



Does Education Cause Spiritual Belief Change?

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Currently, little is known about the influence classroom learning has on the spiritual beliefs of students. Despite this fact, decisions on educational policy, parental home schooling, and even whether to bring legal actions against school districts, often rest on the assumption that education can induce spiritual belief change. To begin the process of filling the current gap in academic knowledge, this qualitative interview study centers on the personal accounts of educational and religious histories of sixteen participants. The interview data collected suggests that education has a limited role in beginning the process of spiritual belief change, but that education is often relied on once an episode of belief revision begins to occur. Instead, major life events, such as the death of a family member, were often described as being the catalyst for spiritual belief change. The importance of emotion in both education and belief change is discussed.

Keywords: religion, spirituality, belief change, hot conceptual change, emotions, life events, education, qualitative

A trend exists that as an individual comes to be more learned in an academic discipline, she becomes less likely to retain her religious beliefs (Ecklund & Scheitle, 2007; Larson & Witham, 1998; Leuba, 1916; 1933). While researchers are cognizant of the correlation between degree of education and decline of religious beliefs, we still lack an explanation of how or why such a shift in belief might be occurring. Current developmental and conceptual change theories provide conflicting results as to what exposure to new information can do to a system of beliefs (Carey, 1988; Piaget, 1971; Pintrich, Marx, & Boyle, 1993). Notwithstanding our unmistakable lack of understanding as to why such changes in belief might develop, legal actions amidst various families, religious organizations, and school systems in the United States have persisted over a variety of issues stemming from assumptions that learning new knowledge can fundamentally and irrevocably augment an individual's religious beliefs. Yet, the fact remains there is no solid evidence to justify such an assertion.

Despite the above stated lack of information, one would be hard pressed to find a curriculum-based issue that sparks a more impassioned debate than that of the teaching evolution in public schools. Parents and educators have deeply entrenched views regarding what is the appropriate material to be included in the science education curriculum. Many high-profile scientific organizations have had to address the teaching evolution in public schools as a result of the high tensions that accompany the topic. One example, the National Science Teachers Association, posted an open response to the public regarding their official position defending the teaching of evolution in schools, and has made available a wealth of resources for educators to aid in the teaching of evolution (National Sciences Teachers Association, 2003).

Furthermore, numerous lawsuits have taken place, in both local and federal courts across the United States, attempting to change the degree to which either intelligent design or evolution is included in public school

curriculums. Thus far, sixteen court cases involving a dispute related to evolution and education that have been adjudicated to completion by federal court rulings. Ten of these cases have had a significant impact on the educational landscape of the country through the adjustment of curriculum; the first case was *Epperson v. Arkansas*, in 1968; and the most recent being *Kitzmiller et al. v. Dover Area School District et al.*, which occurred in 2005 (Antolin & Herbers, 2001; Matsumura & Mead, 2007; Pager, 2006).

Research conducted with parents who have selected to either home school their children or send them to a private academy regularly cite an inconsistency between their religious faith and the educational policies of their local schools as one of the top reasons for removing their children from the public school system (Yang & Kayaardi, 2004). Many parents who choose to home school for religious reasons do so assuming that allowing their children to be exposed to information that is inconsistent with the family's religious traditions is inherently dangerous.

If, anecdotally, so many individuals hold the opinion that there is a correlation between education and spiritual belief change, then how does current educational theory measure that point of view? The answer is decidedly mixed and largely dependent on which theory is applied to the question. For example, in just looking at the theory of constructivism a researcher would be conflicted on how to interpret the impact learning might have on religious beliefs. Using traditional constructivism, in which individuals slowly build their understanding of the world, it would be possible for new information to challenge one's spiritual beliefs (Piaget, 1971). Piaget asserted that when new and significant information fails to fit into pre-established constructs people begin to feel a natural level of discomfort with this realization, known as disequilibrium. They are then forced to either assimilate the new information into what we believe, or accommodate it by fundamentally changing their mental construct.

While disequilibrium could be the beginnings of an explanation, Neo-Piagetians have since modified the initial theory of how individuals construct understanding of the world, from a single logical structure into a domain-specific theory (Gelman & Williams, 1998; Wellman & Gelman, 1992, 1998). In essence, this change implies that we construct separate and unique structures for different areas of thought. A consequence of this theory change would be that it potentially becomes more difficult for new knowledge to influence religious beliefs; in order for new information to be influential there would need to be a match between the domains of the incoming

and established knowledge.

Survey data collected on the American public indicates congruence with the revised constructionist theory. National attitudes about the existence of God have remained comparatively stable over the past 80 years (Harris Poll, 2006). Perhaps the most damaging evidence against the notion that education can change the spiritual beliefs of students is to consider that it was roughly 40 years ago that the Supreme Court ruled in favor of teaching evolution in the U.S. and rates of faith have failed to change. In fact, regardless of the curriculum used public schools across the U.S., the population who believe in God, are some of the highest of any industrialized nation in the world (Harris Poll, 2006). In light of a poverty of direct evidence, and contradicting forecasts from various theories of learning, we must call into question the assumption that formal education is a causal factor in modifying the spiritual beliefs of students.

