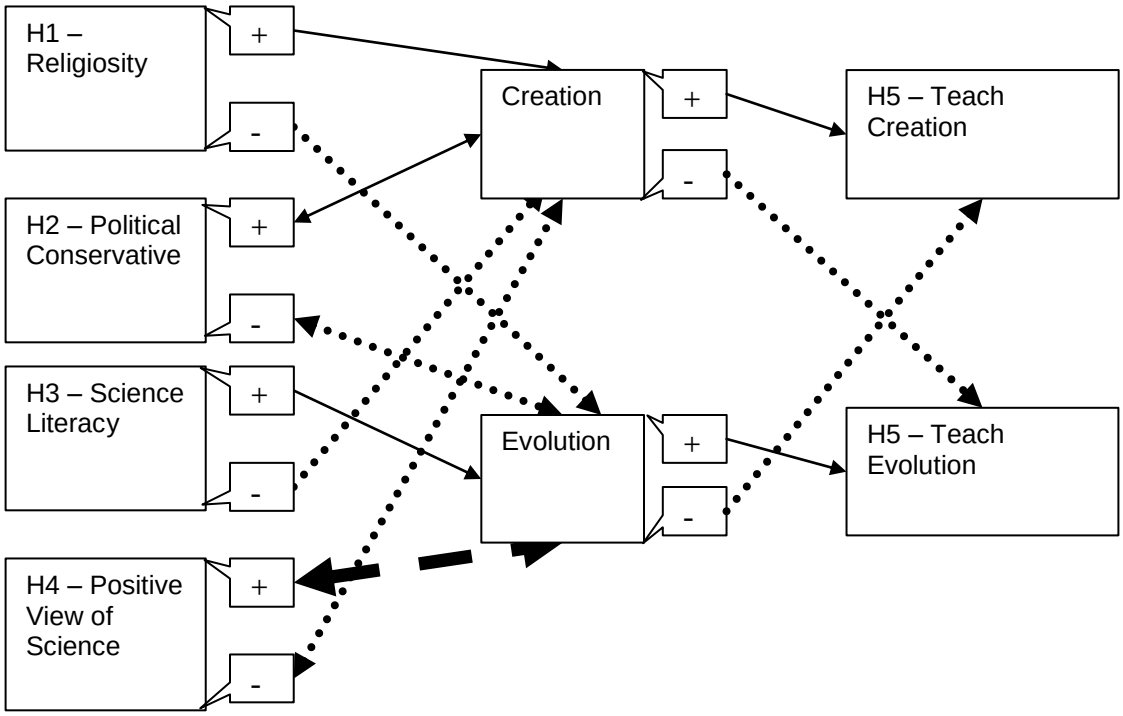
b. Using the asymptotic standard error assuming the null hypothesis.

CHAPTER 6

CONCLUSION

Figure 6.1 depicts the confirmed theoretical model that guides the conclusion of this thesis' analysis. Note that the thick multidirectional dashed line from positive view of science to evolution represents the only relationship between variables that our data analysis did not confirm. Therefore the next 3 sections will discuss the details of the confirmed relationships between variables.

Figure 6.1 Confirmed Model Of Relationship Between Variables



* The thick multidirectional dashed line from positive view of science to evolution represents the only relationship between variables that our data analysis did not confirm.

6.1 The Relationship Between Creation And Evolution Is Explained By World View

Through hypothesis 1, the sample demonstrates that creationists are more religious than evolutionists. Through hypothesis 2, the sample demonstrates that creationists are more politically conservative than evolutionists. In other words, creationists being cultural traditionalists and evolutionists being cultural modernists are well supported by the data. These results suggest that the “Moral Majority” and status politics are still significant. Moreover, they suggest that which truth claims each group considers valid and/or most valid (world view section 3.4) are still significant. Therefore, the results are consistent with previous literature.

Moreover, the following explains why these results are predicted by previous literature. Regarding attitude structures and cognitive sociology, one would expect that key phrases and words may shift, but the underlying cognitions tied to creationist attitudes and how they define situations (mindscape section 3.2) remain unchanged (i.e. tradition). For example, to veil itself as scientific, creationist literature replaced the word ”god” with the phrase “intelligent creator” but the underlying cognition is unchanged. Creationists believe a higher power created and controls everything in existence.

6.2 How Education Is Related To Rejection Of Science

Through hypothesis 3, the sample demonstrates that creationists are more likely than evolutionists to fail a simple test of scientific knowledge. In other words, inadequate scientific education is related to rejection of science. This suggests that a central issue of the Creation-Evolution controversy is rejection of scientific education, facts and ideas. Therefore, the results are consistent with previous literature.

These results support implications made in section 3.7.3 regarding creation and science literacy. Specifically, they suggest that some creationists cannot be effectively argued with because they ignore or misinterpret (i.e. fail to learn or reject) and are consequentially ignorant of what they disagree with. Therefore they do not understand what constitutes science or a scientific argument in the first place.

6.3 How The Relationship Between Creation And Evolution Is Explained By Education

Since hypothesis 4 only demonstrates that creationists have a negative view of science, the sample only partially supports the ideation that evolutionists are more likely than creationists to have a positive view of science. However, the sample does support the ideation that creationists have a negative view of science. Through hypothesis 5, the sample demonstrates that creationists and evolutionists are intolerant of the opposite ideation being taught in public school. Since previous literature suggests that creationists view TSW as a viable means of invalidating, or at least questioning, evolutionary views, these results are consistent with the view that creationists are not as reasonable or tolerant as they seem and perhaps think themselves to be.

Regarding creationists, results are consistent with compartmentalization of beliefs (i.e. Introduction page 2) and prioritizing different truth claims (i.e. world view section 3.4). In other words, creationists, like cultural traditionalists, consider following God's laws to go to heaven (i.e. utilitarian function Table 3.1) more important than accepting and/or considering the scientific evidence for evolution (i.e. knowledge function Table 3.1). For creationists fear of god is more salient than understanding what is going on around them.

6.4 Implications

First, these data support the position that a person's religious beliefs, academic understanding of evolution and science, and opinions regarding what can and cannot be taught in the science classroom are indicative of the creation-evolution controversy. They also support the position that attitude structures, cognitive sociology, status politics and world view are still relevant to understanding the creation-evolution controversy. In short, educational and logical deficiencies can lead to antagonistic views of evolution in particular and science in general. While neither the high creation nor high evolution subset dominates our sample, the two combined constitute a polarity of religious opinion versus verifiable science. In short, our sample contains a polarity consistent with our creation-evolution controversy model.

