

Development of a Theistic-Atheistic  
Strength of Worldview Scale

by

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## ABSTRACT

The purpose of this study was to create a brief strength of religious/nonreligious worldview scale that has language inclusive for nontheistic populations. An exploratory factor analysis was conducted using 207 participants from a major public southwestern university and a public midwestern university in the United States. It was determined that the Strength of Worldview Scale (SOWS) is a single-factor measure, which also demonstrated high test-retest reliability. It was hypothesized that scores on the SOWS would be negatively correlated with the Depression, Stress, and Anxiety Scale (DASS), positively correlated with the Purpose in Life Subscale, and not correlated with the Extraversion Subscale of the Big Five Inventory (BFI). Only a modest statistically significant correlation between the SOWS and Purpose in life was found. A regression analysis was also conducted with theistic/atheistic belief as a predictor of scores on the SOWS. A curvilinear relationship was found, indicating that strong theists and atheists score more highly in the SOWS than those who are unsure of their beliefs on the existence of a God, Gods, or Higher Power. Preliminary results suggest that the SOWS may be a promising measure for assessing strength of belief in both theist and nontheist populations.

This is dedicated to my friends and family who have supported me throughout this challenging endeavor; for without their help I may never have finished. In no particular order, this is dedicated to Charlie, Dana, Eric, Todd, Kurt, Dawit, Monica, Nicole, Mike, Bryan, Brian, and the rest of my ASU cohort, as well as my mom and dad, whose constant faith and support of me has been my bedrock.

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## **Review of Literature**

Religion has been, and continues to be, a central part of human culture for thousands of years, and for many individuals, it is a fundamental aspect of life and personal identity. However there is a growing trend of individuals identifying as nonreligious throughout the world. Atheists can be described as individuals who lack a belief in any God or supernatural higher power (Gervais, Shariff, & Norenzayan, 2011). It is estimated that there are close to half a billion individuals worldwide who do not believe in God (Zuckerman, 2007). Nonbelievers in God comprise the fourth largest religious identity worldwide, behind Christians, Muslims, and Hindus (Gervais, 2011). Still, nonbelievers are an often underrepresented and sometimes discriminated minority in nearly every country in the world. While in the United States atheists do not face such grave persecution as death or imprisonment for their belief, their experiences are unique to being irreligious in a religious nation and culture. Atheists report experiencing psychological harm as a result of social and personal attitudes of others regarding their beliefs, but these factors are not well studied (Whitley, 2010). The field of counseling serves to help those of diverse backgrounds through culturally sensitive research and practice. There is currently insufficient research on the experiences of atheists in the counseling setting, especially in comparison to the extensive research on religious and spiritual populations. This is in part due to inadequate measures to allow in-depth study of the nature of nonreligious beliefs. In order to better assess the relationship between mental health and religious belief, this study aims to develop a measure of strength of belief that is applicable to individuals on the full spectrum of theistic-atheistic belief.

In this review, I will first define religion and spirituality, as well as what it means to be an atheist or nonbeliever. I will then describe the demographics of Atheism in the United States, and provide a short historical background for the persecution and discrimination against atheists. Lastly I will summarize current literature on the relationship between religious belief and mental health, and examine relevant measures of religious belief as well as the issues in the measurement of atheists' belief systems.

### **Definitions of Religion and Spirituality**

Although religiosity and spirituality are nearly universally salient constructs, there is some variety as to how they are defined, and they are difficult to measure (Hwang, Hammer, & Cragun, 2009). Religiosity is commonly accepted as “beliefs, practices, behaviors, and feelings that are expressed in institutional settings or ways associated with a denominational affiliation“ (Richards, Bartz, & O’Grady, 2009). Spirituality is a more generalized construct, and is defined by the American Counseling Association as a “capacity and a tendency innate and unique to all persons...that moves the individual toward knowledge, love, meaning, peace, hope, transcendence, connectedness, compassion, wellness, and wholeness“ (Summit Results, 1995, p.30). Simply put, spirituality is a “general feeling of closeness and connectedness to the sacred (Worthington, Hook, Davis, & McDaniel, 2010, p. 205). While the definition of spirituality is vague enough to cover a myriad of individual beliefs, it is still worth keeping in mind that some individuals do not regard themselves as spiritual (Baker & Smith, 2009). Many atheists do not identify as spiritual, even if they may engage in ways that can be interpreted by others as spiritual (Hwang, Hammer, & Cragun, 2009). Religiosity generally refers to an institutional context and spirituality with an

individualized one, and while there is often a great deal of overlap, they are not necessarily interconnected (Richards, Bartz, & O'Grady, 2009). In fact, there is only a modest correlation between self-reports of religiosity and spirituality (Kapusinski & Masters, 2010). There exists a growing number of individuals who profess belief in a God, Gods or higher power yet are unaffiliated with any religion, just as there exists nonspiritual people who participate in religion for primarily social reasons (Baker & Smith, 2009; Sherkat, 2008). While there are many ways to define religiosity and spirituality, these constructs do not adequately encompass the belief systems of nontheists, who tend to view themselves outside of both religiosity and spirituality.

### **Definition of Atheism**

Whereas theism represents individuals who believe in one or more omniscient, omnipresent, personal God or Gods (Cliteur, 2009), atheism represents individuals who do not believe in any God, Gods or higher power (Whitley, 2010). It is worth noting that while most theists in the United States subscribe to monotheism (belief in a singular God), there is a minority population that believes in polytheism (belief in 2 or more Gods) or a more generalized and impersonal higher power (Cliteur, 2009). For the purposes of this review, theistic beliefs may be represented by any combination of God, Gods, or higher power to represent the entire spectrum of theistic beliefs. Similarly, while atheists are often considered a homogeneous group, there is not one set of beliefs to categorize these individuals. There are common misunderstandings in the varied ways one can be a nontheist, such as confusion between agnosticism and theism. Agnosticism is traditionally defined as an uncertainty about belief in the existence of a God or Gods, or a belief that we do not currently have the ability or knowledge to make a definitive

statement on the existence or nonexistence of God (Baker & Smith, 2009). However, atheism and agnosticism are not necessarily separate constructs. Both theism/atheism and gnosticism/agnosticism can be viewed as dimensions of belief and knowledge, respectively, where theism/atheism represents belief/nonbelief in a God or Gods, and Gnosticism/agnosticism represents possibility/impossibility of knowing the truth. There can then be four combinations: agnostic atheist, gnostic theist, gnostic atheist, and agnostic theist. Due to the relatively recent surge in writings about atheism in popular culture (see for example, Hitchens (2007), Dawkins (2006)), there are many more terms in existence to describe the more nuanced dimensions of nonbelief. For the purpose of clarity in this study, the term atheist will be used to refer to those who do not believe that any God exists, while the term nonbeliever will be used to describe the spectrum of nontheistic belief systems. Both monotheists (belief in a singular God) and pantheists (belief in more than one God) will be referred to as theist and defined by their belief in at least one God.

### **Beliefs of Atheists**

What it means to be an atheist or nonbeliever can be in many ways just diverse as what it might mean to be a Christian or a Muslim. Without any holy texts or major centralizing organizations, nonbelievers tend to be very individualized in their belief systems. However numerous atheist, secular, and humanist organizations, such as American Atheists, Atheist Alliance, and the American Humanist Association, have emerged in an attempt to centralize believers. Beliefs tend to be structured around concepts of rationality, logic, and material existence, rather than the supernatural. Still, supernatural beliefs are not necessarily excluded, as some atheists may believe in ghosts,

karma, aliens or other entities unobserved and unproven. Atheists may have a myriad of varying ideas about the nature of our universe, but share the belief that there is no omniscient and omnipresent higher power. Without a religion to explain purpose in life, atheists often turn inwards for explanation. They believe that one's meaning and purpose in life is the responsibility of the individual to develop. An atheist believes that the natural world is all that exists, and without a belief in an afterlife, this life has innate value.

While religions often play a large role in the social expressions of their members' lives, atheism does not have any dogmatic social teachings or requirements of how to express one's belief; though prominent atheist individuals and organizations provide suggestions, such as alternatives to Christianity's Ten Commandments (Dawkins, 2006). As a consequence atheism is not seen as a religious identity, but is more of a philosophical ideology similar in type to feminism, Marxism, etc. A common stereotype of atheists is that since they do not believe in a higher power that has supreme authority to ensure that they act morally, they are more inclined to immoral behavior (D'Andrea & Sprenger, 2007). From a religiously morally absolutist point of view, because atheists do not adhere to any religion's moral code, they are viewed as immoral. However, atheists have the same intrinsic emotions as theists and are driven to moral action just as naturally (Baggini, 2003). Atheists subscribe to morality that is rooted in evolutionary or sociological bases. From an evolutionary standpoint, humans have developed the ability to act rationally and behave in ways that will help sustain the species, which implies that moral decision-making is ingrained in our species (Dawkins, 2006). The sociological perspective suggests that as a group, people determine what is moral over time within a

cultural perspective. In both bases, religion is seen not as the originator of morality but as an expression of cultural and evolutionary morality.

Atheism is seen as ideologically in contention with theism, causing a need for justifications of an atheistic worldview. The theoretical justifications of contemporary atheism can be broken into scientific atheism and humanist atheism (LeDrew, 2012). Scientific atheism is the belief that scientific and technological advancement through utilization of the scientific method and rational thought are in conflict with religion and ultimately make religion and belief in a higher power obsolete. Humanistic atheism takes the approach of viewing religion within a sociological and historical context, theorizing that without suffering and inequity there would be no need for religion. Both theoretical aspects of atheism do not necessarily disprove the existence of a higher power, but merely demonstrate the foundations of a worldview are well developed.