Design

The research design of the study is based on a qualitative methodology of one-on-one personal, semi-structured interviews between the researcher and the participant (Merton, Lowenthal, & Kendall, 1990). The goal of this design is to explore the stories of how an individual's education history and spiritual beliefs have interacted throughout that individual's life, using the method of in-depth personal interviews.

For this study, the personal interviews were conducted with 18 participants who were selected through snowball and volunteer sampling attempting to establish a heterogeneous sample with regards to spiritual beliefs; however data was used from only 16. One of the participants failed to provide enough data during the interview for coding, and the second participant chose to end the interview before completion. In-depth interviews of roughly 35 to 75 minutes were conducted with each participant. During these conversations the participant was asked to reconstruct their educational experiences, their progression from early religious and spiritual beliefs to their current beliefs, and what impact they believe their learning had on any change in spiritual beliefs. Each of the interviews had the audio dialogue digitally recorded as a means to secure data provided from the participant, in addition to detailed field notes taken by the researcher during the interview.

Participants

The sample population for the interview study consisted of participants who were graduate students or faculty at the University of Georgia. This population represented a wealth of lived experience within educational systems, both locally within Georgia public schools, as well as other institutions around the United

Table 1
Summary of Participants

Name	Gender	Age Range	Education	Childhood Beliefs	Current Belief
Amber	Female	Late 20s	Ph.D. Can.	Catholic	Christian
Amy	Female	Mid 20s	Ph.D. Can.	Catholic / Methodist	Spiritually Christian
Ann	Female	Mid 20s	Ph.D. Can.	Agnostic	Agnostic
Brian	Male	Late 20s	Ph.D. Can.	Baptist	Agnostic
Derek	Male	Early 30s	Ph.D.	Jewish	Agnostic
Emily	Female	Late 20s	Ph.D. Can.	Christian	Christian
Jonathan	Male	Late 50s	Ph.D.	Agnostic	Christian
Julie	Female	Late 20s	Ph.D. Can.	Presbyterian	Spiritually Christian
Jen	Female	Mid 30s	MA.	Catholic	Zen Buddhist
Mike	Male	Mid 30s	Ph.D.	Mormon	Pantheist
Molly	Female	Early 30s	BA.	Catholic	Spiritually Catholic
Robert	Male	Early 30s	Ph.D. Can.	Jewish	Spiritually Jewish
Sally	Female	Early 30s	BA.	Jehovah's Witness	Spiritually Jewish
Sean	Male	Mid 30s	Ph.D.	Agnostic	Christian
Thomas	Male	Late 20s	Ph.D. Can.	Catholic	Catholic
Tim	Male	Mid 60s	Ph.D.	Christian	Presbyterian

States and abroad.

Participants (see Appendix for descriptions) were recruited through fliers placed around campus on bulletin boards, recruitment e-mails, as well as word-of-mouth through the assistance of friends, colleagues, and faculty members asking individuals, whom they believed might be interested, if they would be willing to volunteer some of their time to discuss their religious, spiritual, and educational history. As a prerequisite to volunteering, individuals were asked to provide basic descriptive data such as age and gender, in addition to the spiritual beliefs they were raised with, and the spiritual beliefs they currently hold. While the procedure of purposeful selection was going to be used with the aim of preventing a homogeneous sample of individuals with the same spiritual beliefs, gender, or age, the individuals who volunteered to participate created a wide diversity in the sample prior to any intervention by the researcher.

Data Collection and Analysis

Each participant was digitally recorded, capturing the discussion during the interview. The resulting audio files were then saved and later converted, by hand, into a typed transcript. Each transcript contained not only the words spoken during the interview, but also all audible verbal and non-verbal cues, such as laughter, sighing, and pauses, which could be used during the process of coding and interpretation.

The interview data collected were explored using two distinct analytical approaches. The first was used to

find themes and patterns within the data, so that they could be converted into basic descriptive codes; a technique that is a hybridization of elements from the grounded theory approach as proposed by Strauss and Corbin (1990), Bogdan and Taylor (1975), as well as transcript analysis suggested by Pomerantz and Fehr (1997). The focus of this analysis is to extract content from the data by inductively coding various elements into distinctive categories. As the analytical phase of the research project advanced, the developed categories were combined, discarded, or refined in order to distill recognizable patterns of meaning from the raw data. These finalized data categories were then viewed in light of the original research questions as a means of testing the proposed hypothesis and allowing a deeper understanding of phenomena. The selected hybrid analysis approach also allowed for the coding of outside material, such as important identities and relationships to the participant, which are typically excluded by more traditional conversation analysis techniques. The main benefit that this form of transcript analysis has over others is the specific attention paid to the references and terms used by the speaker, as well as the importance of the identities, roles, and relationships between the speaker and others expressed during the interview.

The second analytical approach used to interpret the data is that of a thematic narrative analysis (Riessman, 2008). In this method of analysis, the entirety of the story that is told by the participant is utilized as the foundation

for interpretation. The participant’s holistic account is used instead of fracturing the transcript into smaller units of data from which one would develop codes, general themes, and symbols. The whole story can either highlight a specific case study that serves as an exemplar to a particular event, or be used to develop overarching patterns of cause and effect, a story arc that can then be compared against other stories to determine if they follow a similar progression of events.