Second, in regards to the questionnaire, response rates may appear to be low on many of the analyses (refer to Appendix B). Because most questions were opinion format, one of the answers was "(F) Never heard of it/don't know enough to have an opinion" (hereafter Answer F). To avoid violating the basic premises of Likert-like scale, this answer had to be excluded from data analysis. Since each scale includes multiple questions, there were multiple opportunities for each respondent to be excluded on any given scale. However, Answer F is important because, being uneducated on the subject, these people have fewer or no creation-evolution beliefs of their own to defend. Therefore, they are more likely to be neutral towards and therefore inactive in the creation-evolution controversy. However, because they are uneducated on the subject, they can be impressed by polarities on a given subject (i.e. creation and evolution). As suggested in section 2.4.2, since these people know little about the creation-evolution controversy they may be swayed by distorted facts, misinformation and/or outright lies (Forrest et al 2004). Therefore, convincing pro-creation and pro-evolution arguments can garner their support. Suffice to say, these people are the "swing voters" pro-creation factions are trying to recruit to their cause with sophistic arguments (Forrest et al 2004).

Third, it cannot be overemphasized that the creation-evolution controversy is real, and that creationists are actively undermining evolution in education, politics and public opinion. While a minority of educators, evolutionists and scientists (hereafter evolutionists) are defeating creation in court, it is not enough. Evolutionists need to become politically organized or creationists are going to replace validated evolutionary science education with intellectually bankrupt pseudo-scientific creation claims. However there seems to be a significant barrier to the mobilization of evolutionists. The average evolutionist is aware that evolution is winning in court and tends not to pursue the issue further. This is a problem because creation is winning in U.S. opinion polls and creation aligned educators, politicians and public policy makers are successfully changing U.S. public education to be pro-creation via the TSW argument. In short, it is not an accident that evolution is being removed from science text books in the U.S. Since

evolution frames most fields of science, if this problem is not addressed the U.S. will produce increasing numbers of people bereft of an adequate science education. At the very least, poor science education will discourage global hiring of U.S. trained scientists. In order to mitigate these problems, evolutionists need to become more proactive about educating the public and protecting public education's evolutionary science classrooms, teachers and textbooks. Public education campaigns should probably focus on teaching key concepts, phrases and words (e.g. theory in section 2.1), and introducing and refuting creation's current position (i.e. TSW). The educational overhaul should probably focus on recruiting new teachers (grants), making current teachers (legislature) and making science education programs more evolution fluent (policy). Furthermore, evolution and science books (legislature and policy), especially those in public schools, should be rewritten specifically to debunk creation myths and pseudo-science. In order to achieve these goals evolutionists will need private and public support to affect public opinion, fund grants, and produce vital public policy. These goals cannot be met by subtle (i.e. behind the scenes) politics alone.

APPENDIX A

THE STUDENT QUESTIONNAIRE

Questionnaire #____

The Student Opinion Questionnaire
The following questionnaire is part of a study of the ideas students have about several scientific and other topics. It is divided into two parts. The first part is focused on collecting some background information on you (but we do NOT want your name, student number or any other information usable to identify who you are on this form – as stated in the Consent Form, you will remain anonymous). In the second part, we will ask your opinions on a number of topics. Please answer all items on the accompanying sheets as best as you can. Please be truthful – we are really interested in what you think. Also please remember to answer all questions – special attention was paid to making sure all questions have a valid answer for all participants.

Thank you very much for participating in this study!

SECTION 1
1) Your age:
a) Under 18
b) 18-22
c) 23-25
d) 26-29
e) 30-39
f) 40 and above

2) Which college or university do you attend?
a) Mountain View College
b) North Lake College
c) University of Texas at Arlington
d) Other
e) Have not attended college

3) What is your area of academic major: (Select one)
a) Anthropology
b) Other Social/Behavioral Sciences (Criminal Justice, Interdisciplinary Studies, Political Science, Psychology, Sociology, Social Work, Urban Studies)
c) Humanities (Art, Communications, English, Foreign Languages, General Studies, History, Journalism, Library Science, Music, Philosophy, Physical Education)
d) Engineering, Computer Science
e) Business Administration
f) Natural/Physical Sciences (Biochemistry, Chemistry, Health Sciences, Mathematics, Physics)
g) Natural Physical Sciences (Biology)
h) Natural Physical Sciences (Geology)
i) Other

4) Are you:
a) Female
b) Male

5) Your Grade Point Average on the 4-point scale: (Select one)
a) 0.0-0.99
b) 1.0-1.99
c) 2.0-2.49
d) 2.5-2.99

e) 3.0-3.49
f) 3.5-4.0

6) Outside of class requirements, how many books do you read per year?
a) 0-2
b) 3-10
c) 10-14
d) 15 or more

7) Your race: (Select all that apply)
a) African-American
b) Asian/Pacific Islander
c) Hispanic
d) White
e) Native American
f) Other

8) Where did you grow up, mostly? (Select one)
a) In the country (rural area)
b) In a small town/city (pop. Below 50,000)
c) In a medium-size metro area (50,000-499,999 people)
d) In a large metro area (over 500,000 people)

9) In what country or area did you grow up? (Select one)
a) USA
b) Great Britain
c) Europe (except Great Britain)
d) Africa (except Middle East)
e) Asia (except Middle East)
f) Middle East
g) Canada
h) Latin America
i) Australia
j) Other

10) If you grew up in the USA, in what region? (Select one)
a) Texas
b) Pacific West (WA, OR, AK, HI)
c) California
d) Mountain (MT, ID, WY, NV, UT, CO, AZ, NM)
e) West North Central (ND, SD, NE, KS, IA, MO, MN)
f) South Central (OK, AR, LA, MS, AL, TN, KY)
g) South Atlantic (FL, GA, SC, NC, VA, WV, MD, DE)
h) Middle Atlantic (NY, PA, NJ)
i) East North Central (WI, IL, IN, OH, MI)
j) New England (ME, VT, NH, MA, RI, CT)
k) Did not grow up in the USA

11) If you lived in the USA during the past FIVE YEARS, in what region? (Select one)
a) Texas
b) Pacific West (WA, OR, AK, HI)
c) California

d) Mountain (MT, ID, WY, NV, UT, CO, AZ, NM)
e) West North Central (ND, SD, NE, KS, IA, MO, MN)
f) South Central (OK, AR, LA, MS, AL, TN, KY)
g) South Atlantic (FL, GA, SC, NC, VA, WV, MD, DE)
h) Middle Atlantic (NY, PA, NJ)
i) East North Central (WI, IL, IN, OH, MI)
j) New England (ME, VT, NH, MA, RI, CT)
k) Did not live in the USA