### **Demographics of Atheism**

In the United States, individuals who identify as atheist consist of about 4-5% of the population, though this number is likely low due to a number of reasons why someone would choose not to disclose his/her nonbelief (D'Andrea & Sprenger, 2007). In some fundamentalist theocratic nations atheists can be imprisoned or even killed, and while nothing of this magnitude exists in the US, discrimination and prejudice against atheists persists (Gervais et al., 2011). An individual may choose not to identify as an atheist because of the stigma in such a highly religious nation as the US, instead choosing one less conflicting with religious ideology, such as questioning or agnostic. Even in European countries such as France and Norway with a large population of nonbelievers, only a small percentage identify as atheist (Zuckerman, 2007). People may also hold a

personal belief of atheism, but identify with a religious organization of upbringing for social or cultural reasons (Baker & Smith, 2009). For example it is common for a Jewish individual to identify with the religion of Judaism, but yet not believe in the existence of God, especially in comparison with Christianity, where faith in God is a more central tenet of affiliation with the religion (Sherkat, 2008).

While atheists may be an underrepresented population, the number of people identifying as atheist is growing worldwide. However, the percentage of atheists varies highly from country to country and region to region. Nations where there are higher rates of general public welfare and security tend to also have the highest rates of nonbelievers, and conversely nations that are poorer or have less societal welfare tend to be highly religious (Zuckerman, 2007). There are anomalies, such as developed nations (U.S., Ireland) that are highly religious, and nations with poor development and security that are irreligious (North Korea, former Soviet states). The marked trend in increased secularization over the last few decades has for the most part been limited to the more developed nations, such Canada, Australia, Japan, Korea, and much of Europe, while less developed nations have not become more secular. Although many individuals in these secularized countries may profess a lack of belief in any God, it appears many do not wish to be identified as atheist. For example, 31-44% of the British reported not believing in God, though only 8% reported identifying as an atheist (Zuckerman, 2007).

In the United States, atheists tend to follow certain demographic trends. In a country where religious conservatism has become strongly associated with political conservatism, atheism is much more frequent among the politically liberal (Sherkat, 2008). According to one study, of those who identify as atheist, 77% are male and 59%

are under the age of 49. Atheists also tended to be more, educated and wealthier than the general population (Hwang, Hammer, & Cragun, 2011). Although most atheists have no affiliation with a religious organization, a small number (2.6%) of atheists identify with a particular religion (Sherkat, 2008). Atheists are considered more likely to be more “independent, introverted, lonelier, undogmatic and tolerant of ambiguity...” and yet show no differences with religious individuals in traits such as “likelihood of performing an altruistic act, emotional disturbance, depression, self-esteem, dispositional optimism, and social support” (Hwang, Hammer & Cragun, 2009, pg. 613).

### **Discrimination Against Atheists**

Atheists have historically been an underrepresented and discriminated population, both worldwide and in the US. Skeptics of the supernatural have pondered their existence since antiquity. Protagoras, recognized as the earliest prominent philosopher to be contemporarily considered an atheist, was eventually condemned to death for his writings. In ancient Greece, atheism was used primarily as a label to attack opponents, though it was unheard of for an individual to self-identify as an atheist at that time (Bremmer, 2007). It was not until the 18<sup>th</sup> century in France that Atheism became used as a term for self-identification, though agnosticism remained a safer and more popular label to express a disbelief in theism (Hyman, 2006). With increasing modernity in the western world at the turn of the 20<sup>th</sup> century, atheism became more accepted as a cultural phenomenon.

Persecution of atheists was not uncommon throughout history. The penalty for apostasy was often death or imprisonment in many historical cultures, including those of medieval Europe (Bremmer, 2007). Severe punishments for atheism however still exist



in some Islamic nations in Africa and the Middle East. Seven countries currently still have a death penalty for apostasy and atheism, and while there have not been many executions in recent history, the existence of such laws point to extreme prejudice in some parts of the world towards the irreligious (Evans, 2012). Atheists may not have to risk their lives to express their beliefs in the United States, but that does not mean that discrimination here does not exist. Federally, the United States protects the rights of atheists to hold public office, though seven state constitutions still have laws preventing atheists from holding public office (State Constitutions that Discriminate against Atheists, n.d.).

Even without much institutional discrimination in the United States, atheists still face widespread and often open prejudice for their beliefs. In a study investigating discriminatory experiences of atheists, forty-one percent of self-reported atheists recounted experiencing discrimination within the last half decade (Hwang, Hammer, & Cragun, 2009). Multiple studies and polls support that atheists are viewed as one of the most distrusted groups in America (Edgell, Gerteis, & Hartmann, 2006; Gervais, 2011; Gervais, Shariff & Norenzayan, 2011). Amongst various hypothetical (and equally qualified) minority presidential candidates, the atheist was the only one that a majority of respondents would be unwilling to vote for (Gervais & Norenzayan, 2011). Atheists were also the minority category that Americans would least approve of their children marrying (Edgell, Gerteis & Hartmann, 2006). Respondents of another survey reported that atheists received lowest priority for receiving a hypothetical donated organ, suggesting that people believe atheists are less deserving of a second chance in life (D'Andrea & Sprenger, 2007). In news and popular media outlets, atheists have been

criticized and stereotyped in line with the general prejudice towards atheism (Johnson, 2012). The general stereotype of an atheist is a person who does not act morally, worships the devil, is angry towards God, is confused, and rude (D'Andrea & Sprenger, 2007).

One interpretation for the cause of this prejudice and distrust of religious individuals towards atheists is that atheists are believed to lack a higher authority for morality (Gervais, Shariff, & Norenzayan, 2011). Because atheists act without fear of supernatural monitoring or punishment, they are seen as a threat to act uncooperatively with society. Almost half of Americans responded that they view it is impossible to act morally outside of God, so it is no surprise that those responding would express distrust and the resulting prejudice towards atheists (Edgell, Gerteis, & Hartmann, 2006). It would seem that the degree of distrust of atheists correlates with an individual's belief that belief in God is a requirement for moral behavior. A study by Gervais, Shariff, and Norenzayan (2011) investigated this claim, and discovered that distrust of atheists is generalized in society, even amongst spiritual individuals who did not actively participate in religion.

Not surprisingly, negative attitudes towards atheists have the potential to contribute to psychological distress. Religiosity and spirituality have been well studied in regard to mental health and well-being, although atheism and well-being is relatively unexamined (Weber, Paragant, Kunik, Lomax II, & Stanley, 2011). While connections have been made to religiosity and positive mental health, to imply the inverse that lack of religiosity is psychologically harmful would be erroneous (Morgan, 2013). Weber et al. (2011) conducted a meta-analysis of studies comparing nonbelievers (atheists and

agnostics) with believers (in God) in terms of psychological distress. The findings from 10 studies were mixed, suggesting inconclusive or marginal overall differences in degree of distress between believers and non-believers. Some of the studies in the meta-analysis suggest that strength of belief, whether it is atheistic or religious, moderated the relationship between belief/nonbelief and psychological health. That is to say, individuals who believed strongly in their atheism were just as psychologically fit as their theistic counterparts, provided they had a similarly levels of doubt in their belief system. However, a common experience among newfound atheists is that their beliefs are temporary or “just a phase,” potentially making it difficult for atheist to develop similar levels of conviction in his/her worldview to utilize it as a tool for coping. These findings, as well as the findings on negative attitudes towards nonbelievers may help explain potential factors for psychological distress of atheists.

The distress that nonbelievers experience has been linked to social isolation and internalizing negative attitudes (Edgell, Gerteis, & Hartmann, 2006; Jenks, 1986). Also, whereas religious individuals may find comfort from the social aspect of religion, most atheists do not have such an organization to connect with others who share a similar belief system. One study indicated that self-reported atheists were more likely to report experiencing discrimination than those who held private beliefs in line with atheism but chose not to identify as such (Cragun, Kosmin, Keysar, Hammer, & Nielsen, 2012). A similar study by Swan and Heesacker (2012) found no significant differences in negative perceptions towards an individual labeled as an atheist and an individual whose beliefs would categorize him/her as an atheist. This suggests that the only effective method for nonbelievers in God to avoid negative perceptions is by hiding their beliefs from others

and refusing to identify publicly as an atheist. Similarly, minorities of other identity categories who are more outspoken about their identity are more likely to experience prejudicial attitudes as they are perceived as a threat to the *status quo* (Kaiser & Pratt-Hyatt, 2009).

There are indications that prejudice in atheists can be reduced. Atheist prejudice is far less common where atheists are more prevalent, and it has been experimentally shown that reminders of atheist prevalence reduced prejudicial attitudes towards atheists among religious individuals (Gervais, 2011). On an individual level, Garneau (2013) investigated the relationship between mental health and perceived prejudice towards atheists. Individuals who perceived greater prejudice towards their atheism were more likely to report psychological distress. Some common attempts to manage the perceived prejudice, such as being secretive about one's beliefs and trying to "pass" as a non-atheist were shown to correlated with greater distress, whereas having a large network of other atheist friends was correlated to lesser distress. For an atheist wishing to manage negative prejudicial attitudes, he/she is faced with a seeming catch-22 – identify publicly as secular in order to gain the benefit of a social support network but face more prejudice from others, or conceal one's beliefs to reduce prejudice but face inner conflict from having to hide one's true beliefs. In addition, remaining closeted about one's beliefs does not protect from internalizing prejudicial attitudes towards atheists.