Results

For the majority of the participants, it is clear that education has played a role in the development of their spiritual beliefs. However, what is surprising is the nature of influence education provided for these individuals has been one of a supporting role, rather than being a cause or catalyst for belief change. While most of the participants referenced their education during the interviews, it was mentioned as a follow up to another more significant catalyst, life events. In other words, the teaching of factual information in the classroom, for stories that were examined, failed to be sufficient for spiritual belief change in isolation of other more significant factors. Instead, the stories suggest that life experiences are the primary cause for spiritual belief change. Events that were described included the early death of a parent, the observation of immoral behavior by local church leadership, and being deeply moved by the actions of a close friend. These life experiences, much more so than factual knowledge, were cited as the source that made the first cracks in the foundation of previously established spiritual beliefs. These personal experiences, in a sense, sow the seeds of disequilibrium, causing a questioning of some or all of a spiritual doctrine. It is from that point onward education then has the ability to provide the support for belief modification or change. To provide a sense of the coded themes in context, a transcribed example for each is given below. Each case uses a block quote to maintain the richness of data and the unedited fidelity of the participant’s voice.

Spiritual Beliefs from Childhood:

My family both came from very strong religious backgrounds, and had seen themselves as being damaged by those backgrounds, so my parents deemphasized

religion. They never practiced anything formally, never asked that I practice anything formally, and it really just didn’t impact my life at all. I grew up in, the city I grew up in was the home to a large televangelism ministry in the 70s and 80s, so it was definitely part of the culture of school I went to, was very Evangelistically Christian, the culture of the city I was living in was pretty Evangelistically Christian, so a lot of what I thought about religion through that process was negative or antagonistic. (Sean, personal communication, February 6, 2009)

Life Experience as Catalyst:

Somewhere in there my mom died when I was about twelve, thirteen, this was something that initially caused me to start questioning things. And then through that time I just felt very guilty for feeling that way, very fearful that I might be punished for thinking this way, and it was a major relief to eventually accept Jesus into my heart, to accept God into believing this, and fully like putting all of my beliefs into this, and to devote my life to this. And after that feeling wore off, that initial, sort of like, feeling wore off, and that my life hadn’t really changed all that much, and I still was very angry that this had happened, and it still made no sense to me, it was very much, just hard to make any real sense out of this, it just seemed that God was extremely, kinda flippant about things, and if there was really a plan, what was the purpose of like putting us here just to suffer and all this kind of stuff? These were just these very adolescent, kinda of angry, thoughts that festered and were never really answered by anybody that I went to, and I just ended up with a bad taste in my mouth when it came to religion. I went to a Baptist school, college, for my freshman year and was really bothered by the hypocrisy that I saw there and the insulation, just the insular nature of the place, and I wanted to go to

Table 2
Frequency of Major Thematic Codes

Theme	Frequency
Spiritual beliefs established by family in childhood	16 / 16
Life experience as catalyst for belief change	13 / 16
The use of education after life catalyst occurred	11 / 16

another school and just kind of explore some other ideas. One of the things that really bothered me, was that nobody, like people would just scoff at anything that was bound in reason, or things like that. It was like blasphemy to discuss evolution that was something that was like a possibility, things like that. Just extremely difficult things in my life, know you, tragedies to me, and then like learning about tragedies that happen to others, I suppose a lot of that happens in school as well, in history we learned about Vietnam and just horrible things that men do to each other. And then learning about other cultures, and how different they are, and just learning that there are billions of people who believe in something that is completely different from what we believed in, and to truly consider that they might be damned for where they are born just seemed ridiculous to me... If I were born into a world where everything was absolutely perfect and my parents told me I was blessed by God, and everything just turned out great, and I was like the best person on the sports team, and totally rocked IQ tests, and dominated standardized tests, and everything just wonderful happened all the time, I wouldn't question my faith, I would be less likely to question my faith. But when, and now if I had been exposed to like, in that situation, all kinds of terrible things that happened to close people to me, and things like that. I mean there is always going to be that, "Why does this happen?" like you know the explanations aren't always satisfactory, that we can't know, and that there is a purpose behind this but it is too great for us to understand. Like that kind of stuff just isn't good enough for some people, and when you start to experience that you don't get punished for thinking this way, you feel a little bit more comfortable doing it. (Brian, personal communication, April 6, 2009)

Education After Life Event:

But, you know, the way I disengaged from Christianity there wasn't really a point where school helped me do that, school did help me sort of give language to my insurrection, in that were these set of critiques that were available... It started with gender politics, you know, that is where this crack started to happen and starting to look at Christianity as this patently male dominated thing, although that is changing somewhat, and you know, the history of that and how it has been used

in terms of asserting power and all these sort of masculine qualities to world history. And so that sort of opened things up and then I read Nietzsche and then got into this post-humanist, post-structural philosophy, continental philosophy, 20th century stuff. But my education into rhetorical theory really was a big part of that too, because that is what we study, we study how people make meaning, and where the buck stops, and how are narratives built, and how do people linguistically cobble together their universe, and that is very closely tied in with studies of religion, in fact some of the most notable rhetorical theorists write extensively about religion as a primary metaphor by which we can understand rhetoric, because, you know, almost any meaning making activity that we are involved, in it could be called a type of spirituality, our belief that Barack Obama will bring us salvation is not so different from the belief that Christ will bring us salvation, there are a different set of key terms, but the narratives look remarkably similar, so my vocation studying rhetoric and meaning construction has been a vocation in understanding how religions are built, how they operate, how they multiply, and spread themselves, and how people come to ask the questions they do like, "Why am I here?", why they need to ask that question, and what narratives have been built that are ready made to answer that question. Studying deeply how those things are constructed has really influenced my perspective on what spirituality and religion is. (Mike, personal communication, February 14, 2009)

Out of the data that was collected, it can be argued that there are two central reasons that factual knowledge presented in educational settings, in the absence of any other factors, seem to fail in producing a strong drive for cognitive change in the area of spiritual belief. First, there is a wide array of diverse information easily accessible and available for the construction of arguments supporting or attacking any spiritual belief system. Given the intellectual complexities of the world and availability of contradicting information with modern technologies, it seems that one particular fact may be either diminished in its capacity to influence a belief set as a whole, or can easily be dismissed, based on alternative information which supports an alternative set of beliefs. Second, for the participants the methods by which spiritual beliefs were first encoded into memory were often experiential and personal in nature. Therefore, these beliefs appear to be far more protracted and hardened against change than are other types of beliefs that have been based on purely

intellectual or theoretical ideals. Researchers have previously noted how some beliefs are only susceptible to being changed by beliefs of the same type (Edwards, 1990; Murphy & Mason, 2006). In such cases, the exposure to factual and logical information will do little to influence a belief that is founded in experience and emotion.

None of this is to say that education fails to play a role in the process of spiritual belief change; rather it is in a secondary role than as a catalyst for conceptual change. The relationship between spiritual belief change and education can be expressed well using an analogy of how fire is created. A powerful life experience is what causes that initial spark leading to flame, and the amount of knowledge that one has gained through education serves as the fuel for the combustion. Both elements need to occur in order for the reaction to happen; yet only one of them can act in a causal role. It would be possible for an individual to have plenty of fuel but never get a spark, just the same as it is possible for another person to have a spark but fail to have enough combustible material to generate a fire. A few of the participants openly questioned what spiritual beliefs they would hold today if they had received differing quality or quantity of education, or had experienced a different course of life events.

Discussion

From the data collected in this study it can be argued that the participants interviewed asserted that life events rather than formal education were the primary cause for changes in spiritual belief throughout their lives. Such findings contrast the popular assumption that it is education that directly changes the religious and or spiritual beliefs of students. While education was not reported to be the catalyst for spiritual belief change, it seems to have a secondary role in supporting the justification and rationale for modifying spiritual beliefs.

An Overview of Education and Spirituality

The one clear constant throughout all of the interviews is that spirituality is a deeply personal issue. The participants' beliefs have not been established through a general apathy of interest, or a premature foreclosure of identity; they have been thoroughly considered and evaluated as being an important element of personal life, one that requires reflection and careful selection. Each of the participants had weighed factors in their life and came to, what they believe to be, a reasoned and defensible position regarding their own personal spirituality.

The presumption, or even fear, that the teaching of a single fact, or a set of ideas, is sufficient to be able to fundamentally alter an individual's spiritual beliefs appears to be unfounded. During the interviews no one expressed such a sudden or radical change in spiritual belief stemming from one idea, lesson, or subject learned in school. It is an understatement to assert that the world

is a complex place; it is rich in a vast variety of religious heritages, scientific and empirical knowledge, and historical accounts of both good and ill committed by groups and individuals of all classes and culture. Along with the understanding of the world being as complex as it is, comes the realization that a properly motivated individual is able to support any one of a menagerie of wildly diverse beliefs given such a large set of information. With the range of information readily available on the Internet alone, it becomes extremely difficult to convince a critical mind of the validity or incongruence of a complex idea, especially one that is based on faith.

It is possible to suggest that by limiting exposure to diverse ideas, it might be possible to control an individual's belief system, in so much as that person would have no alternative prospective with which to view the world. However, the opposite case, open access to information, does not entail that alternative ideas are lead to belief change. For the participants who were interviewed by me, the exposure to novel ways of understanding the world failed to serve as a catalyst for spiritual belief change. Instead, in story after story, it was a life event or emotional experience that functioned as the beginnings of spiritual change.

A Comparison to Theories of Belief Change

In listening to each participant tell of their intertwined history of educational and spiritual development, and then comparing those stories to the variety of theories researchers have asserted about how belief changes occur, it appears to me that while no theory is directly contradicted by the interview data, at least one, the notion of hot conceptual change introduced by Pintrich, Marx, and Boyle (1993), is notably reinforced by the findings. Hot conceptual change highlights the importance of, the sometimes overlooked, factors that play a part in the modifications of belief: situations, motivations, and emotions. In short, hot conceptual change suggests that these important aspects of psychology are the influences that may serve as confounding variables for otherwise logical thought processes.

