The Interpersonal Foundations of Anti-Atheist Prejudice

by

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Abstract

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Anti-atheist prejudice in the U.S. is socially accepted and rife—and not just because most Americans are religious. This research suggests that hostility toward atheists is related in part to protecting parental relationships. To the extent that they are established within parental relationships, shared reality theory implies that religious beliefs and associated attitudes will be psychologically defended to the extent that the parental relationships engaged are strong, healthy, and vital (Magee & Hardin, 2010; see also Hardin & Higgins, 1996). Three experiments examined the regulation of anti-atheist prejudice in the defense and protection of religious shared realities with parents, as implied by shared reality theory, and used parental attachment as an indicator of the strength and vitality of the parental relationship. The first two experiments explored parental attachment in the regulation of automatic anti-atheist prejudice during social interactions. In Experiment 1, automatic attitudes toward atheists were assessed with a subliminal sequential priming task in a social tuning paradigm in which the experimenter casually mentioned he was an atheist, or did not (e.g., Lowery et al., 2001). Interacting with an atheist reduced automatic anti-atheist prejudice among those with low parental attachment and, if anything, increased automatic anti-atheist prejudice among those with high parental attachment. Experiment 2 tested the causal role of parental attachment by experimentally manipulating

parental attachment with an essay task and found complementary results: Interacting with an atheist reduced automatic anti-atheist prejudice among those with low manipulated parental attachment, increased automatic anti-atheist prejudice among those with high manipulated parental attachment, and did not affect automatic anti-atheist prejudice among those in a non-parental salience comparison condition. Experiment 3 manipulated the mere cognitive salience of the concept ‘atheist’ (in the absence of relationship demands) via a subliminal prime word task. Subliminal exposure to the word atheist reduced explicit anti-atheist prejudice among those with low parental attachment and low parental religious shared reality, but not among those with high parental attachment or high parental religious shared reality. This research suggests that when religious people interact with atheists (or think about atheists) anti-atheist prejudice is activated and then regulated by parental attachment.

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"I don't know that atheists should be considered as citizens, nor should they be considered patriots. This is one nation under God."

- George H.W. Bush, 1987

Despite a growing tolerance for religious diversity in America[1] (Alwin, 1986; Fisher & Hout, 2006; Herberg, 1960; see also Jacoby, 2004), the increase in religious pluralism in post-war America has not coincided with a proportionate increase in tolerance for non-believers. Today atheists remain one the most stigmatized and least accepted groups in America, outranking Muslims, homosexuals, and recent immigrants as the group least likely to share the vision of American society (Edgell, Gerteis, & Hartmann, 2006). Atheists are considered immoral, untrustworthy, problematic, and self-interested; they are also associated with elitism, individualism, materialism, and consumerism (Edgell, Gerteis, & Hartmann, 2006; also Gervais, 2011; Gervais, Shariff, & Norenzayan, 2010). Americans say that they are less likely to vote for an atheist presidential candidate than they are for a Catholic, a Black, a Jew, a woman, a Hispanic, a Mormon, someone married for the third time, a 72 year-old[2], or a homosexual[3] (Jones, 2007), and that they are less willing to accept intermarriage with an atheist than any other religious minority – including Muslims (Edgell, Gerteis, & Hartmann, 2006). Divorced atheist parents have had contact with their children severely limited or have been denied custody altogether because of their atheism (Volokh, 2006). The Boy Scouts of America expressly

[1] This is certainly true among Protestants, Catholics, and Jews, though, arguably, not for all religious groups (e.g., Muslims in the wake of 9/11).

[2] These data are from a Feb. 2007 Gallup poll targeting the presidential candidates running at the time asking Americans whether they would vote for "a generally well-qualified" presidential candidate nominated by their party with each of the following characteristics: Jewish, Catholic, Mormon, an atheist, a woman, black, Hispanic, homosexual, 72 years of age, and someone married for the third time (Jones, 2007). Atheists were ranked the lowest with only 45% of the respondents answering in the affirmative, compared to 95% for Catholic which was ranked highest.