### **Atheism as a Diversity Issue in Counseling**

Psychotherapy has historically been a secular institution. Sigmund Freud likened religious belief to an illusion, and it was perhaps in his mold that the field of psychology and psychiatry was secularized (Whitley, 2010). In recent decades religion and

spirituality have been integrated into therapy as a way to connect to the diverse experiences and worldview of clients. Still, there remains a drastic gap between the secular nature of the profession and the majority religious clients it serves. Additionally, the experiences of atheists in therapy are understudied in comparison religious and spiritual individuals.

Psychologists are much more likely to be nontheistic than the general public. Whereas over 90% of Americans are theists, only 30-40% of therapists are estimated to believe in God (Whitley, 2010). A survey of psychologists indicated that they were markedly less likely to view religion as something important in their lives, compared to the general public (Post & Wade, 2009). According to a Gallup poll, two-thirds of Americans would prefer to be treated by someone who has similar spiritual beliefs (Young, Wiggins-Fame, & Cashwell, 2007), suggesting a potential issue of a spiritual/religious “mismatch”. Despite this difference, it is the responsibility of the therapist to be competent in working within a client’s worldview, especially since a therapist will almost always differ with the client in some key identity category, whether it is race/ethnicity, sexual preference, socioeconomic status, etc. Attention has been given to ensuring that therapists can maintain this competence. The Association of Spiritual, Ethical, and Religious Values in Counseling (ASERVIC) is a group within the American Counseling Association maintains a specific list of competencies deemed essential for implementing religion and spirituality in therapy (ASERVIC, 2009). Still, in one study only 46% of counselor educators in CACREP approved programs felt prepared to include these competencies, and only 60% of counseling students in these programs reported exposure to spiritual competencies (Young, Wiggin-Fame, Cashwell, & Belaire,

2002). It would seem that the counseling profession has identified a greater need to train its future therapists to deal with issues relating to religion and spirituality. One study indicated that mental health professionals were more likely to view the beliefs of less common religions, such as Mormonism or Nation of Islam, as pathological in comparison to Christianity, even when the beliefs are not identified as belonging to the particular religion (O'Connor & Vandenberg, 2005). This study is concerning in that it suggests unfamiliarity with diverse beliefs may be harmful to therapy.

Atheism is a topic that is rarely mentioned when integrating religion and spirituality in counseling. The counseling profession prides itself on embracing the diversity of its practitioners and its clients, and being able to treat clients equitably and fully. This is true regardless of the counselor's own beliefs and values, as both the American Counseling Association and the American Psychological Association mandate that practitioners must not let personal bias take precedence over their clients' worldviews (ACA, 2005; APA, 2010). For the most part, counseling has embraced multiculturalism, which D'Andrea and Sprenger (2007) define as empowerment of marginalized groups in society, yet atheists and have been conspicuously absent in the research on multicultural counseling. Atheists comprise a small (5-10%) percentage of Americans, similar to other minority groups who already receive attention in multicultural counseling literature. As an underrepresented population, atheists have similarities to the LGBT community, and parallels can be drawn. Much like LGBT individuals, externally adopting a marginalized label and "coming out" as atheist can be a potentially empowering and liberating step in the development of personal identity (Smith, 2011). However, both atheists and the LGBT face prejudice for their identities,

and may choose instead to conceal their marginalized identity from others to avoid judgment, thereby experiencing similar pressures and challenges to explore in therapy.

### **Religiosity and Mental Health**

The connection between religious belief and mental health has been well studied in psychological literature (Bergin, 1983; Galen & Kloet, 2011; Hill & Paragment, 2003; Weber et al., 2012). Religious belief has been associated with greater physical health, mental health, coping, and life satisfaction, and more specifically less depressive symptoms, anxiety, and suicide (McCullough, 1999; Koenig, McCullough, & Larson, 2001; Plante, Yancey, Sherman, & Guertin, 2000; Weber et al, 2012). The literature in support of the positive relationship between religiosity and life satisfaction is based on a meta-analysis using cross-cultural and multi-national sampling, suggesting a robust relationship (Okulicz-Kozaryn, 2010). While many of these studies indicate positive correlations between religious belief and mental health, some evidence is unclear or contradictory with respect to a positive linear relationship (Galen & Kloet, 2011). The relationship between religiosity and mental health appears to be more complex since there have not been studies to successfully find a causal relationship between increased religiosity and mental health. Within the Vulnerability-Stress Model, the resources, both social and personal, that an individual finds with belief and practice in a religion may act as a coping tool for life challenges (Zwingmann, Klein, & Büssing, 2011). The effect of religious belief could potentially be the result of mediating variables, such as certainty of belief or social support (Galen & Kloet, 2011; Weber et al., 2012). Strength and centrality of religious faith (or nonreligious belief) has been linked to greater psychological health for religious individuals through greater coping (Baker &

Cruickshank, 2009; Wilkinson & Coleman, 2010). It would seem that certainty in one's beliefs and importance of those beliefs could moderate the relationship between belief and psychological well-being, even regardless of the content of belief (Galen & Kloet, 2011). Social support from religious belief may also moderate the relationship, and since the participation of atheists and other non-religious individuals in secular organizations has not been well studied, the effect is currently not clear. Still, in studies that chose to examine the moderating effect of certainty of belief for both the religious and nonreligious (Galen & Kloet, 2011; Wilkinson & Coleman 2010), only a one-item unvalidated measure was used, and there was no exploration of the construct of nonreligious belief as independent from religious belief.

While not a new hypothesis, there is increasing evidence that the relationship between religious belief and mental health is curvilinear, in part due to the effects of moderator variables (McMordie, 1981, Galen & Kloet, 2011, Weber et al., 2012). In a study by McMordie (1981), individuals who identified as highly religious or non/anti-religious had lower reported scores of death anxiety than those who fell in the middle. When distinctions are made in studies between the weakly religious and the nonreligious, a curvilinear relationship tends to appear, suggesting that it may be only the weakly religious who bear the brunt of negative psychological pressures (Galen & Kloet, 2011). However, most studies relating mental health and religious belief do not distinguish between the weakly religious and the nonreligious, creating the false presumption that there is a linear relationship and that nonbelief is inherently unbeneficial. Those studies that do examine the nonreligious as a diverse group often do not adequately account for the potential moderator variables such as certainty of belief or social support. Since most



studies of religious belief use a representative sample (90% theistic), they do not have a large enough sample of nonreligious individuals to detect variance in the beliefs of nonreligious individuals (Galen & Kloet, 2011). This lack of variance in the beliefs of the nonreligious is in large part due to the inadequacy of religious measures in terms of measuring the beliefs of nonreligious individuals the same way that religious individuals' beliefs are measured. Due to the discrepancy in defining religious belief and spirituality, many measures exist that differ in measuring the construct of religiosity (Freiheit, Sonstegard, Schmitt, & Vye, 2006). Each of the following measures is a popular tool for measuring religious belief in psychological study, yet each contains flaws that render them inadequate for the study of atheists in relation to mental health.

### **Measures of Religiosity**

In the field of psychology, religion has been a well-studied phenomenon over the past 20 years, with close to 8,000 peer-reviewed related articles containing “religi\*” (stem word search) in the PsycINFO database. Despite this attention, there is no consensus about how to measure religiosity, in part due to the difficulty in defining and operationalizing relevant constructs. Hill and Hood (1999) compiled 125 multidimensional measures of religious and spiritual belief with the desire to better understand the complex nature of religious and spiritual belief. From the compiled measures of religiosity, Hill and Paragment (2008) identified some unifying constructs shared by the varying measures: closeness to God, Orienting and motivating forces, religious support, and religious and spiritual struggle. Closeness to God can be characterized by experiencing a personal relationship with God; orienting and motivating forces are the underlying drives for religious and spiritual belief, such as for internal

fulfillment or external identification; religious support measures the connectedness of the individual to their religious community; and religious and spiritual struggle identifies the doubt and challenges associated with religious belief.

The most prevalent concept in the study of religion and psychology has been religious orientation, driven by the development of the Religious Orientation Scale by Allport and Ross (See Allport & Ross, 1967; Hill & Hood, 1999). Underlying drives and motivations were a focal point in understanding what motivates people's religious beliefs in relation to prejudice, and from that point the Religious Orientation Scale has been the theoretical basis of many popular religious orientation scales. The following measures are popular (well cited in the literature), influential, and they possess robust psychometric properties (Hill & Hood, 1999; Hill & Paragment, 2008; King & Crowther, 2004). However, a commonality shared by these measures is an absence of attention to the belief systems of nontheists.

**Religious Orientation Scale (ROS).** Allport and Ross conducted perhaps the most impactful research on the measurement of religious belief, with the initial purpose to study the relationship of belief with ethnic prejudice (Allport & Ross, 1967). In the development of the scale, religious belief was divided into two factors that described the motivating forces: Extrinsic Motivation and Intrinsic Motivation. Many of the subsequent measures of religious belief are based on the Intrinsic-Extrinsic scale developed by Allport and Ross. Extrinsic motivation for religious belief is characterized by the social factors related to religious belief, such as desire to belong to a group, to socialize and feel support. Sample items include "A primary reason for my interest in religious is that my church is a congenial social activity" and "What religion offers me

most is comfort when sorrows and misfortune strike”. Intrinsic motivation can be characterized by a more internal drive towards belief and what it provides for the individual, such as prayer and guidance. Sample items include “I try to hard to carry my religion over into all my other dealings in life” and “Quite often I have been keenly aware of the presence of God or the Divine Being”. The ROS has been tested for reliability in multiple contexts and populations since its inception in the 60’s (Hill & Hood, 1999; Maltby, 2002). Internal consistency and test-retest reliability of the intrinsic and extrinsic subscales has generally been reported with Cronbach alphas in the .80s and .70s, respectively (Hill & Hood, 1999).