Other theories of belief change discuss the topic in terms of how the addition of novel information to a belief set can cause a reevaluation of one's knowledge, and may lead to an alteration in the structure of an entire concept or set of beliefs, (see Carey, 1988; Case & Okamoto, 1996; Piaget 1971; Thagard, 1992). While each of these theories is beneficial in attempting to understand how individuals may go about restructuring their beliefs about the world, the explanations they provide are founded on the epistemological assumption that logical systems are, first and foremost, influenced by factual information. A supposition that is true in symbolic logic proofs, but begins to unravel when dealing with the complex mental workings of people. These, and

similarly constructed theories, fail to account for the fact that emotions are an essential part of the conceptual systems of humans. As counter-intuitive as it might seem, many researchers may be over valuing the role of logical reasoning in cognition, and in doing so miss the fact that beliefs are often weighted with an emotional value.

The emotional value of a piece of information, in many respects, appears to be as strong of a factor in belief change, if not stronger, than the logical value of that information. In speaking with participants, a theme that was repeatedly expressed was of having experienced a life event which had an emotional element associated with it, which then started a process of belief change. The importance of life events, for the participants, parallels the ideas of Gardner (2006), and research of Falsetti, Resick, and Davis (2003), who also suggested that traumatic life events were a primary cause for belief change. It is easy to understand how there would most likely be a high level of association between trauma and emotions, and in turn how such a situation may lead to conceptual change, if the emotions from the situation were to be coupled with specific facts or beliefs.

An interesting implication of the results would be that the impact of new knowledge, or even the reprocessing of old knowledge, might be primarily influenced by the emotional state of the thinker, rather than the validity of information being provided. If this is the case we could expect to see the most dramatic upheaval of emotionally based beliefs occurring during, or directly after, high levels emotional duress. Furthermore, such an implication would also entail that under the majority of circumstances, the factual information being presented in the education of students in public schools would fail to be sufficient for causing spiritual belief change, an assertion which is strongly supported by the personal histories of the participants.

Spirituality and School Curriculum

Despite the long-standing contention over the legality of teaching of evolution, and other topics that drive controversy in public schools, there may be little room for maintaining such disputes that are founded on the claim that there is a nature opposition between spirituality and curriculum. While clearly further research expanded in scope and depth is needed to illuminate these issues further, if the themes found in these interviews were to continue to be expressed by a greater number of participants, then the arguments currently used to suggest that the teaching of specific ideas or theories, such as evolution, might challenge or damage spiritual beliefs of student would in fact be invalid and solely based on personal fears rather than psychological research. In essence, it might be possible to side step the entire debate over what sort of factual information should be taught to students in the sciences or other curriculums by understanding the mechanisms by which personal

spiritual beliefs evolve. In coming to a basic understanding of the psychological processes that govern belief change, it may very well be the case that no single fact exists which is strong enough to derail a personal spiritual faith. Therefore with continued exploration in this fruitful line of research, one might be able to argue that there should be no limits placed on the teaching of factually accurate information to students based on grounds of possibly infringing on their spiritual beliefs.

Conclusion

The research question guiding this study was *what influence does education have on students' spiritual or religious beliefs?* The answer suggested by this data set is that education appears to have a limited role in causing spiritual belief change. However, what an individual has learned over the course of their education can function in a supporting role by being used as justification for an alteration in belief. Rather than education, foundational changes in spirituality were reported to result from life events and experiences. Specifically, participants discussed life events that had a strong emotional component, such as the death of a loved one, as serving as a catalyst for deciding to alter their spiritual beliefs.

The assumption that subjects such as biology, might be the most likely to cause a question of beliefs seems to be inaccurate. Instead the participants described drawing support for their current spiritual beliefs from a wide assortment of disciplines including: English, psychology, sociology, history, research methods, and biology. Do individuals who have similar spiritual beliefs also have similar historical profiles? From the limited sample size of this study, it should be tentatively stated that with academics, there is little connection between their personal histories, and the belief system which they have selected to be a part of, other than to say that it seems in some cases, life experiences have shifted individuals from one belief set to another. Do different religious or spiritual belief systems respond differently to education? There simply is too little information with which to make even an educated judgment on this question, it is best left to others to decide an answer.

The topic of how education influences the spiritual belief change of students needs to be continued and have expanded research into the future. It is a fruitful and unexplored area of educational psychology that has substantial implications for both students and educators, yet has very little known about it beyond the limited research study presented here. The study presented here has taken the personal interviews of sixteen participants and attempted to find thematic commonalities within their described narratives of educational history and the process of spiritual change that they have undergone. In exploring these personal histories, one major theme was repeatedly asserted; personal experiences lead to spiritual belief change rather than learned factual knowledge. While specific facts and ideas are often used to support a

transformation in spiritual beliefs, this application of learned knowledge is used after a life event has served as the catalyst of change. These findings seem to contradict the assumptions individuals have about the role novel information has in maintaining and revision of beliefs. Moving forward, future researchers need to establish larger scale research projects, including greater and more diverse populations, including younger participants who are still in school, in an attempt to determine whether or not the introductory research conducted here has any merit to be generalized out into a larger and more diverse population.