[3] Also noteworthy is the fact that that not a single member of Congress identifies as non-religious, unaffiliated, agnostic or atheist.

forbids atheists from joining their organization in any capacity (BSA, 2011). Results of the United States Army's Soldier Fitness Tracker and Global Assessment Tool, both mandatory web-based surveys that are part of the Comprehensive Soldier Fitness Program (http://csf.army.mil/), tells atheist soldiers — who are exemplary in all other respects — that they lack a sense of meaning and purpose in their lives and that they need significant improvement in their spiritual dimension[4] if they want to be considered a resilient Soldier (Griffith, 2010, 2011). And — in spite of Article IV, paragraph 3, of the United States Constitution, which states, "No religious test shall ever be required as a qualification to any office or public trust under the United States" — nine state constitutions explicitly forbid atheists from public office, legislation that has resisted recent efforts to reform[5] (Arkansas State Legislature, 2011). Anti-atheist prejudice is rife in America. Anti-atheist prejudice is openly tolerated and more socially acceptable than prejudice against most any other commonly stigmatized group (Jacoby, 2004). Why?

Curiously, little is known empirically about the specific nature of the threat posed by atheists or why atheists elicit such strong reactions from people — reactions that are all the more striking when one considers that atheists are not a particularly well-organized, conspicuous, or otherwise powerful social group (Dawkins, 2006; Edgell, Gerteis, & Hartmann, 2006). Only recently has anti-atheist prejudice attracted attention in social psychology (Gervais, 2011; Magee & Hardin, 2010), which is surprising given the fervor with which anti-atheist prejudice is typically maintained, its ubiquity in the United States, and the degree to which prejudice toward other stigmatized groups like blacks (Dovidio, Kawakami, Smoak, & Gaertner, 2008), women

[4] The Global Assessment Tool assesses soldiers along five dimensions of strength: physical, emotional, social, family, and spiritual. The goal is to evaluate soldiers for overall resilience so that they can be the best soldiers they can be, according the United States Army.

[5] Proposed by Arkansas State Rep. Richard Carroll of North Little Rock, Bill HJR 1009 was a House Joint Resolution amending the Arkansas constitution to repeal the prohibition against an atheist holding any office in the civil departments of the state of Arkansas or testifying as a witness in any court. Bill HJR 1009 died in House Committee at Sine Die adjournment on May 1, 2009.

(Eagly, 2004), and homosexuals (Fernald, 1995; Herek, 2009) has been documented in the social psychological literatures. What is known empirically about atheists? Atheists are the fourth largest religious group in the world and, perhaps not surprisingly, receive considerably more tolerance and acceptance in secularized European nations — particularly those with low levels of religiosity such as Denmark, Sweden, and the Czech Republic — than they do in America (Zuckerman 2007). Experimentally increasing perceptions of atheist prevalence reduces explicit and implicit distrust of atheists, but does not have an effect on positive feelings toward atheists or perceived contact with atheists (Gervais, 2011). Moreover, anti-atheist prejudice is at odds with objective measures indicating that atheists are predominantly male, married, above average in intelligence , and highly educated (Beit-Hallahami, 2007; Hunsberger & Altemeyer, 2006; see also Lynn, Harvey, & Nyborg, 2009). Atheists are open to experience, intellectually oriented (Shermer, 1999), and especially well adjusted (Galen, 2009). In fact, Beit-Hallahami (2007) summarized the psychological profile of the model atheist in Western society in the following way:

> We can say that atheists show themselves to be less authoritarian and suggestible, less dogmatic, less prejudiced, more tolerant of others, law-abiding, compassionate, conscientious, and well-educated. They are of high intelligence, and many are committed to the intellectual and scholarly life. In short, they are good to have as neighbors. (p.313)

If atheists are indeed good to have as neighbors and as smart, well adjusted, law abiding, and possess characteristics of the model American citizen as research suggests, why then is anti-atheist prejudice so overtly expressed and tolerated? Why do people mistrust atheists? And why are Americans so threatened by atheists?