The Religious Orientation Scale, while influential, has multiple limitations that preclude it from practical use studying atheists. The 20-item scale is influenced by a North American Christian background, with items that explicitly mention Church, the Bible, and other Christian dogmatic terminology. This, and other items that begin with the presumption that the participant has a religious belief (as compared to irreligious) create difficulty for nonreligious individuals to answer the items accurately and consistently.

**Hoge Intrinsic Motivation Scale.** Hoge’s (1972) Intrinsic Religious Motivation Scale is strongly influenced by the ROS, though it differs in that Hoge conceptualizes religious orientation on one dimension rather than two. Thus, extrinsic and intrinsic religious motivation is seen as two ends of a unidimensional factor. Some sample items include “My faith involves all of my life” and “Nothing is as important as serving God as best I know”.

The 10-item scale contains 7 intrinsic and 3 extrinsic items, with the extrinsic item scores reversed to put all items on the same dimension (Hill & Hood, 1999). The scale was normed on a sample of adult Protestants who were referred to take the test based on perceived high levels of religiosity from their ministers (Hoge, 1972). The internal reliability of the original sample was .90, using Kuder-Richardson. The shortened form of the test yielded a Cronbach alpha of .84 (Hill & Hood, 1999). Validity of the scale was tested by the relationship between ministers' impressions of the individuals' religiosity and test scores, which were correlated at .58 with  $p = .03$  significance-level (Hoge, 1972). Additionally, test scores correlated with the ROS at .71.

The Intrinsic Religious Motivation Scale completely ignored nontheistic populations. The sample population used in the development of the scale consisted only of Protestant adults who were highly religious, which limits both the variance that could be detected in the instrument, as well as its applicability to non-Christian populations. While explicit mention of God and Christian terminology is more minimal in comparison to the ROS, the assumption that an individual is theistic is implied.

**Duke University Religion Index.** The Duke University Religion Index (DUREL) is a brief, five-item measure of religious belief that is specifically designed for use in studies measuring health outcomes (Koenig & Büssing, 2010). The DUREL is in part based on the Hoge's Intrinsic Religious Motivation Scale, but instead contains three factors: organizational religious activity (ORA), non-organizational religious activity (NORA), and intrinsic religiosity (IR). ORA is characterized by group and public religious activities such as church and study groups. NORA represents private

expressions of religious belief such as private prayer and reading. IR measures motivating factors for religious belief. The purpose of this differentiation in factors from previous religious motivation scales was an attempt to more comprehensively measure religious belief (Hill & Hood, 1999).

The DUREL was developed by administering the Hoge Intrinsic Religious Motivations Scale to 455 inpatients at the Duke medical center (Koenig & Büssing, 2010). Scores were correlated to measures of depression, social support, and other well-being constructs. Principal component analysis led to selection of 3 items from the Hoge scale that loaded to the intrinsic religiosity factor (Hill & Hood, 1999). Single items were utilized to measure both ORA and NORA. The three items used for IR yielded a Cronbach's alpha of .75, and since the other two factors only consisted of one item each, there was no analysis of internal consistency. The 3-item IR subscale of the DUREL demonstrated high correlation with the 10-item Hoge scale ( $r = .85$ ) and modest correlation with the ORA and NORA subscales ( $r = .40$ ,  $r = .42$ , respectively), indicating convergent validity to the Hoge scale and differentiation of the factors (Hill & Hood, 1999).

Similar to other religious motivation scales, the IR component of the DUREL appears to be designed with the religious individual in mind, using terminology that might result in undifferentiated scores between nonreligious and strongly irreligious individuals. This creates difficulties in use with atheistic populations, as there is no way to address how those beliefs are expressed.

**Santa Clara Strength of Religious Faith Questionnaire.** The Santa Clara Strength of Religious Faith Questionnaire (SCSORF) is a 10-item scale that is designed

to measure the strength of belief interdenominationally (Plante & Boccaccini, 1997). The authors contend that religious orientation measures such as the ROS do not sufficiently measure the strength of religious beliefs. The SCSORF is a unidimensional measure. Sample items include “My religious faith is extremely important to me” and “I look to my faith as providing meaning and purpose in my life.”

The SCSORF was administered to three samples of college students, adults, and high school students, respectively. High internal reliability coefficients were obtained for each sample, with Cronbach’s alpha above .90. The scores of the three samples from the SCSORF were correlated at .87, .90, and .87 with The Age Universal Religious orientation Scale (a revision of the ROS by Gorsuch & Venable, 1983; see Hill & Hood, 1999), suggesting high convergent validity.

The scale, which is shorter than the ROS, does not contain explicit references to Christian terminology. However, the word ‘faith’, which is used in most of the items, can be a confusing term for nonreligious individuals to respond to due to its religious connotations. While the SCSORF is much more accessible of a scale for diverse respondents, it does not provide for items to differentiate between low religious individuals and atheists.

### **Summary and Rationale for the Current Study**

Over the last 20 years, religion and spirituality have been well studied in regard to their intersection with counseling in order to better serve the needs of religious and spiritual clients. Measures of religious motivation and orientation seek to assess an important construct in psychology (Koenig & Büssing, 2010). A major criticism of these existing measures is that they presume a theistic belief system. Such measures are biased

against atheists and any other individuals who do not believe in any God or higher power. Little research has been conducted to understand the experiences of atheists, who have historically been discriminated for their beliefs. Atheists are one of the least trusted minorities in America and they may experience psychological distress as a result of social ostracism and demonizing from religious individuals (Gervais, Sharif, & Norenzayan, 2011).

Numerous studies have revealed a positive correlation between religious belief and mental well-being, though the erroneous assumption is that nonbelief is necessarily harmful (McCullough, 1999; Morgan, 2013; Weber et al., 2012). This may be due in part to the lack of empirical research explicitly studying atheism and mental health. A major issue in the study of atheism and mental health is the insufficiency of available measures to adequately convey the belief system of atheists. Since nontheists comprise a small minority of the population, rarely are they the focal sample of a study. Measures of religious belief are typically normed to Protestant Christian populations, though efforts have been made to create inclusive measures for diverse religious beliefs (Hill & Pargament, 2003). Brief measures of religious belief based on Allport & Ross' (1967) Religious Orientation Inventory, as well as other commonly used measures fail to differentiate the various ways in which individuals may be nonreligious due to explicitly theistic terminology. As a result, these measures fail to identify nonreligious individuals who may consider their nonbelief a major aspect of their worldview. Since strength of belief is a factor in the relationship between religious belief and mental health, measures should incorporate language that can accurately assess this variable for both theistic and atheistic populations.

The purpose of this study is to create a brief strength of religious/nonreligious worldview scale that has language inclusive of nontheistic populations.



## Method

### Overview

The development of the Strength of Worldview Scale (SOWS) was conducted in three phases. In phase one, items for the scale were developed with assistance from an expert in research on atheists. In phase two, the scale was field tested to determine validity of the instrument. In the third phase, a second sample was obtained to establish test-retest reliability of the measure.

### Phase I

**Item Development.** The purpose of the SOWS is to create a more universal scale of religious/nonreligious belief that is applicable to both theists and atheists. Based on analysis of existing measures of religious motivation, the construct of belief motivation should be represented in atheists as well as theists. That is to say, atheists and other nontheists experience motivating forces towards their beliefs and can find strength in those beliefs (Smith, 2011). However, existing scales do not attempt to measure the degree of atheistic belief in the same manner that theistic belief is measured. Many items utilized in previous measures prevent meaningful application to nontheists; some items presume theistic belief and others use explicitly theistic terminology to quantify belief. Therefore, a fundamental concern in item selection is to ensure items are understandable and applicable to both atheists and theists. The SOWS attempts to measure the construct of worldview belief strength. Strength of belief can be defined as the importance of a person's beliefs to their life and identity, which based on existing literature, has been operationalized through scales of religious motivations (Allport & Ross, 1967; Smith, 2011; Whitley, 2010). In religious and theistic populations, the strength of an

individual's belief is correlated with positive mental health, but the false assumption is made that nontheistic individuals have weak beliefs in their understanding of the world (Galen & Kloet, 2011).

In this study, the term “worldview” is used to describe the belief system of both theistic and atheistic individuals. The term worldview already exists in academic literature, and has been defined as “...a set of assumptions about physical and social reality that shapes the way a person perceives and interprets the world... a sense of meaning to reality...” (Magee & Kalyanaraman, 2009). The purpose of this study is to remove the theistic bias in strength of belief measures. Thus, I am modifying items in religious belief measures by incorporating “worldview” concepts and language. I created a subset of items from the Intrinsic Religious Motivation Scale (Hoge, 1972), Religious Orientation Scale (Allport & Ross, 1967), Duke University Religion Index (Koenig & Büssing, 1997), and the Santa Clara Strength of Religious Faith questionnaire (Plante & Boccaccini, 1997) that fit with the construct of strength of worldview. Items were selected for their applicability to atheists and other nontheistic belief systems. I also refined the wording of items so that they are relevant and sensitive to both atheists and theists. Alterations included: removing explicitly theistic or religious terminology, such as ‘God’, ‘the Bible’, ‘church’, etc.; using hyphenations of ‘belief/nonbelief’, ‘religious/nonreligious belief/faith/worldview’, etc., when describing theistic and atheistic beliefs; and simply using the words belief or worldview in the items while explaining their applicability in the instructions. Lastly, I included additional items that may better fit the construct of strength of worldview that are not addressed in existing measures.