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Appendix

Participant Profiles

Amber, Ph.D. Candidate Social Sciences, currently in her late twenties:

Amber was raised in western Africa and influenced strongly by her conservative Catholic mother and grandmother. As a lone child she went to Catholic Church with her grandmother, and grew up being told that, "Church was the way to go if you had problems." Amber went through difficult times as a kid that made her faith stronger by providing a place to find solace through reading the Bible and learning that while current pain is only temporary, something better waited later. The only happiness she knew, for the longest time, was religion and it became extremely important for her while growing up. Amber attended Catholic school from an early age until she went to college. However, Amber believes that nothing she learned in school ever challenged her faith. Even learning about evolution failed to have any impact; she openly admits that she has never questioned her belief in creationism. She no longer practices Catholicism. As Amber grew in her understanding of spirituality she believes she became more open minded. She came to believe that accepting Christ as a personal savior was the most important part of her faith, and that the role of church was that of a fellowship with others rather than a requirement of devotion.

Amy, Ph.D. Candidate Social Sciences, currently in her mid-twenties:

Amy was raised in the southern Gulf States region of the United States. Growing up within a Catholic household, Amy went to church regularly as a family. Even at a young age religion was a large part of her life, for both spiritual and social reasons. As time went on her parents divorced, and at around eleven years old Amy switched to a Methodist church because it was where her friends went to worship. By and large, where Amy was raised, religious gatherings were seen as social events in addition to practices of faith. Early in high school, Amy began seeing value in the teachings she was listening to at her religious functions, and they became more important as a moral compass in her life. Progressing through her teenage years and into adulthood, Amy started to move away from a strictly religious interpretation of the world because of personal interactions with people she had experienced over the years. For her change in belief, Amy points to people whom she cared about, and knew were good people, who according to organized Christianity were condemned to hell. She refused to believe that a good God would send people to hell for things they were unable to control. From there she began to question her faith, and reinterpret and reanalyze what she had been taught, to come to her own understanding of what being a Christian is. She currently identifies with being, spiritually, a Christian

with a set of core beliefs, but doesn't follow the religious traditions of a particular branch.

Ann, Ph.D. Candidate Social Sciences, currently in her mid-twenties:

Ann was raised in Canada within a family which did not emphasize religious devotion. Her mother had a personal spirituality that emphasized living a life that doesn't hurt yourself or others but she didn't push her beliefs onto her children. Her stepfather was non-religious, and rarely even spoke on the topic. Religion in general did not enter into their daily lives, and as a child Ann placed little thought to issues of religion or spirituality. When she was in high school, Ann's stepfather unexpectedly died. This event caused Ann to begin seeking a greater understanding of spirituality and brought up questions regarding the purpose and meaning of life. Even with her greater interest into spirituality, Ann currently has no affiliation with any religion and believes that focusing on personal morality is more important.

Brian, Ph.D. Candidate Social Sciences, currently in his late twenties:

Brian was raised in a military family, and because of that life style, grew up in a variety of locations within the United States and also internationally. He identifies himself as being disinterested in religion as a child, but that it began to strongly influence him during his teenage years once his family was posted in Mississippi. At that time Brian started going to a southern Baptist church, adopting their beliefs and becoming a born again Christian. During his mid-teens, Brian's mother died. While he wanted to question his faith for having lost his mother, Brian felt great guilt in doing so and found relief in accepting that Jesus had a plan for him. However, after a brief period of time of solace, Brian's doubts continued to nag him and he found little sense in the actions of God, which seemed flippant. Brian went on to a Baptist college but during his freshman year was bothered by both the hypocrisy and insulation at the school. He decided to leave at the end of the academic year. In continuing with his education elsewhere, Brian began to resonate with the notion of the null hypothesis, and that a person should start from a position of disbelief, waiting for the evidence of existence to be provided. Currently, Brian is comfortably agnostic; he feels that it isn't his role in the world to solve age-old issues of faith, nor is it even possible.

Derek, Ph.D. Sciences, currently in his early thirties:

Derek was raised in the northeastern United States within a moderately Jewish household, with his parents only really emphasizing religion at major holidays. Derek quickly lost interest in participating while enrolled in a Hebrew school program. As he aged he found himself moving away from formal religion and more towards looking at nature as a form of spiritual

inspiration. Derek sees many logical contradictions in the various religious doctrines. For him the beauty and elegance of the natural world is a kin to a personal religion. Derek follows the notion that science is the closest humans can come to understanding a God, if there is one, rather than following, what he believes to be, works of mythology written by people thousands of years ago. Derek continues to practice some of the major Jewish rituals with his young son, to provide him with cultural, rather than religious, heritage.