Finding the answers to these questions is perhaps more important than ever with the ascendance of what some are calling *The New Atheism* movement. Following a relatively recent succession of pro-atheist New York Times bestsellers (Dawkins, 2006; Dennet, 2006; Galen, 2009; Harris, 2005; Hitchens, 2007; Shermer, 1999; Stenger, 2007), atheists across the nation are figuring more prominently in the public eye than ever before (Goodstein, 2009). The number of atheist groups across the country is increasing and many are organizing their efforts to increase public awareness via nationally coordinated media campaigns, which have appeared across the country on buses (British Humanist Association, 2011; Slotnik, 2009), billboards (Slotnik, 2010a), and in the New York City subways (Lee, 2009). Other atheist groups have attempted to improve public relations by publicizing their connection and substantial contributions to high-profile charity work (e.g., Non-Believers Giving Aid, http://givingaid.richarddawkins.net; Freeman, 2010). Recent motion pictures have celebrated the atheist worldview (Johnson & Charles, 2008), and even books on how to raise freethinking, atheist children have appeared in bookstores (McGowan, 2007; McGowan, Matsumura, Matskas, & Devor, 2009). However, as atheist voices rise, so do those of the opposition (e.g., McKinley Jr., 2010; Slotnik, 2010b, 2010c). Atheists are now more likely than ever to become embroiled in the inherent tensions of this cultural conflict and face discrimination (Downey, 2004; Hammer, Cragun, & Hwang 2011). This dissertation research seeks to address these questions, at least in part, and in so doing may represent a first step toward understanding the social-cognitive aspect of anti-atheist prejudice, the prevalence of which is likely to increase as the American atheist population continues to grow[6] (Kosmin & Keysar, 2008), become more visible, and more publically outspoken.

[6] The American Religious Identification Survey (Kosmin & Keysar, 2008) recently found the number of people who claimed "no religion" had nearly doubled nationally over the last 18 years, to 15 percent. They were the only

This dissertation research provides evidence that anti-atheist prejudice is rooted in the interpersonal foundations of religious belief along lines implied by shared reality theory and attachment theory. For most, religious beliefs are established early within the parental relationships, fostered and nurtured within the family, becoming a bond that holds religious families together. Repeated shared religious experiences strengthen this cognitive tether between the child and the parent such that the dynamics of the relationship become entwined with the religious beliefs established within it. Consequently, when religious beliefs are challenged or threatened, the parental relationships bound by them are also threatened. However, not all parental relationships are created equal: some are stable, strong, healthy and vital; others are not. The degree to which religious beliefs are defended is contingent upon the strength and vitality of the parental relationship. This dissertation research suggests that atheists present just such a threat: Atheists not only threaten religious beliefs but also the parental relationships of those that hold them — a threat defended to the extent the parental relationships engaged are perceived to be stable and vital.

Shared Reality Theory

Shared reality theory provides a theoretical framework from which to understand anti-atheist prejudice by looking at how beliefs are used, regulated, and defended as a function of the relationships in which they are shared (Hardin & Conley, 2001; Hardin & Higgins, 1996). According to shared reality theory, experiences and attitudes are cognitively realized when they are perceived to be acknowledged, recognized, or otherwise intersubjectively "shared" with

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demographic that increased in all 50 states. It is untenable to suggest that all those who claimed "no religion" are atheists, though, doubtless, they are among them.

others. Shared reality theory postulates that both the need to establish and maintain relationships, as well as the need for epistemic understanding, is pursued and met through the mutual achievement of a social-cognitive common ground or "shared reality." This social-cognitive process establishes and regulates both the particular interpersonal relationships involved in the shared experience — whether short-term relationships or long-term relationships — and the particular attitudes shared in these relationships (Hardin & Conley, 2001). First, the establishment and maintenance of shared reality is necessary for social relationships, implying that the vitality of a given relationship is contingent on the degree to which shared reality within that relationship has been achieved. Second, the establishment and maintenance of shared reality is necessary to objectify individual cognitions, which implies that the vitality of a given belief is contingent on the degree to which it is validated through shared reality.