After creating the preliminary items for the study, I contacted two experts in the field of atheist research and received feedback on the inclusion and wording of the items. Both experts are male PhD professors at major research institutions. By email, I provided the experts with my collection of items, as well as an explanation of the construct being examined and a request for feedback on individual items (Appendix A; Appendix B). I received feedback from one of the two experts and implemented the suggestions made for a few of the items. Adjustments on the measure included revising of wording on four items with an emphasis on universality. No recommendations were made to add, remove, or significantly alter any of the items. After integrating the feedback from the expert, testing of the measure began.

## **Phase II**

**Participants.** For this phase of the study, the scale was administered to a convenience sample of 215 undergraduate and graduate students at Arizona State University and Miami University of Ohio. Eight participants left a significant portion of the questionnaire blank and were excluded from the sample, resulting in a usable sample of 207. The sample comprised of three subsets: undergraduate students taking a class in introductory psychology or career/major exploration, students who are on the listserv of secular student organizations, and students in graduate counseling psychology courses. Participants were given the option to complete the survey online through a link and offered the opportunity to receive extra credit (Appendix C). The sample (N = 207) comprised of 47.5% male and 51.5% female. Mean age of the sample was 20 with a range of 17-64 years. The racial/ethnic background was as follows: 7.2% African American, 13.5% Asian, 66.7% Caucasian, 16.9% Latino/Hispanic, 1% Middle Eastern,

4.3% Native American/Indigenous, and 3.9% Other. Percentages may not add up to 100 as participants had the option to select more than one racial category. Forty-three percent of the sample reported identifying as either agnostic, atheist, or religious none, while 48% reported being a member of a major religious group. In terms of actual belief, 28% reported not believing in a God, Gods, or higher power, with 16% reporting as unsure, and 55% as believing.

**Instrumentation.** The items developed in phase one were included in the study as the central measure (the SOWS), while five additional items were included to measure religious identity, religiosity, spirituality, theistic/atheistic belief, and gnostic/agnostic belief. In order to test for convergent validity, participants also completed the Purpose in life subscale of the Ryff Scales of Psychological Well-Being (Ryff, 1989) and the Depression, Anxiety, and Stress Scale (Lovibond & Lovibond, 1993). To test for discriminant validity, participants completed the extraversion subscale of the Big Five Inventory (John & Srivastava, 1999).

*Religiosity, Spirituality, and Theistic/Atheistic Belief.* Five questions were included to assess how individuals categorize their religious and spiritual beliefs, how religious they believed to be, how spiritual they believed to be, the degree to which they either believed or disbelieved in a God, Gods, or higher power (theistic/atheistic belief), and whether or not they believed it was possible to know for certain if a God, Gods, or higher power does or does not exist scale (gnosticism/agnosticism) (see Appendix A). Items assessing religiosity, spirituality, and theistic/atheistic belief were answered on a seven-point Likert-type scale. Specifically, for theistic/atheistic belief, 1 indicated “I wholly believe in God, Gods, or a higher power”, 4 indicated “I am unsure whether a

God, Gods, or a higher power exists”, and 7 indicated “I wholly believe that there is no God, Gods, or a higher power”. Gnosticism/agnosticism was answered on a three-point “yes, no, unsure” scale.

*Ryff's Purpose in Life Subscale.* The Ryff Scales measure six areas of well-being: Autonomy – self-determining, independent, self-regulating; Environmental Mastery – sense of control and effective use of external environment and opportunities; Personal Growth – feelings of continued development, realizing potential, sense of maturing; Positive Relations with Others – satisfying and trusting relationships, strong emotional intelligence; Purpose in Life – goals in life, sense of meaning; and Self-Acceptance – positive and realistic view of self, not judgmental towards oneself (Ryff & Keyes, 1995). Participants respond on a 6-point scale from *completely disagree* to *completely agree*. The original form contains 20 items for each scale and was tested on 321 individuals, with internal consistencies ranging from .86 to .92 (Ryff, 1989). The Ryff scales have been cited in over 400 research articles and have had varying forms tested in multiple languages and countries (Springer & Hauser, 2006). In addition to the original 20-item subscale form, a 12, 9, and 3-item subscale forms have been validated (Springer & Hauser, 2006). For this study, only the Purpose in Life subscale from the 9-item per subscale form was included. Internal consistency of the Purpose in Life 9-item subscale was computed to be .73. Van Dierendonck (2004) found a correlation of .89 between the short form and the original 20-item subscale.

*Depression, Anxiety, and Stress Scale.* This 42-item measure contains three subscales indicating an individual's current levels of depression, anxiety, and stress. Internal consistencies for each subscale ranged from .84 to .91, and a three-factor model

was supported by a confirmatory factor analysis (Lovibond & Lovibond, 1993). Support of convergent validity was demonstrated with high correlation (.74) of the depression subscale to the Beck Depression Inventory and high correlation (.81) of the anxiety subscale with the Beck Anxiety inventory (Lovibond & Lovibond, 1993).

*Extraversion.* The Big Five Inventory (BFI) was created to be a shorter form of McCrae & Costa's (1992) NEO PI-R, which contains the "Big 5" factors of personality – Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness (John & Srivastava, 1999). The 44-item BFI is highly correlated with the full 240 item NEO PI-R, with correlations for the factors ranging from .83 - .96. The extraversion subscale of the BFI demonstrated an internal consistency of .88 and a strong correlation with the NEO (.83) (John & Srivastava, 1999). The extraversion subset of the BFI was included to test for discriminant validity with the SOWS, as previous literature has not suggested differences in extraversion in relation to strength of belief (Hwang, Hammer & Cragun, 2009).

**Recruitment.** Request for participation in the study was provided to students in introductory psychology classes as an opportunity for minimal extra credit. Students in the secular organizations (Secular Student Alliance, Secular Free-Thought Society of ASU, and Secular Students of Miami) were recruited through their Facebook group and email listserv. The study was conducted through use of Qualtrics; an online questionnaire program.

**Analysis.** Analysis of the SOWS included a brief group comparison based on demographic information, an exploratory factor analysis to determine if the factors differ from those found in measures of religious motivation, and regression and correlational

analyses to gain a better understanding of the theoretical underpinnings for strength of worldview belief.

After the eight participants who left the survey blank were excluded from analysis, any other missing data in the sample was accounted for in analyses by utilizing multiple imputation with 20 imputations and 200 iterations.

Previous literature on strength of belief measures varies from one to three factors. The Santa Clara Strength of Religious Faith Questionnaire (Plante & Boccaccini, 1997) contains one factor of strength of belief, the Hoge Intrinsic Religious Motivation Scale (Hoge, 1972) contains one factor of intrinsic motivation, the Religious Orientation Scale (Allport & Ross, 1967) contains two factors of intrinsic and extrinsic motivation, and the Duke University Religion Index (Koenig & Büssing, 2010) contains three factors: intrinsic motivation, organizational religious behavior, and non-organizational religious behavior. It was hypothesized that a sole factor would emerge in the Strength of Worldview Scale.

A regression analysis was conducted to understand the relationship between theism/atheism and strength of worldview. It is predicted that theistic/atheistic belief will act as a predictor for scores on the SOWS. Convergent and discriminant validity of the SOWS was tested through a correlational analysis with the Ryff scales, DASS and the BFI. It was predicted that high scores on the SOWS would be correlated to high scores on the Purpose in Life subscale of the Ryff Scales of Psychological well-being. Additionally, the three subscales of the DASS should be negatively correlated with the SOWS. It is hypothesized that scores on the SOWS will be unrelated to scores of Extraversion on the BFI.

### **Phase III**

**Test-Retest Reliability.** For this phase of the study, the survey was administered to a sample (N = 20) of students in the Master's and PhD Counseling Psychology program at Arizona State University, as well as undergraduate students at Purdue University Calumet. The sample consisted of 13 males and 7 females with a median age of 23.9. Eight identified as Caucasian, 4 as African American, 3 as Asian, 3 as Latino/Hispanic, 2 as Native American, 1 as Middle Eastern, and 1 as Other (Pacific Islander). Racial/ethnic counts will not add up to 20 as participants had the option to select more than one racial category. In terms of religious belief, 11 participants identified as Christian, 4 as Agnostic, 1 as Atheist, and 3 as Other (Spiritual, Baha'i, and Catholic). Participants accessed the survey through a recruitment email distributed by the instructor. Students were given the study twice by their instructors in a two week interval. Each participant from this sample created a code at the initial assessment and was required to enter that code at the second assessment so that test and retest scores could be matched. Pearson correlations were computed between scores at time 1 and 2. It was predicted that strength of worldview would be relatively stable and would not change on a short-term basis. Retest administration two weeks later should be highly correlated with the original results.



## **Results**

### **Exploratory Factor Analysis**

An exploratory factor analysis was conducted on the preliminary 17-item Strength of Worldview measure. Factors were extracted utilizing the principal axis factoring method in SPSS, with no rotation. Eigenvalues lower than one were removed automatically in the analysis, and a subjective analysis of a scree plot was utilized to determine the optimal number of factors (See Figure 1). The initial factor, “worldview strength”, had an eigenvalue of 9.61, explaining 56.55% of the variance in the model, while a second factor, “lack of worldview”, had an eigenvalue of 1.61, explaining 9.48% of the variance. All other components fell below the extraction threshold. Due to a lack of theoretical relevance, and the fact that the three items that loaded to it were reverse coded, the second factor was excluded in further analysis. Those items that loaded onto the second factor (questions 5, 16, and 17) were excluded, making the SOWS a 14-item measure (See Table 1).