12) What is your religious affiliation? (Select one)
a) Roman Catholic
b) Eastern Orthodox
c) Jewish
d) Latter-Day Saints
e) Muslim
f) Jehovah's Witness
g) Seventh day Adventists
h) Protestant
i) Buddhist
j) Hindu
k) None
l) Other

13) What Protestant denomination? (Select one)
a) Baptist
b) Churches of Christ
c) Episcopal
d) Lutheran
e) Methodist
f) Presbyterian
g) Pentecostal
h) Disciples of Christ
i) Other
j) Not protestant

14) On a scale of 1-10, how important is religion in your life? (1 indicating nonexistent, 10 indicating very important)
1 2 3 4 5 6 7 8 9 10

15) About how often do you attend church per month? (Select the closest answer)
a) Never
b) Once
c) 4 times
d) 10 times
e) 30 times or more

16) How often do you pray on an average every week?
a) Never
b) I only pray during stressful times
c) A few times per year
d) 1-5 times a week
e) Every day

f) Several times a day

17) Religiously, which of the following terms describes you the best? (Select one)
a) Fundamentalist
b) Conservative
c) Moderate
d) Charismatic
e) Liberal
f) Spiritual)
g) Nonreligious
h) Agnostic
i) Atheist

18) Which of the following best describes your political philosophy? (Select one)
a) Conservative
b) Moderate
c) Liberal
d) Not at all political

19) Were you taught about evolution in your high school biology course(s)? (Select one)
a) Yes, and creation was taught along with it
b) Yes, and creation was NOT taught along with it
c) No, not at all

20) Do you think the modern theory of evolution has a valid scientific foundation? (Select one)
a) Yes, because it is possible to test many hypotheses of evolutionary theory.
b) Yes, even though we can never test hypotheses about events in the past.
c) No, because we can never be sure about events in the past.
d) No, because evolutionary theory is based mainly on speculation, not hard scientific facts.
e) No, because it goes against my convictions.

SECTION II

Select the phrase after each statement that most clearly describes your belief about the statement. Possible choices are:

a) Agree strongly
b) Agree somewhat
c) Disagree somewhat
d) Disagree strongly
e) Undecided; the available evidence is inconclusive
f) Never heard of it/don't know enough to have an opinion

21) The world is at least 4 billion years old. A B C D E F

22) What this country needs is fewer laws, agencies, and more courageous, tireless, devoted leaders whom people can place their faith in. A B C D E F

23) Humanity came to be through evolution which was controlled by God. A B C D E F

24) The death penalty should be implemented because it is divine will. A B C D E F

25) Aliens from other worlds are responsible for ancient monuments like the pyramids, which primitive people could not have built. A B C D E F

26) America was visited by Europeans long before either Columbus or the Vikings got here. A B C D E F

27) An ancient curse on the tomb of the Egyptian pharaoh King Tut actually kills people. A B C D E F

28) There is a good deal of scientific evidence against evolution and in favor of the Bible's account of creation. A B C D E F

29) Overall, science has done more good in the world than harm. A B C D E F

30) The decline of spiritual values in American life is largely due to the spread of science and technology. A B C D E F

31) Science is too expensive. A B C D E F

32) The Loch Ness "Monster" exists only in the imagination. A B C D E F

33) It does not matter what scientists say, it is divine word that defines the Truth. A B C D E F

34) UFOs are actual spacecraft from other planets. A B C D E F

35) There is intelligent life somewhere out there in the universe beyond the earth. A B C D E F

36) Adam and Eve, the first human beings, were created by God. A B C D E F

37) Time travel into the past is possible. A B C D E F

38) "Bigfoot" (Sasquatch) is a real creature roaming the woods in the American Northwest. A B C D E F

39) One can believe in the Bible and Creation, OR in atheistic evolution-there is really no middle ground. A B C D E F

40) Reincarnation really happens. A B C D E F

41) White or Black magic really exists. A B C D E F

42) It is impossible to communicate with the dead. A B C D E F

43) Some people can predict future events by psychic power. A B C D E F

44) Claims that there is some mysterious force operating in the Bermuda Triangle is untrue. A B C D E F

45) The lost continent of Atlantis was the home of a great civilization. A B C D E F

46) The theory of evolution correctly explains the development of life on earth. A B C D E F

47) Homo Sapien, or modern man, is at least 40,000 years old. A B C D E F

48) Aliens from other worlds visited earth in the past. A B C D E F

49) The high civilizations of the Aztecs and Maya were founded by Old World colonizers, such as the Egyptians. A B C D E F

50) Dinosaurs and humans lived at the same time, as is shown by finds of their footprints together. A B C D E F

51) Everything written in the Bible is literally true. A B C D E F

52) Psychic power (ESP) has failed to prove helpful in finding and interpreting archaeological sites. A B C D E F

53) Our government is hiding information about the fact that UFOs are alien spacecraft. A B C D E F

54) Astrology is an accurate predictor of future events. A B C D E F

55) Some races of people are more intelligent than others. A B C D E F

56) Prayer should be allowed in public schools. A B C D E F

57) God created humanity pretty much in its present form within the last 10,000 years or so. A B C D E F

58) Homosexuality is not just an alternative lifestyle, it is clearly wrong. A B C D E F

59) The accounts recorded in the Bible are not parables or legends but happened exactly as they are told. A B C D E F

60) One cannot read other people's thoughts by psychic powers. A B C D E F

61) The story of the Great Flood and Noah's Ark, as told in the Bible, is symbolic rather than an actual event. A B C D E F

62) The Indians of the New World are descendants of the Lost Ten Tribes of Israel. A B C D E F

63) Science makes our way of life change too fast. A B C D E F

64) The Shroud of Turin has been proven to be the burial shroud of Christ. A B C D E F

65) Most scientists are atheists. A B C D E F

66) Evidence of Noah's Ark has been found on Mount Ararat in Turkey. A B C D E F

67) Astrology is an accurate predictor of people's personalities. A B C D E F

68) Ghosts really exist. A B C D E F

69) Angels really exist. A B C D E F

70) Most scientists today believe that the modern theory of evolution is a valid scientific theory. A B C D E F

71) The theory of evolution should be taught in public schools as an explanation of origins. A B C D E F

72) The Bible's account of creation should be taught in public schools as an explanation of origins. A B C D E F