Emily, Ph.D. Candidate Social Sciences, currently in her late twenties:

Emily was raised in a Christian family, having bible readings as a family every morning and attending church regularly. The institution of religion was very important to her growing up, although she admits to having fears as a child of not being Christian enough. Emily went to a Christian school until fifth grade and then was home schooled until going to a Christian college. She chose to embrace Christianity as a teenager but found that many people failed to act in accordance to the beliefs they professed, which lead to some personal confusion on the value of belief. She had a crisis of faith early in college due to a family event, which lead to her being agnostic for a period of time before coming back to a Christian belief system that was significantly different than how she was raised. She asserts that in believing that God is in sovereign control of everything, education should be a priority of all believers, to learn more about God's creations, and that people should not have problems with apparent contradictions in the world since it is all God's design.

Jonathan, Ph.D. Education, currently in his late fifties:

Jonathan was raised in the Midwestern United States, participating in church functions, but always believing that there was something more to life than what he had observed in the lives of those around him. His experiences with the church lead him to believe that religion was simply wish fulfillment for the old and was of little interest to him. Coming from a family that didn't particularly value intellectual pursuits, he joined the military in the late 1960s as a way to find meaning and purpose in life. While larger ideals such as duty and honor were appealing to Jonathan, he soon found that the vast majority of people in the military were just as confused as he was about how to live their lives. During this time he began to question if there was anything that could provide meaning and purpose in his life. As he was about to be stationed in Vietnam, another enlisted man began talking to Jonathan about having a personal relationship with God through Christ. Others had tried to talk to him about their religious beliefs before, yet this individual stood in contrast, through his lived actions, to many of the others Jonathan had known. He spoke with Jonathan about how events in the bible were more than myths, such as the prophesying of the creation of Israel,

which caused Jonathan to question what other historic truths might exist in the bible. After his conversion and time in the military, Jonathan went on to college. During this period he didn't have his faith challenged by education. As an example he asserts his belief in creationism was never confronted by science, due to his belief in the irreducible complexity argument.

Julie, Ph.D. Candidate Social Sciences, currently in her late twenties:

Julie was raised in the Southern United States, and as a child she went to Presbyterian Church every Sunday, and some Wednesdays, with her family. Religion was always a central part of her family's life. Julie became very involved in the church as an adolescent, wanting to change her lifestyle after her older sister had been sent to boarding school for delinquent behavior. She became highly involved in youth groups and was the youth board member for the session in the church (the governing body). After seeing the inner workings of the church, especially how decisions were made, such as which families were helped and which were turned away, Julie was disgusted with the hypocrisy of the church leadership. After that time she stopped attending youth groups and had a decline in religious belief. In college Julie stopped identifying herself as a person of strong conviction and lessened the amount of time she went to church. Now Julie mainly goes to church for the social interactions. Her faith has become a spirituality in which she values nature, focusing less on following the edicts of a religion. For Julie education has allowed her to be critical about life and to not blindly accept the things people tell her on faith but to question and analyze ideas.

Jen, M.A. Social Sciences, Currently in her late twenties:

Jen was raised in the Midwestern United States in a Catholic household and was greatly influenced by Catholic beliefs as she grew up. She began to take issue with Catholicism around the time she went to college. Her explorations into the history of the church lead her to recognize how the religious institution had, and continued to, view and treat women and homosexuals in negative ways. The more she learned about this often overlooked side of the church, the less she felt like it was a belief system which reflected her own personal values. In seeing a disconnection between her views of a moral life and that of other professing Christians, Jen slowly moved away from the beliefs of her Catholic upbringing. Early in college she met an individual who was a practicing Buddhist. Jen, looking for a concrete practice that joined a spiritual and moral life style, began the exercise of daily meditation. This daily practice provided Jen with a sense of connection to the world, and a basis for her future spiritual development. Currently, Jen identified herself as being a Zen Buddhist, with the goals of mediating on life experiences and discussing moral issues with other Buddhists.

Does Education Cause Spiritual Belief Change?

Mike, Ph.D. Liberal Arts, currently in his early thirties:

Mike grew up in the Midwestern United States, and spent the first 18 years of his life in a Mormon family with strong religious beliefs, but then drastically moved away from those beliefs when he went away to college. Mike felt deeply connected to his faith at a young age, but in gaining a sense of the world through life experiences, Mormonism began to appear to him to be a largely regressive practice. Mike cites the refusal of members of the Mormon faith to ask even elementary philosophical questions about the world, as a troubling and disenchanting experience for him. He describes his change in belief as a slow defection from Mormonism, throughout this process he has explored various religious traditions and found arguments which reflected his own beliefs in reading philosophy and comparative religion texts. Mike cautiously identifies himself as a pantheist, believing that a connecting force exists in all things, but remains highly critical of religions.

Molly, B.A. English, currently in her early thirties:

Molly was raised in the Northeastern United States within a Catholic household. She attended a private Catholic school for her early education through middle school and then switched to a public high school. Molly enjoyed and resonated with her Catholic education and upbringing. She believes she had a very positive childhood and experience within the church. However, as she became a teenager Molly started to question doctrines of the church, specifically the role of women and issues central to women's rights such as birth control. She became frustrated at how women had been portrayed in the eyes of the church. Around this time Molly began to separate her intellectual understanding of the Catholic faith with her own personal spirituality and beliefs about morality. While she still occasionally prays and enjoys the rituals of the church, she also sees great hypocrisy in their decisions. Molly no longer follows the Catholic faith and believes that love and respect for others are the two most important elements of her personal spirituality.