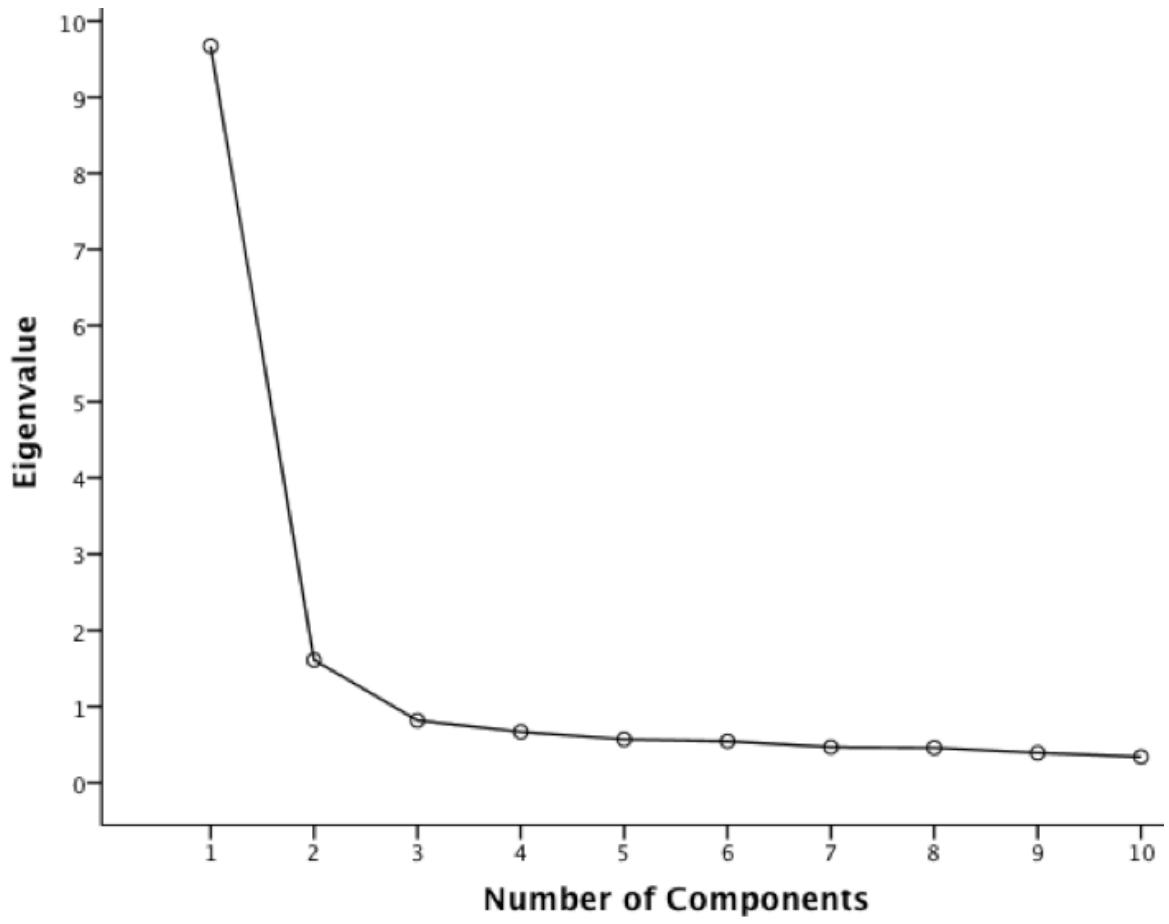


Figure 1. Scree Plot for the Strength of Worldview Scale

Table 1

*Factor Loadings of Items from the Strength of Worldview Scale on the Factor "Worldview Strength"*

<i>Item Description</i>	<i>Worldview Strength</i> $\alpha = .96$	<i>Lack of Worldview</i> $\alpha = .73$
1. Whenever possible, I try to integrate my worldview into all aspects of my life.	.890	
2. My worldview impacts many of my decisions.	.867	
3. My worldview greatly influences my decision-making.	.846	
4. I look to my worldview as a source of inspiration.	.828	
5. My worldview is what really lies behind my whole approach to life.	.826	
6. I try to integrate my worldview into all of my life.	.819	
7. My worldview is a core part of who I am as a person.	.819	
8. It is important to me to spend periods of time thinking about my worldview.	.780	
9. It matters to me that I am identified by my worldview.	.778	
10. I look to my worldview as a source of comfort.	.752	
11. I prefer to seek out people who share my worldview.	.729	
12. My career and occupational plans are influenced by my worldview.	.721	
13. I enjoy being around others who share my worldview.	.707	
14. I read literature (books, writings, scriptures) related to my worldview.	.681	.660
15. I do not think about my worldview when making decisions. (R)	.464	.608
16. My worldview is not very important in the grand scheme of things (R).	.490	.441
17. There are more important things in life than my worldview. (R)		

*Note.* (R) Indicates reverse scored items. Loadings less than .3 were excluded.

## Group Comparisons

Independent sample t-tests were conducted to explore if any differences existed in scores of the SOWS based on demographic information. No statistically significant differences were observed between males ( $M = 3.11$ ,  $SD = 1.07$ ) and females ( $M = 3.17$ ,  $SD = 1.06$ ),  $t(196) = -.39$ ,  $p = .702$ , and a one-way ANOVA indicated no significant differences between racial groups,  $F(5, 184) = 1.50$ ,  $p = .193$ . Additionally, Theists ( $M = 3.24$ ,  $SD = 1.07$ ) and nontheists ( $M = 2.93$ ,  $SD = 1.00$ ) did not differ significantly on average scores of the SOWS,  $t(205) = 1.89$ ,  $p = .059$ .

## Regression Analysis

A regression analysis was conducted to investigate if the variable theistic/atheistic belief could predict worldview strength. The full SOWS measure was the criterion variable in the analysis. A linear and a quadratic regression model were compared for best fit of the data given previous literature suggesting that the relationship between theistic/atheistic belief and strength of belief may be linear (Koenig, McCullough, & Larson, 2001; McCullough, 1999) or possibly curvilinear (Galen & Kloet, 2011). The linear model ( $R^2 = .07$ ,  $F(1,205) = 15.70$ ,  $p < .05$ ) and the curvilinear model ( $R^2 = .14$ ,  $F(1,204) = 14.90$ ,  $p < .05$ ) were statistically significant, though the curvilinear model was better able to explain the variance above and beyond a linear model ( $R^2$  Change = .07,  $F(1,204) = 17.31$ ,  $p < .05$ ) (See Figure 2). This result indicates a modest effect size, with a curvilinear model of theistic/atheistic belief explaining 14% of the variance in strength of worldview, and 7% more of the variance than from a linear model. Individuals who strongly believed God existed tended to have a stronger worldview belief than those who did not believe in God. However, those who did not express a strong belief about the

existence or nonexistence of God had lower scores of strength of worldview than both those who strongly believed in God and those who strongly did not believe in God.

### Linear vs Curvilinear Regression of Theistic/Atheistic Belief on SOWS

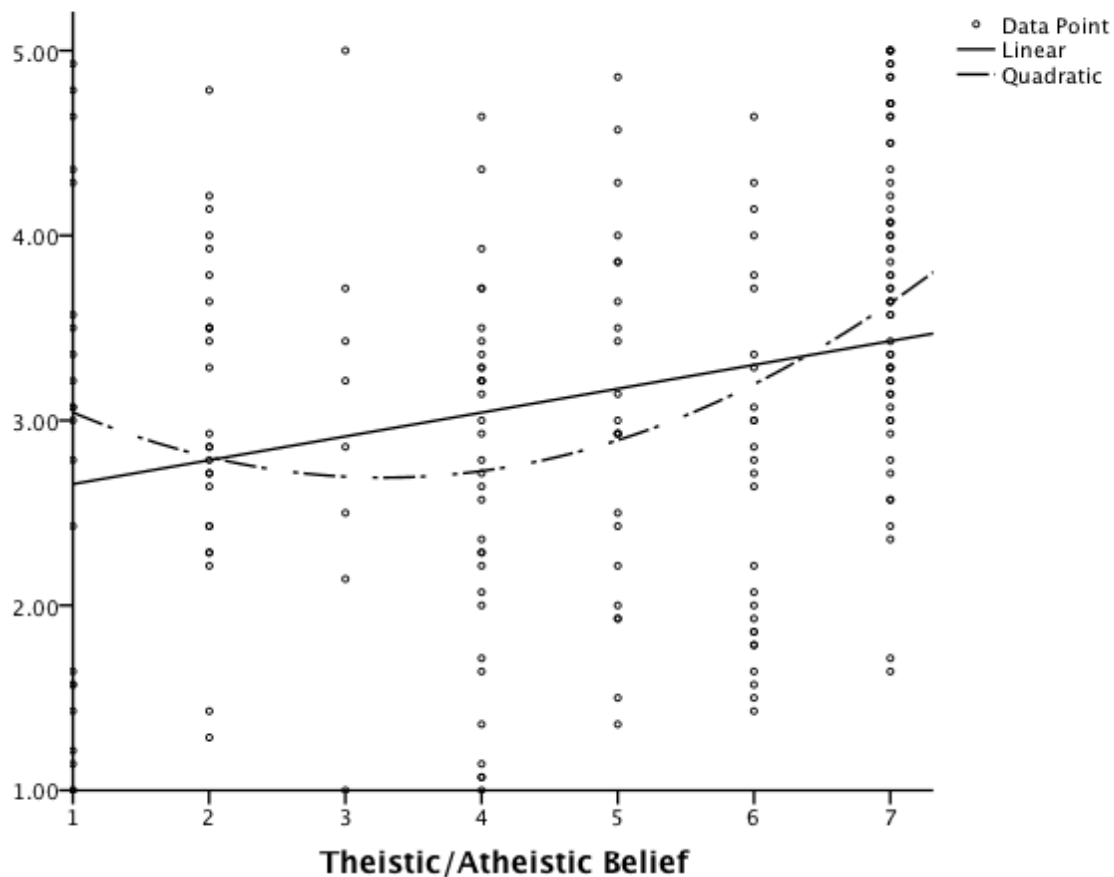


Figure 2. Linear vs Curvilinear Regression of Theistic/Atheistic Belief on the SOWS. Y-axis indicates average score on the SOWS. Theistic/Atheistic Belief scale ranges from 1 (I wholly believe there is no God, Gods, or higher power) to 4 (I am unsure of the existence of a God, Gods, or higher power) to 7 (I wholly believe there is a God, Gods, or higher power).