73) The theory of evolution and the Bible's account of creation should both be taught in public schools as explanations of origins and let the student decide what they believe. A B C D E F

74) Sex education should be taught in public schools. A B C D E F

75) I have a clear understanding of the meaning of scientific study. A B C D E F

76) A woman should have the right to a legal abortion. A B C D E F

77) A woman should have the right to birth control at any age. A B C D E F

78) Science and religion often contradict each other. A B C D E F

79) It is not possible to believe in evolution and still be a good Christian. A B C D E F

80) I believe in the Equal Rights Amendment (ERA) to guarantee women equal rights. A B C D E F

81) Good science education is a top priority for our schools. A B C D E F

82) We depend too much on science and not enough on faith. A B C D E F

83) Everyone should support their country – right or wrong. A B C D E F

84) How long does it take the earth to go around the sun?
a) the earth does not go around the sun
b) one day
c) one month
d) one year
e) 10 years

85) If a coin is tossed, the probability that it will land "heads up" is one half. In four successive tosses, a coin lands "heads up" each time. What is most likely to happen when the coin is tossed a fifth time?
a) It is likely to land "heads up."
b) It is likely to land "tails up."
c) It is equally likely to land "heads up" or "tails up."
d) More information is needed to answer the question.

True or False Questions (a = true, b = false)

86) The earth revolves around the sun. A B

87) Radioactive milk can be made safe by boiling it. A B

88) The earliest humans lived at the same time as the dinosaurs. A B

89) Human Beings, as we know them today, developed from earlier species of animals. A B

90) The continents on which we live have been moving their location for millions of years and will continue to move in the future. A B

91) Antibiotics kill viruses as well as bacteria. A B

92) Electrons are smaller than atoms. A B

93) Lasers work by focusing sound waves. A B

94) It is the father's gene that decides whether the baby is a boy or a girl. A B

95) The oxygen we breathe comes from plants. A B

96) All radioactivity is man-made. A B

97) The center of the Earth is very hot. A B

APPENDIX B

THE SIGNIFICANCE OF MISSING DATA IN THE CROSS-TABULAR ANALYSIS

The high number of excluded cases in cross-tabular analysis found in section 4 is due to the fact that the majority of questions analyze opinion, which include the Answer F. Answer F is excluded from data analysis because it would violate the Likert-like scale. Because the number of Answer Fs encountered will increase as the number of variables increase, it should be no surprise that related scales and cross-tabular analyses will have increasingly large amounts of excluded cases. However, rather than invalidating section 4's data analysis, these missing cases demonstrate an important point regarding the salience (section 3.1) of the creation-evolution Controversy. Where section 4's data analysis will test salience of the issue for those who know the issues, this section can be used to identify how many people do not know the issues.

Distinguishing who Answers F is important because, being uneducated on the subject, these people have fewer or no creation-evolution beliefs of their own to defend. Therefore, they are more likely to be neutral towards and therefore inactive in the creation-evolution controversy. However, because they are uneducated on the subject, they can be impressed by polarities on a given subject (i.e. creation and evolution). As suggested in section 2.4.2, since these people know little about the creation-evolution controversy they may be swayed by distorted facts, misinformation and/or outright lies (Forrest et al 2004). Therefore, convincing pro-creation and pro-evolution arguments can garner their support. Suffice to say, these people are the "swing voters" pro-creation factions are trying to recruit to their cause with sophistic arguments (Forrest et al 2004).

The creation and evolution scales are included in all 5 hypotheses. As seen in table B.1, according to the variable with the highest number of Answer F, cross-tabular analysis involving the creation scale will exclude at least 7.8% of cases. As seen in table B.2, according to the variable with the highest number of Answer F, cross-tabular analysis involving the evolution scale will exclude at least 10.6% of cases. Therefore all hypothesis cross-tabular

analyses involving the evolution scale will contain a lower number of valid cases than those analyses involving the creation scale.

Table B.1 Creation Variables: Frequency Of Choosing (F) Never Heard Of It/Don't Know Enough To Have An Opinion.

	Frequency*	Percent*
Adam And Eve	10	2.9%
Bible Literally True	27	7.8%
Teach Creation	26	7.5%

* Out of 348 cases or 100%.

Table B.2 Evolution Variables: Frequency Of Choosing (F) Never Heard Of It/Don't Know Enough To Have An Opinion.

	Frequency*	Percent*
World's Age	37	10.6%
Explains Life On Earth	20	5.7%
Teach Evolution	17	4.9%

* Out of 348 cases or 100%.

Hypothesis 1 contains the creation, evolution and religiosity scales. As seen in table B.3, the religiosity scale has no questions that contain Answer F. The religiosity scale will not exclude any cases on its account. Hypothesis 1 will contain a higher number of valid cases than other hypothesis cross-tabular analyses.

Table B.3 Religiosity Variables: Frequency Of Choosing (F) Never Heard Of It/Don't Know Enough To Have An Opinion.

	Frequency*	Percent*
Importance of religion	NA	NA
Church Attendance	NA	NA
Frequency of Prayer	NA	NA

* Out of 348 cases or 100%.

Hypothesis 2 contains the creation, evolution and politics scales. As seen in table B.4, according to the variable with the highest number of Answer F, cross-tabular analysis involving the politics scale will exclude at least 2.0% of all cases. Hypothesis 2 will contain a moderate number of valid cases when compared to other hypothesis cross-tabular analyses.

Table B.4 Politics Variables: Frequency Of Choosing (F) Never Heard Of It/Don't Know Enough To Have An Opinion.

	Frequency*	Percent*
Politics	NA	NA
Sex Education	1	0.3%
Legal Abortion	7	2.0%
Birth Control	5	1.4%

* Out of 348 cases or 100%.

Hypothesis 3 contains the creation, evolution and science literacy scales. As seen in table 3.5, the science literacy scale has no questions that contain the Answer F. The science literacy scale will not exclude any cases on its account. Hypothesis 3 will contain a higher number of valid cases than other hypothesis cross-tabular analyses.

Table B.5 Science Literacy Variables: Frequency Of Choosing (F) Never Heard Of It/Don't Know Enough To Have An Opinion.

	Frequency*	Percent*
V1	NA	NA
V2	NA	NA
V3	NA	NA
V4	NA	NA
V5	NA	NA
V6	NA	NA
V7	NA	NA
V8	NA	NA
V9	NA	NA
V10	NA	NA
V11	NA	NA
V12	NA	NA
V13	NA	NA
V14	NA	NA

* Out of 348 cases or 100%.