Robert, Ph.D. Candidate Social Sciences, currently in his early thirties:

Robert was raised in the Northeastern United States, in a reformed Jewish household. Religion was of little real importance to him growing up. His family was lax and rarely followed the practices and the rituals of the faith, only celebrating the main holidays at temple a few times a year. Robert went to Hebrew school as a young boy and into adulthood, begrudgingly, continuing his studies past his Bar Mitzvah at the behest of his parents. At the time he felt that Judaism, as a religion, was of little importance in his life, while recognizing the significance of continuing the Jewish traditions. Robert now believes that there is a fundamental distinction to be made between religion and spirituality; he came to this understanding through experiencing life events and extensive time abroad in China and Belize. Robert believes that all

religions, being made by man, are deeply flawed, but furthermore that individuals can have a personal spiritual relationship with God, or whatever, without the interference of religion.

Sally, B.A. Education, currently in her early twenties:

Sally was raised as a Jehovah's Witness. Religion was strongly emphasized within her household as she was growing up and she remembers putting her full faith into the religion when she was a child because people she loved and trusted taught it to her. However, as she aged she began to question some of the things her family's faith declared were immoral, especially the notion that individuals who were not part of their religious group were inherently bad. Overtime she began to break away from her religious upbringing and established spirituality based on Jewish traditions, which is the faith of her husband.

Sean, Ph.D. Education, currently in his mid-thirties:

Sean grew up Southeastern United States with staunchly anti-religious parents, who had seen themselves as being damaged from their earlier experiences with religion, and so deemphasized the role of religion in the life of their children. While the culture of the city and school Sean grew up with were Evangelical Christian, he maintained agnostic beliefs throughout his early life and through college but had a conversion experience when he began teaching at an inner city high school. He began teaching courses on African and world literature, which dealt with issues of spirituality and religion. The material he and his fellow faculty were teaching, caused them to view their role in the urban school as a part of their ministry and outreach to youth. All of these factors built up to an adult conversion in his early twenties. Currently a professing Christian, Sean believes that there is a role for doubt in a strong faith, and a good deal of what God might ask a person to do is impossible, but the act of trying is essential. Sean spoke to the point that only by becoming more educated can people find religious truth, and that a lot of good science and religion has been lost by people limiting what they learn. For Sean, formal education helps to encourage and develop faith, and improves the interactions between those of faith and those who choose alternative beliefs.

Thomas, Ph.D. Candidate Social Sciences, currently in his late twenties:

Thomas was born into a Roman Catholic family. He had a mother who was very religious and accepted on faith whatever she was told by the Church, without ever questioning those beliefs, and a father who was agnostic due to unfortunate events early on in his life. Thomas was sent to Catholic grade school for religious education and from an early age believed that the complexity of the world was a clear indication of God's creation of everything. Thomas, spurred on by academic conversations on religion in college, went through a two-year period in which he strongly questioned his religious

faith and deeply explored other religious traditions. During this period he examined his core beliefs and found himself still aligned with the Catholic tradition. Thomas is a strong supporter of scientific discovery and research, but he admits he has never been able to question his fundamental belief that there was God who started the process. God for him is perfect and loves us, however the world is not designed to be perfect, and therefore we are here to choose whether or not we want to accept God.

Tim, Ph.D. Education, currently in his mid-sixties:

From an early age Tim went to Sunday school as a child, where his initial religious beliefs were formed. He continued to follow those beliefs through high school, until doubts began to emerge as he recognized a disconnection between the teachings of the bible and scholastic subjects. Specifically Tim saw friction between the explanations of science and religion, two areas that were both of deep personal interest. Even with his doubts, Tim's self identity was wrapped up in being a Christian. He continued to struggle with his beliefs throughout college, determined to find a way to marry science and religion together. He admits to failing in this attempt to merge the two belief systems, sometimes being strong in his religious faith and at other times tossing them aside in favor of academics. Tim claims that he had a personal religious experience that caused him to, "doubt his doubts," and strongly reinforce his religious beliefs. While his faith waned into his 30s, his beliefs had rebounded with his religious experiences, and when his children were born he and his wife began attending church again regularly. Since going back to church Tim, has continued to be very active in his Presbyterian community for the past 25 years.

Article Citation

Markle, T. D. (2012). Does Education Cause Spiritual Belief Change? *Current Issues in Education*, 15(1). Retrieved from <http://cie.asu.edu/ojs/index.php/cieatasu/article/view/838>

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Current Issues in Education

Mary Lou Fulton Teachers College • Arizona State University
PO Box 37100, Phoenix, AZ 85069, USA

Manuscript received: 10/19/2011

Revisions received: 3/27/2012

Accepted: 3/29/2012



Current Issues in Education

Mary Lou Fulton Teachers College • Arizona State University
PO Box 37100, Phoenix, AZ 85069, USA

Volume 15, Number 1

April 3, 2012

ISSN 1099-839X

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