## Correlational Analysis

Correlations were computed on the Purpose in Life Subscale, DASS Subscales (depression, anxiety, stress), BFI Extraversion Subscale, and the SOWS (See Table 2). Results of the correlational analysis indicate that no correlations with the SOWS were significant.

Table 2

*Correlations of DASS Subscales, Ryff Purpose in Life Subscale, BFI (Extraversion), and SOWS*

Scale	1	2	3	4	5	6
1. Depression	-					
2. Anxiety	.693*	-				
3. Stress	.739*	.798*	-			
4. Purpose in Life	-.489*	-.366*	-.323*	-		
5. Extraversion	-.212*	-.048	-.028	.265*	-	
6. SOWS	-.065	.021	.052	.101	.058	-

*Note.* \* Correlation is significant at the .05 level (2-tailed).

## Test-Retest Analysis

A test-retest analysis was run to estimate reliability of the SOWS, using the 14 items that remained after the exploratory factor analysis. Twenty participants took and retook the SOWS at a two-week interval. Scores at Time 1 correlated highly with scores at Time 2 ( $r = .726$ ,  $p < .05$ ), indicating adequate temporal consistency of the measure.

## Discussion

The purpose of this study was to create a measure of the strength of an individual's worldview irrespective of their theistic orientation. Items were derived from theistically-biased measures, with the biased items revised. Items were qualitatively improved with the help of an expert in the field. A test-retest analysis indicated the new instrument was stable over time.

The Exploratory Factor Analysis appears to support a one-factor solution. While two potential factors passed the initial screening of eigenvalues greater than 1, "worldview strength" explained 57% of the variance while a potential second factor would have only accounted for 10% of the variance. Only one item (question 5) did not load to "worldview strength", and only three items (questions 5, 16, and 17) loaded more strongly onto the potential second factor. Importantly, when I looked at the content of the items that loaded more strongly on the second factor, I found that they did not differ in any meaningful theoretical sense from the rest of the scale items. Interestingly, though, I did notice that they were the only reverse-scored items in the scale. Perhaps, then, this second factor might represent the inattention of some of the participants in not recognizing the different wording of the reverse scored items. On the basis of this observation, in addition to the relatively low eigenvalue for the second factor, I conclude that it is more appropriate to advance a one-factor model in developing this Strength of Worldview Scale, excluding the three items (questions 5, 16, and 17) that failed to load to the "worldview strength" scale. A one-factor model was hypothesized and fits well within previous literature, especially from the measures that the SOWS was inspired (Hoge, 1972; Plante & Boccaccini, 1997). While the "grandfather of religious orientation

scales” was two dimensional with extrinsic and intrinsic factors of religious belief (Allport & Ross, 1967), the Santa Clara Strength of Religious Faith Questionnaire (SCSORF; Plante & Boccaccini, 1997) and the Intrinsic Religious Motivation Scale (Hoge, 1972) viewed intrinsic and extrinsic religiosity as multiple expressions of a single construct. The SOWS is similar to the SCSORF in that it seeks to measure strength of belief rather than different expressions of belief, so it is logical that these two measures are comparable and would both have a single factor.

In addition to developing a more inclusive way of testing one’s strength of worldview, this study also revealed some important insights regarding the relationship between religious/nonreligious beliefs and mental health. While many studies have found a positive linear relationship between high religiosity and positive mental health outcomes (Koenig, McCullough, & Larson, 2001; McCullough, 1999; Okulicz-Kozaryn, 2010; Plante, Yancey, Sherman, & Guertin, 2000; Weber et al, 2012), others suggest that the relationship between belief and mental health may in fact be curvilinear (Galen & Kloet, 2011, McMordie, 1981, Weber et al., 2012). If such a curvilinear relationship exists, it would run against the unspoken assumption in the literature that less religiosity is associated with a weaker worldview. Participants in the current study were asked to rate their “theistic/atheistic belief”, the degree to which they believe or disbelieve in the existence of God, with those beliefs acting as a predictor variable for strength of worldview. A positive linear relationship was found, suggesting that theists tend to have stronger worldview beliefs than atheists. However, a curvilinear relationship was able to better explain the relationship between the variables, suggesting that both theists and atheists have stronger worldviews compared to those who are agnostic or unsure. This



finding gives credence to the hypothesis that nontheists can have strong belief systems in a similar manner as theists, and supports the SOWS as capable of assessing those beliefs in both theists and atheists.

The correlational analyses were conducted to test the validity of the SOWS. There were no significant correlations between the SOWS and other tested measures. A correlation with Purpose in Life neared significance, however it fell just short. The prediction that scores on the SOWS would be negatively correlated with depression, anxiety, and stress was not supported. Additionally, as hypothesized, there existed no correlation between the SOWS and extraversion. In summary, validation of the SOWS may be viewed as weak.

Ideally the test-retest correlation would be higher due to the stability of a construct like strength of worldview, but the measured correlation is adequate for this study. Given the relatively short timeframe of two weeks between Time 1 and Time 2, it was expected to have a test-retest coefficient of .80 or higher. Still, a coefficient of .73 indicates that participants did not greatly change in how they rated the strength of their worldview.

### **Limitations**

There were several methodological and theoretical limitations to this study. One limitation in the methodology of the research is that the data was mostly collected through convenience sampling. Also, in order to get an adequate number of nontheistic participants, I targeted secular student organizations. While this resulted in the inclusion of more nontheists, the recruitment could be considered biased. For example, nontheists from these student organizations may be different from general population nontheists in

that they may be more likely to self-identify as atheist or agnostic, more likely to have a strong belief system (enough so to join an organization), and more likely to participate in the study (more interested in the topic). Additionally, embracing atheism as an identity typically occurs during college age (Smith, 2011). Thus, college students' strength of belief may be different than older, more mature individuals.

There was also no direct comparison made to any of the original measures of religious strength of belief that the SOWS items were created from. A correlational analysis between the 'parent' and 'child' measures could have provided useful information about the validity of the SOWS. Specifically a correlation between the SCSORF and the SOWS would have been helpful for establishing convergent validity since these scales are most similar. Questions about participants' specific behavior, like how many hours a week the participant has spent reading texts related to his/her beliefs, rather than his or her general impression of frequency, may have been preferable.

In the regression analysis, a one-item measure was utilized to represent theistic/atheistic belief. There are limitations to using a one-item measure for analysis, such as potentially low reliability and predictive validity (Diamatopoulos, Sarstedt, Fuchs, Wilczynski, & Kaiser, 2012).

Another methodological limitation of the correlational analysis of the SOWS and the DASS is the difference in reference of time. While the SOWS is asking for a reflection of a more longstanding assessment of belief, the DASS is measuring depression, anxiety, and stress levels reported in the last two weeks. Given the long-term and more stable nature of the construct of worldview, it would make sense to compare it to a long-term measure of depression or a historical assessment of depression symptoms.

For example, some participants who may have a history of clinical depression but rated positive feelings in the last two weeks would have been scored as mentally healthy.

One theoretical limitation of the current study is that there may be differences in the underlying structures of belief between theist and nontheist populations. The SOWS items were adapted from measures of theistic religious belief, keeping a similar structure based on how those measures expressed religious belief. If there was a unique effect of theistic-religious beliefs on positive mental health, then an attempt to measure nontheists beliefs with a questionnaire utilizing the assumption of a theistic-religious belief structure might be inadequate. There may be fundamental differences in how theistic and atheistic individuals use their worldview beliefs.

Another theoretical limitation may be that existing research exploring comparisons of theistic and atheistic beliefs focused on samples of older individuals. A meta-analysis of 100 articles investigating atheists identified a mean sample age of 44 across all studies (Brewster, Robinson, Sandil, Esposito, & Geiger, 2014). This may limit the theoretical generalizability because older adults, both theistic and atheistic alike, might differ in the structures or their beliefs, or in the importance of belief in coping with life stressors, compared to the college aged individuals investigated in this study. Though not well explored, there may be many developmental differences that might influence the structure of beliefs between the elderly and college aged students.