Hypothesis 4 contains the creation, evolution and view of science scales. As seen in table 3.6, according to the variable with the highest number of Answer F, the view of science scale will exclude at least 6.2%. Hypothesis 4 will contain a lower number of valid cases than other hypothesis cross-tabular analyses.

Table B.6 View of Science: Frequency Of Choosing (F) Never Heard Of It/Don't Know Enough To Have An Opinion.

	Frequency*	Percent*
Spiritual Decline	12	3.4%
Science Expensive	20	5.7%
Life Changes Fast	21	6.2%

* Out of 348 cases or 100%.

Hypothesis 5 contains the creation, evolution and tolerance scales. As seen in table 3.7, according to the variable with the highest number of Answer F, the teach creation variable will exclude at least 7.5% of cases. The teach evolution variable will exclude at least 4.9% of cases. The teach both variable will exclude at least 5.7% of cases. Hypothesis 5 will likely contain a moderate number of valid cases when compared to other hypothesis cross-tabular analyses.

Table B.7 Tolerance Variables: Frequency Of Choosing (F) Never Heard Of It/Don't Know Enough To Have An Opinion.

	Frequency*	Percent*
Teach Creation	26	7.5%
Teach Evolution	17	4.9%
Teach Both	20	5.7%

* Out of 348 cases or 100%.

REFERENCES

Alters, Brian. 2005. Teaching Biological Evolution in Higher Education: Methodological, Religious, and Nonreligious Issues. Mississauga, Ontario: Jones and Bartlett Publishers Canada.

Book used to frame religious issues with evolution.

Babbie, Earl. 2007. The Practice of Social Research. 11th Ed. Belmont, CA: Thomson Wadsworth.

Book used to verify aspects of Methodology Section.

Barrows, M. Edward. 2001. Animal Behavior Desk Reference: A Dictionary of Animal Behavior, Ecology, and Evolution. 2nd Edition. NY: CRC Press.

Book used to define creation science, science, special creation, theory, and common types of organic evolution.

Bealey, Frand and Allan G Johnson. 1999. "Conservativism;" "Liberalism" and "Politics" *The Blackwell Dictionary of Political Science: A User's Guide to Its Terms*. Retrieved 4/10/2009 Available: NetLibrary Online Reader, UTA eContent Collection.

Online resource used for definitions.

Bendix, Reinhard. 1962. Max Weber: An Intellectual Portrait. Garden City, NY: Anchor Books.

Book used to create cleavage table, and define class and status politics.

Brockman, John (Ed). 2006. Intelligent Thought: Science Versus the Intelligent Design Movement. NY: Vintage Books.

Book's articles 1, 3, 6, 7, 8 and 12 were used to flesh out Introduction and scientifically oriented aspects of Literature Review section, such as the section regarding transitional tetrapod species.

Bybee, Rodger W (Ed). 2004. Evolution in Perspective: The Science Teacher's Compendium.

Arlington, Virginia: National Science Teachers Association Press.

Book used to frame religious issues with evolution.

Cooper, Seth L. and David K. DeWolf. 2005. “Teaching About Evolution in the Public Schools: a Short Summary of the Law.” Midwest City, Oklahoma [Seattle, Washington]: Oklahomans for Better Science Education (Discovery Institute) retrieved 10/1/08 (www.obse.org/pdfs/TeachingEvolution.doc).

Article used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Coren, Stanley, James T. Enns and Lawrence M. Ward. 2004. Sensation and Perception. 6th Ed. Hoboken, NJ: John Wiley.

Book used to reference philosophy of perception.

Coyne, Jerry A. 2006. “Intelligent Design: The Faith That Dare Not Speak Its Name.” Pp. 3-23 in *Intelligent Thought: Science Versus the Intelligent Design Movement*, edited by John Brockman. NY: Vintage Books.

Article used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Crawford, R. M. and J.D. Dodge. 1969. “Observations on the Fine Structure of the Eyespot and Associated Organelles in the Dinoflagellate *Glenodinium Foliaceum*.” Journal of Cell Science 5:479-493.

Article mentioned briefly when refuting irreducible complexity.

Darwin, Charles. 1979 [1859]. The Origin of Species by Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life. NY: Avenel Books, distributed by Crown Publishers.

Classic book that is the origin of modern evolutionary theory.

Dawkins, Richard. 2006. “Intelligent Aliens.” Pp. 92-106 in *Intelligent Thought: Science Versus the Intelligent Design Movement*, edited by John Brockman. NY: Vintage Books.

Article used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Davis, Persival, Dean H. Kenyon and Charles B. Thaxton (editor). 1993. Of Pandas and People: The Central Question of Biological Origins. 2nd Ed. Dallas, Texas: Haughton Publishing Company. (Unlisted authors - Nancy Pearcey wrote Overview Chapter and Michael Bebe wrote 2nd Ed's biochemistry chapter).

Book used as the quintessential straw man/example of ID's attempt to debunk or at least subvert evolution, and also used to directly link creation science, Discovery Institute, ID and TSW.

Dennett, Daniel C. 2006. "The Hoax of Intelligent Design and How It Was Perpetrated." Pp. 33-49 in *Intelligent Thought: Science Versus the Intelligent Design Movement*, edited by John Brockman. NY: Vintage Books.

Article used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Dieckmann, Carol L. 2003. "Eyespot Placement and Assembly in the Green Alga Chlamydomonas." BioEssays 25, No 4:410-416.

Article mentioned briefly when refuting irreducible complexity.

Discovery Institute. 2008. "Summary: The Scientific Controversy Over Whether Microevolution Can Account For Macroevolution." Seattle, Washington: Discovery Institute, retrieved 10/7/08 (http://www.discovery.org/scripts/viewDB/filesDB-download.php?id=118).

Article used to define to refute ID's microevolution argument.

Du Bois, W.E.B. 2004 (1903). *The Souls of Black Folk*. Boulder, CO: Paradigm.

Book's Chapter 1 "Of Our Spiritual Striving" used to demonstrate double consciousness.

Ebaugh, Helen Rose Fuchs. 1988. *Becoming an EX: The Process of Role Exit.* Chicago, IL: The University of Chicago Press.

Book used to reference Role Theory.

Edwards v. Aguillard, 765 F. 2d 1251 5th Cir. (La.) Jul. 09, 1985, 482 U.S. 578, 107 S.Ct. 2573 (U.S. La. Jun. 19, 1987). U.S. Supreme Court decided June 19, 1987.

Court case used to illustrate the reality of creationist's position.

Epperson v. Arkansas, 416 S. W. 2d 322 (Ark. Jun. 05, 1967), 393 U.S. 97, 89 S. Ct. 266, 21 L. Ed 228, 37 U.S. Law Week 4017. U.S. Supreme Court decided Nov. 12, 1968.

Court case used to illustrate the reality of creationist's position.

Eve, Raymond A. and Francis B. Harrold. 1986. "Creationism, Cult Archaeology, and Other Pseudoscientific Beliefs: A Study of College Students." Youth and Society 17, No 4:396-421.

Article whence several hypotheses originate.

Eve, Raymond A., Francis B. Harrold and Mark Plunkett. 1986. "Patterns of Creationist Belief Among College Students." Unpublished article presented at the 51st Meeting of the Society for American Archaeology, New Orleans, Louisiana.

Unpublished article whence several hypotheses originate.

Eve, Raymond A. and Francis B. Harrold. 1991. The Creationist Movement in Modern America. Boston, MA: Twayne Publishers - A Division of G.K. Hall and Co.

Book used to frame thesis and define key concepts such as creationism, cultural modernism, evangelical, evolution, the means of cultural reproduction and protestant.

Eve, Raymond A. and Francis B. Harrold. 1993. "The Influences of Group Process on Pseudoscientific Belief: 'Knowledge Industries' and the Legitimation of Threatened Worldviews." Advances in Group Processes 10:133-162.

Article included as contextual background/additional readings.

Eve, Raymond A. and Francis B. Harrold. 1994. "Who are the Creationists?: An Examination of Conservative Christian Social Movement in International Perspective." Population Review 38:65-76.

Article whence several hypotheses originate.

Eve, Raymond A. and Francis B. Harrold (Eds). 1995. Cult Archaeology and Creationism: Understanding Pseudoscientific Beliefs about the Past. Expanded Ed. Iowa City, IA: University of Iowa Press.

Book's Chapter 2 explains part of what rejection of science is. Chapter 4 and 5 are the basis of ideations regarding what constitutes creation, evolution and a Likert-type scale. Appendix A: The Student Opinion Questionnaire question 75 was reinstated into my questionnaire but modified to reflect more modern evidence.

Eve, Raymond A., Francis B. Harrold and Geertruida C. de Goede. 1995. "Cult Archaeology and Creationism in the 1990s and Beyond." Pp. 152-176 in Cult Archaeology and Creationism: Understanding Pseudoscientific Beliefs about the Past (Expanded Ed), edited by Raymond A. Eve and Francis B. Harrold. Iowa City, IA: University of Iowa Press.

Book's Chapter 11 used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Eve, Raymond A., Lonnie Roy and Anson Shupe. 1996. "Satan will get you if you don't watch out." The Newsletter of The North Texas Skeptics Volume 10 Number 2 February 1996. Retrieved 11/29/2008 (http://www.ntskeptics.org/1996/1996february/february1996.htm).

Article used to define class and status politics.

Eve, Raymond A., with Francis B. Harrold and John H. Taylor. 2004. "Creationism, American Style: Ideology, Tactics and Rhetoric in a Social Movement." University of Texas at Arlington, Arlington, TX. Pp.67-84 The Cultures of Creationism: Antievolutionism in English-Speaking Countries, edited by Simon Coleman and Leslie Carlin. Aldershot, UK: Ashgate Publishing Limited.

Article used to help frame the paper, especially in the Introduction.

Fazio, Russell H. 1989. "On the Power and Functionality of Attitudes: The Role of Attitude

Accessibility." Pp. 153-179 in *Attitude Structure and Function*, edited by Steven J. Breckler, Anthony G. Greenwald and Anthony R. Pratkanis. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.

Book used to define attitude functions/structures.

Feder, Kenneth L. 1995. "Cult Archaeology and Creationism: A Coordinated Research Project." Pp. 34-48 in Cult Archaeology and Creationism: Understanding Pseudoscientific Beliefs about the Past (Expanded Ed), edited by Raymond A. Eve and Francis B. Harrold. Iowa City, IA: University of Iowa Press.

Book's Chapter 4 used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Field, Andy P. 2005. Discovering Statistics Using SPSS: (and sex, drugs and rock 'n' roll). 2nd Edition. London: Sage Publications.

Reference material for SPSS.

Forrest, Barbara and Paul R. Gross. 2004. Creationism's Trojan Horse: The Wedge of Intelligent Design. Updated edition. NY: Oxford University Press.

Book extensively used to prove creation science, Discovery Institute, ID and TSW are directly linked. Furthermore it was also used to verify the Wedge document's authenticity.

Frankfort-Nachmias, Chava and Anna Leon-Guerrero. 2002. Social Statistics for a Diverse Society. 3rd Ed. Thousand Oaks, CA: Pine Forge Press - An Imprint of Sage Publications, Inc.

Used to confirm research model based upon chi-square (χ^2) and gamma (G).

Frankfort-Nachmias, Chava and Anna Leon-Guerrero. 2009. Social Statistics for a Diverse Society. 5rd Ed. Thousand Oaks, CA: Pine Forge Press - An Imprint of Sage Publications, Inc.

Book used to verify aspects of Methodology Section.

Freiler v. Tangipahoa Parish Board of Education, 975 F. Supp. 819 (E. D. La. Aug. 08, 1997), 1998 WL2852 (E. D. La. Jan. 05, 1998), 185 F. 3d 337 5th Cir. (La.) Aug. 13, 1999, 201 F. 3d 602 5th Cir. (La.) Jan. 24, 2000, 530 U.S. 1251, 120 S. Ct. 2706, 147 L. Ed. 2d 974, 68 USLW 3657, 68 USLW 3770, 68 USLW 3771, 00 Cal. Daily Op. Serv. 4880, 2000 Daily Journal D.A.R. 6455. U.S. District Court decided Aug. 8, 1997. 5th Circuit Court of Appeals affirmed Aug. 13, 1999. U.S. Supreme Court declined to hear Jun. 19, 2000.

Court case used to illustrate the reality of creationist's position.

Garson, David. 2009. "PA 765: Multivariate Analysis in Public Administration – Reliability Analysis." Raleigh, North Carolina: North Carolina State University [College of Humanities and Social Sciences] retrieved 9/18/2009 (http://faculty.chass.ncsu.edu/garson/PA765/reliab.htm#negative).

Document used to properly frame and present chronbach's alpha.

George, Darrebn and Paul Mallery. 2006. SPSS [13.0 Update] for Windows Step by Step: A Simple Guide and Reference. 6th Edition. NY: Pearson Education Inc.