### **Future Research**

Given the minority and discriminated status of atheists and other nonreligious individuals, there is a need to understand experiences of this population. One potential direction for future research is an exploration of the impact and degree of discrimination

that nontheists face. Research by D'Andrea and Sprenger (2007) and Brewster et al. (2014) highlight the societal need for greater understanding of this minimally studied population. Previous studies by Edgell, Gerteis, and Hartmann (2006), Gervais, Shariff, and Norenzayan (2012), and Gervais and Norenzayan (2011) explored the type and scope of discrimination that atheists face, yet more research is needed on how that discrimination affects those individuals. While we know that atheists are distrusted more than any other population in the US (Edgell, Gerteis & Hartmann, 2006) and that 41% of atheists reported experiencing discrimination for their beliefs (Hwang, Hammer, & Cragun, 2009), it is still not clear exactly how uniquely impactful this discrimination is on the mental health of atheists.

Whereas the current study attempted to quantitatively measure the belief system of nontheists, qualitative methods could potentially lead to insight into the structures of nontheist belief and how nontheist beliefs might either help or hinder positive mental health. Seventy-four percent of the current studies exploring atheism in counseling literature have been quantitative in nature (Brewster et al., 2014). A qualitative study could help explain the similarities and differences between belief systems of theists and nontheists, such as if social support from similar-belief individuals has a comparable impact on atheists as it does for theists (Galen & Kloet, 2011).

## **Conclusion**

Nontheists are a minimally studied minority population, and the current study has been an attempt at improving the instruments by which their beliefs can be studied. The goal of creating a scale that can measure the strength of beliefs of nontheist as well as theist populations was partially achieved. The Strength of Worldview Scale

demonstrated good test-retest reliability, though was not found to have any significant correlations with any measures assessing psychological well-being. Additionally, theistic/atheistic belief was shown to predict worldview strength. Further refinement of the measure is necessary, specifically with additional validity testing through correlations with a related measure such as the Santa Clara Strength of Religious Faith Questionnaire. Validity testing of the SOWS could also benefit from correlation with a more long-term measure of psychological well-being. While the SOWS has clear limitations, the measure does show promise. Researchers exploring religious or nonreligious worldview beliefs can utilize the SOWS as an alternative to current existing measures of strength of belief, especially when studying a nontheist population. Given the need for sensitivity in counseling for diverse and minority populations, the SOWS can also be of use in clinical practice. Practitioners could use the SOWS as an initial step in exploration of worldview beliefs to provide more integrated and personalized therapy for their clients, especially given the research supporting the value of incorporating clients' beliefs into therapy (D'Andrea & Sprenger, 2007; Young, Wiggins-Fame, & Cashwell, 2007). Future studies may further explore the relationship between the discrimination atheists face in connection with mental health outcomes as well as the structures of belief of nontheists. In line with social justice aims, additional focus on nontheist populations will ultimately serve the greater good for both research and practice of counseling.

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APPENDIX A  
STUDY QUESTIONNAIRE

1. How would you identify your current religious beliefs?
  - \_Agnostic
  - \_Atheist
  - \_Buddhist
  - \_Christian
  - \_Hindu
  - \_Jewish
  - \_Muslim
  - \_None
  - \_Other (Please Specify) \_\_\_\_\_
  
2. How religious do you feel you are?
  - 1 – not at all religious
  - 2
  - 3
  - 4 – somewhat religious
  - 5
  - 6
  - 7 – very religious
  
3. How spiritual do you feel you are?
  - 1 – not at all spiritual
  - 2
  - 3
  - 4 – somewhat spiritual
  - 5
  - 6
  - 7 – very spiritual
  
4. What is your belief on the existence of God, Gods or a higher power?
  - 1 – I wholly believe in God, Gods, or a higher power
  - 2
  - 3
  - 4 – I am unsure about the existence of God, Gods, or a higher power
  - 5
  - 6
  - 7 – I wholly believe that there is no God, Gods, or higher power
  
5. Do you believe it is possible to know for sure whether or not god or a higher power exists?
  1. Yes
  2. No
  3. Not sure

The following items are focused on the concept of worldview.

“Worldview” refers to the beliefs people hold that help them understand the big questions in life: What is my purpose? What happens after we die? Why was the universe created? Why is there pain and suffering in the world? These beliefs can be expressed through participation in organized religion, faith in a higher power, personal spirituality, philosophical reflection, scientific understanding, or in any number and degree of ways.

Please refer to your own worldview as it relates to the definition just provided.

Indicate to what degree you feel the following statements apply to you, where 1 is “not at all like me”, 3 is “somewhat like me” and 5 is “very much like me”

1. I try to integrate my worldview into all of my life

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

2. My worldview is what really lies behind my whole approach to life.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

3. It is important to me to spend periods of time thinking about my worldview.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

4. I read literature (books, writings, scriptures) related to my worldview.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

5. There are more important things in life than my worldview (reverse scored)

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

6. My worldview is a core part of who I am as a person.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

7. It matters to me that I am identified by my worldview.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

8. Whenever possible, I try to integrate my worldview into all aspects of my life.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

9. My worldview greatly influences my decision-making.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

10. I look to my worldview as a source of inspiration.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

11. I enjoy being around others who share my worldview.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

12. I look to my worldview as a source of comfort.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

13. My worldview impacts many of my decisions.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

14. I seek out people with a shared worldview.

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

15. My career and occupational choices are influenced by my worldview

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

16. I do not think about my worldview when making decisions (reverse scored)

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

17. My worldview is not very important in the grand scheme of things (reverse scored)

1	2	3	4	5
Not at all like me		Somewhat like me		Very much like me

### Demographic Information

How old are you? \_\_\_ years old

What is your gender? \_\_\_ Female \_\_\_ Male \_\_\_ Other \_\_\_\_\_ (Please Specify)

What is your racial/ethnic background? (Choose all that apply)

- African American/Black
- Asian
- Caucasian/White
- Latino/Hispanic
- Middle Eastern
- Native American/Indigenous
- Other \_\_\_\_\_ (Please Specify)

What is your yearly gross income? \_\_\_\_\_ dollars per year

What is your highest educational level achieved?

- Less than a high school diploma
- High school diploma
- Some college/university
- Associates degree
- Bachelors degree
- Some graduate school
- Masters degree
- Professional and/or doctorate degree (MD, JD, PHD, etc.)



APPENDIX B  
INSTRUCTIONS FOR EXPERTS

Thank you so much for agreeing to help me with the construction of my measure! The goal is to get some feedback on items and item wording for a scale to measure strength of a theistic and/or nontheistic worldview.

Strength of worldview is the importance of a person's beliefs to their life and identity, which based on existing literature, has been operationalized through scales of religious motivations (Allport & Ross, 1967; Smith, 2011; Whitley, 2010). In religious and theistic populations, the strength of an individual's belief is correlated with positive mental health (Galen & Kloet, 2011).

I am attempting to create a measure of strength of worldview that has items primarily taken from or inspired by existing religious motivation measures. These existing measures contain wording that is explicitly theistic, or otherwise presumes a theistic belief system. This measure will hopefully measure the degree to which people find their belief system is important and central to themselves, regardless of whether or not they believe in a God, Gods, or higher power.

I would appreciate your help in the following ways:

1. Make suggestions for wording changes on any of the items
2. Recommend removal or any items
3. Recommend any items or item types to add

Any other suggestions or guidance would be greatly appreciated. I am available by phone or email at any time if you have questions or need any clarification.

[Joseph.robele@gmail.com](mailto:Joseph.robele@gmail.com)

915-342-0853

Thank you much for your expert recommendations,

Joseph Robele

APPENDIX C  
LETTER OF CONSENT

***Title of research study: Development of a Theistic-Atheistic Strength of Worldview Scale***

***Investigator: Joseph Robele***

***Why am I being invited to take part in a research study?***

We invite you to take part in a research study because I am required to complete a research project and thesis as a requirement for completing my Master's Degree at ASU. I am conducting my study under the guidance of Richard Kinnier, PhD. I am looking for adult college undergraduate students (18 or older) to participate, and while there are no other qualifications to participate, I am greatly in need of nontheistic (atheist, agnostic) individuals to participate.

***Why is this research being done?***

The purpose of this study is to measure the strength and centrality of a person's religious or nonreligious worldview. Participation will involve completing a short survey online.

***How long will the research last?***

I expect that individuals will spend less than 20 minutes completing the survey.

***How many people will be studied?***

I expect about 200 people will participate in this research study.

***What happens if I say yes, I want to be in this research?***

You are free to decide whether you wish to participate in this study. Your participation is voluntary, and your participation in this study will be kept confidential.

***What happens if I say yes, but I change my mind later?***

You can leave the research at any time it will not be held against you.

***What happens to the information collected for the research?***

Utmost care will be given to ensure the confidentiality of your answers. Individual responses will not be reported; only aggregate results of all participants will be reported. Your answers will be given a code number so that answers can be referenced without violating confidentiality.

***Who can I talk to?***

If you have questions, concerns, or complaints, please contact me at [joseph.robele@asu.edu](mailto:joseph.robele@asu.edu). You may also contact Richard Kinner, PhD, the Thesis Chair for the project at [kinnier@asu.edu](mailto:kinnier@asu.edu).

This research has been reviewed and approved by the Social Behavioral IRB. You may talk to them at (480) 965-6788 or by email at [research.integrity@asu.edu](mailto:research.integrity@asu.edu) if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research participant.
- You want to get information or provide input about this research.

Please select “I have read the form above and consent to participate” in order to continue with the study. If you choose not to continue you can select “cancel” or close your browser.

Thank you for your time,

Joseph Robele, B.A.