Reference material for SPSS.

Gray, Colin D and Paul R Kinnear. 2006. SPSS 14 Made Simple. NY: Psychology Press – Taylor and Francis Group.

Reference material for SPSS, and used to confirm usage of kendall's's tau-b and tau-c.

Gray, Colin D and Paul R Kinnear. 2008. SPSS 15 Made Simple. NY: Psychology Press – Hove.

Reference material for SPSS.

Greenberg, John, Tom Pyszczynski and Sheldon Solomon. 1986. "The Causes and Consequences of a Need for Self-Esteem: A Terror Management Theory." Pp. 189-212 in *Public Self and Private Self*, edited by Roy F. Baumeister. NY: Springer-Verlag NY Inc.

Article used to define world view.

Gusfield, Joseph R. 1986 (1963). Symbolic Crusade: Status Politics and the American Temperance Movement. 2nd Edition. Chicago, IL: University of Illinois Press.

Book used to define class and status politics.

Healey, Joseph F. 2005. Statistics: A Tool for Social Research. 7th Ed. Belmont, CA: Thomson Wadsworth.

Book used to verify various aspects of Methodology Section.

Herek, Gregory M. 1987. "Can Functions Be Measured: A New Perspective on the Functional Approach to Attitudes." Social Psychology Quarterly 50(4):285-303.

Article used to define attitude functions/structures.

Hudson, Luanne. 1995. "East is East and West is West?" Pp. 49-67 in Cult Archaeology and Creationism: Understanding Pseudoscientific Beliefs about the Past (Expanded Ed), edited by Raymond A. Eve and Francis B. Harrold. Iowa City, IA: University of Iowa Press.

Book's Chapter 5 used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Johnson, Allan G. 2000. "Religion," *The Blackwell Dictionary of Sociology: A User's Guide to Sociological Language.* Retrieved 4/10/2009 Available: NetLibrary Online Reader, UTA eContent Collection.

Online resource used for definition.

Katz, Daniel. 1960. "The Functional Approach to the Study of Attitudes." The Public Opinion Quarterly 24(2):163-204.

Article used to defining attitude functions/structure.

Kauffman, Stuard A. 2006. "Intelligent Design, Science or Not?" Pp. 169-178 in *Intelligent Thought: Science Versus the Intelligent Design Movement*, edited by John Brockman. NY: Vintage Books.

Article used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Kehoe, Alice B. 1995. “Scientific Creationism: World View, Not Science.” Pp. 11-20 in Cult Archaeology and Creationism: Understanding Pseudoscientific Beliefs about the Past (Expanded Ed), edited by Raymond A. Eve and Francis B. Harrold. Iowa City, IA: University of Iowa Press.

Book’s Chapter 2 used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Lolonde, Coralie, Donald W Zimmerman and Bruno D Zumbo. 1993. “Coefficient Alpha As An Estimate of Test Reliability Under Violation Of Two Assumptions.” Education and Psychological Measurement 53:33-50.

Article defining limitations of coefficient alpha.

Matzke, Nicholas J. and Eugenie C. Scott. 2007. "Biological Design in Science Classrooms." Proceedings of the National Academy of Sciences of the United States of America (PNAS) Colloquium Papers 2007 104:8669-8676. Retrieved 4/12/08 (http://www.pnas.org/content/104/suppl.1/8669.full?sid=de018804-f344-47e8-b262-80ad1339a141).

Article that states unequivocally that the book *Of Pandas and People* is the smoking gun in regards to linking Creation Science to ID.

McLean v. Arkansas, 663 F. 2d 47, 33 Fed. R. Serv. 2d 910, C.A. 8 (Ark.), October 16, 1981 (NO. 81-2023), 529 F. Supp. 1255, 2 Ed. Law Rep. 685, 723 F. 2d 45, 50 U.S. Law Week 2412. U.S. District Court decided Jan. 5, 1982.

Court case used to illustrate the reality of Creationist's position.

McNew, Jill C and Jeffrey Weld. 1999. “Attitudes Toward Evolution: Membership in professional

organizations and standards use are associated with strong evolution teaching." Pp.49-55 in in Perspective: The Science Teacher's Compendium, edited by Rodger W Bybee. Arlington, Virginia: National Science Teachers Association Press.

Book used to frame religious issues with evolution.

Merriam-Webster Online Dictionary. 2008. "Rejectionism;" "Rejection + Science;" "Religiosity;" "Science + Literacy;" "Science + View" and "Tolerance." Springfield, MA: Merriam-Webster, retrieved 9/20/2008-12/2/2008 (http://www.merriam-webster.com/).

Online resource used for definitions.

National Academy of Sciences (NAS). 1998. Teaching About Evolution and the Nature of Science. Washington, DC: National Academy Press.

Book used to define fact, law, hypothesis and theory. Framing religious issues with evolution.

National Center for Science Education (NCSE): Defending the Teaching of Evolution in Public Schools. 2008. "10 Significant Court Decisions Regarding Evolution/Creationism." Oakland, California: National Center for Science Education, retrieved 10/1/08 (http://www.ncseweb.org/resources/articles/5690_10_significant_court_decisions_2_15_2001.asp).

Article used to explore significant court cases.

Nietzsche, Friedrich Wilhelm and Walter Kaufmann (ed). 1977 (1954). The Portable Nietzsche. Penguin Books, London: England.

Book used to close section on cognitive sociology.

New Scientist. 2005. "Court Case May Determine How Evolution is Taught in US." Orlando, Florida: New Scientist retrieved 10/1/2008 (http://www.newscientist.com/article.ns?id=dn8042).

Article used to explore significant court cases.

North Lake College (NLC). 2008. "NLC Quick Facts: 2007." Irving, TX: NLC, retrieved 7/16/2008

(http://www.northlakecollege.edu/about/facts.html).

Online resource used to define NLC's population.

Norušis, Marija J. 2005. SPSS 13.0 Guide to Data Analysis. Upper Saddle River, NJ: Prentice Hall.

Reference material for SPSS, and used to confirm usage of Kendall's's tau-b and tau-c.

Norušis, Marija J. 2005. SPSS 13.0 Statistical Procedures Companion. Upper Saddle River, NJ: Prentice Hall.

Reference material for SPSS, and used to confirm usage of Kendall's's tau-b and tau-c.

Outhwaite, William and Stephan P. Turner (Eds). 2007. The SAGE Handbook of Social Science Methodology. Los Angeles, CA: SAGE Publications.

Book's Chapter 4 (Comparative Methods) was used to confirm that analysis of hypotheses was done correctly.

Oxford Dictionary of Science. 2005. 5th Edition. Oxford, UK: Oxford University Press.

Book used to define creationist, evolution and special creation.

OYEZ: US Supreme Court Media. 2008. "Edwards v. Aguillard." Washington, DC: OYEZ retrieved 10/1/08 (http://www.oyez.org/cases/1980-1989/1986/1986_85_1513/).

Article used to explore a significant court case.

Robinson, B.A. 2007. "A Brief History of the Conflict Between Evolution and Creation Science: Origin of Species, et cetera." Ontario, Canada: Religious Tolerance: Ontario Consultants on Religious Tolerance, retrieved 10/1/08 (http://www.religioustolerance.org/ev_hist.htm).

Article used to explore significant court cases.

Rodney LeVake v. Independent School District 656, et. al., 625 N. W. 2d 502, 153 Ed. Law Rep. 356, 534 U.S. 1081, 122 S. Ct. 814, 151 L. Ed. 2d 698, 70 USLW 3425, 70 USLW 3340, 70 USLW 3427. U.S. District Court decided May 8, 2001. U.S. Supreme Court declined to hear Jan. 7, 2002.

Court case used to illustrate the reality of creationist's position.

Schafersman, Steven. 2008. “Eight Significant Court Decisions.” Midland, Texas: Texas Citizens for Science, retrieved 10/1/08 (http://www.texscience.org/files/court-cases/). Article used to explore significant court cases.

Segraves v. California, Court # 278978, Not reported. Sacramento Superior Court decided 1981.

Court case used to illustrate the reality of creationist's position.

Shavitt, Sharon. 1989. “Operationalizing Functional Theories of Attitude.” Pp. 311-338 in *Attitude Structure and Function*, edited by Steven J. Breckler, Anthony G. Greenwald and Anthony R. Pratkanis. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers. Book used to define attitude functions/structures.

Shavitt, Sharon. 1989 (1990). “The Role of Attitude Objects in Attitude Functions.” Journal of Experimental Social Psychology 26:124-148.

Book used to define attitude functions/structures.

Shermer, Michael. 2002. Why People Believe Weird Things: Pseudoscience, Superstition, and Other Confusions of Our Time. Revised and Expanded Ed. NY: Henry Holt and Company, LLC.

Book used to define scientific method.

Shubin, Neil H. 2006. “The ‘Great’ Transition.” Pp. 82-91 in Intelligent Thought: Science Versus the Intelligent Design Movement, edited by John Brockman. NY: Vintage Books. Article used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Spencer, Herbert. 1864-1867. The Principles of Biology. NY: D. Appleton and Company.

Book that is the origin of “survival of fittest” terminology.

Sulloway, Frank J. 2006. “Why Darwin Rejected Intelligent Design.” Pp. 107-125 in *Intelligent Thought: Science Versus the Intelligent Design Movement*, edited by John Brockman.

NY: Vintage Books.

Article used to demonstrate links between creation science, Discovery Institute, ID and TSW.

Steenhuysen, Julie. 2008. "Fish Fossils Plug Hole in Evolutionary Theory." Thomas Reuters, retrieved 7/12/2008 (http://uk.reuters.com/article/scienceNews/idUKN0941357820080709).

Web news article talking about a transitional fish species.

Tammy Kitzmiller, et. al. v. Dover Area School District, et. al., 2005 WL 578974 (M. D. Pa.), 229 F.R.D. 463, 201 Ed. Law Rep. 203, 79 F. Supp. 2d 680, 201 Ed. Law Rep. 126, 33 Media L. Rep. 2121, 388 F. Supp. 2d 484, 203 Ed. Law Rep. 557, 34 Media L. Rep. 1534, 2005 WL 2230024 (M. D. Pa.), 2005 WL 4147867 (M. D. Pa.), 2005 WL 2387629 (M. D. Pa.), 2005 WL 2736500 (M. D. Pa.), 400 F. Supp. 2d 707, 205 Ed. Law Rep. 250. U.S. District Court decided Dec. 20, 2005.

Court case used to illustrate the reality of creationist's position.

Texas Almanac. 2008. “Religious Groups in Texas: Chart Comparing 1990 and 2000.” Texas Almanac, retrieved 10/08/2008 (http://www.texasalmanac.com/religion/religion_chart.pdf).

Chart used to tentatively estimate how many creationists there are in Texas.

U. S. Const. Amend. I.

Amendment cited in all court rulings against creationists mentioned in this paper. Used to illustrate that creationist's are a fringe group who fight to redefine Constitutional Interpretation and Law.

Wolf, Dr. Steven J. 2008. “Introduction to Evolution: Significant Court Decisions Regarding Evolution.” Turlock, California: California State University, Biology Department, retrieved 10/1/08 (http://arnica.csustan.edu/biol3020/courts/court.htm).

Article used to explore significant court cases.

Wysocki, Diane Kholos. 2004. Reading in Social Research Methods. Belmont, CA: Thomson Wadsworth.

Book's Chapter 6 was used to confirm basic validity of my scales.

Zerubavel, Eviatar. 1997. Social Mindscapes: An Invitation to Cognitive Sociology. Cambridge, MA: Harvard University Press.

Book used to define cognitive individualism, cognitive pluralism, cognitive sociology, mindscapes, optical pluralism and thought communities.

BIOGRAPHICAL INFORMATION

Wesley Philip Price's academic interests include art, most biological sciences (i.e. biology, botany, ecology and physiology), history, philosophy, most physical sciences (i.e. chemistry, geology, meteorology, oceanography and physics), most social sciences (i.e. anthropology, criminology, psychology, social psychology, social work and sociology), special education and statistics. However, his research interests are more closely related to how beliefs and misinformation bias our views of well established principles of education and science. He graduated from Nimitz High School in 2000. He graduated from Texas Women's University with a Bachelors of Science in Sociology with cum laude honors in 2005. He completed this thesis in order to complete his Masters of Science in Sociology in 2010. He has done volunteer work with the Junior Historians, International Conversation Partners, Amnesty International and Habitat for Humanity. His volunteer work has included assisting in environmental cleanups, maintaining homeless shelters, teaching conversational English, creating a donation and volunteer database, and organizing, printing and assembling newsletters. He aspires to work as an administrator (in education or non-profit) or teacher (special education or college). While his Masters will be sufficient to teach at a Community College, he may eventually pursue a PhD. As an alternative, he is also pursuing an alternative teaching certificate with Texas A&M Commerce to teach Special Education in Public or Private School.