Regulating shared reality within the complex milieu of multiple interpersonal relationships involves two interacting processes: the pursuit and creation of new shared realities within new short-term relationships, and the defense and maintenance of extant shared realties already established within existing long-term relationships. When confronted with new competing shared realities, how or in what direction one regulates shared reality depends upon the interplay between the extent to which the new relationship in question is desired or obligatory, and the extent to which the extant shared realities engaged in long-term relationships are worth defending. For example, let's say that Joanne is a religious student from a religious family with religious parents. In other words, she has well-established religious shared reality with their parents. And let's say that Joanne finds herself at the start of the new semester in a psychology class taught by a professor who is an atheist and presents a competing shared reality. From a shared-reality perspective, this puts Joanne in the delicate situation of having to regulate

her attitudes toward the professor, which will be determined by the interplay between: (1) the degree to which Joanne perceives her relationship with the professor to be obligatory (Does she have to stay in this class?) and desirable (How motivated is she to do well in this class?) and, (2) the degree to which Joanne considers her parental relationships vital (How much does she currently value her relationship with her parents?)[7], and thus how much her parental religious shared realities are worth defending. Hence, shared reality theory implies that social interaction with an atheist should have different consequences on a believer's anti-atheist prejudice depending on the degree to which the believer's religion is shared in important relationships.

Shared Reality and Religiosity and Parental Attachment

In order to apply shared reality analysis to anti-atheist prejudice, it is important to understand that individual religiosity is established and maintained as a consequence of finding religious shared reality with others throughout the course of social interaction. As a consequence, shared reality theory implies that threats to one's religiosity like atheism, in turn, are threats to the relationships in which religiosity is shared and will be defended to the extent these relationships are perceived to be healthy, stable, and vital. If the relationships engaged in religious shared reality are known, and something is also known about the perceived vitality of these relationships, then predictions about the degree to which religious shared reality will be defended can be made.

Religious attitudes are typically established within parental relationships (Beit-Hallahmi & Argyle, 1997; Caplovitz & Sherrow, 1977; Cavalli-Sforza, Feldman, Chen, & Dornbusch, 1982). To the extent this is true, shared reality theory implies that religious beliefs and associated

[7] It is important to note that the value one places on any relationship is not fixed and static, but fluctuates dynamically in response to situational factors.

attitudes will be psychologically defended to the degree to which parental relationships are considered stable and vital (Magee & Hardin, 2010; see also Hardin & Higgins, 1996). Therefore, an indicator of the quality, strength, or vitality of the parental relationship should also predict the relative stability of the religious beliefs founded on that relationship. From a shared reality perspective, an estimate of parental relationship engagement should predict defense of religious shared realities to the extent that the religious shared realities are relevant to the parental relationship. Parental attachment may be such an estimate.

Although the psychoanalytic tradition has focused on the interpersonal foundations of religious belief since Freud (Freud, 1921, 1927, 1933; McDargh, 1983; Meissner, 1984; Rizzuto, 1979; Sullivan, 1953; see also Wulff, 1997), who was the first to offer a comprehensive psychological theory explaining personal religiosity as a function of security-related processes emanating from children's relationships with their parents, nearly all contemporary experimental research on the interpersonal foundations of religious belief has emerged from research animated by attachment theory. Attachment theory was created by psychoanalyst John Bowlby (1969/1982) in an attempt to explain why early childhood relationships with parents have such a pervasive and lasting effect on personality development (see also Ainsworth et. al, 1978). Attachment theory asserts that the repeated interactions and socializations with our primary caregivers – called *attachment figures* – during infancy and childhood aggregate cognitively to create a set of expectancies regarding how a child's psychological need for safety and security will be satisfied. This set of cognitive expectancies — understood to be an *internal working model* of self and others — depends on the nature of the experiences shared with the attachment figure, which determines whether or not the individual comes to see themselves as lovable or unlovable and others as trustworthy or untrustworthy. These internal working models represent

the social-cognitive construct of attachment security and are commonly captured by individual differences in *attachment styles* that vary from secure attachment to variations of insecure attachment[8] (Ainsworth et. al, 1978). However, for present purposes and reasons of clarity, *parental attachment* will be used in reference to the attachment continuum, and the terms *high* and *low* used to indicate stronger or weaker parental attachments (or more or less attachment security), respectively.

If parental attachment characterizes the vitality of the parental relationship, then from a shared reality theory perspective, parental attachment should also characterize the vitality of any belief based on that relationship — any *attachment belief*. Because religious ideology is normatively founded within parental relationships, religious beliefs may be considered attachment beliefs, and as such, parental attachment should predict endorsement of religious attitudes, including attitudes toward atheists. Consistent with this reasoning, research shows that adult religiosity among those with high parental attachment is more strongly linked to the religiosity of their parents than adult religiosity among those who with low parental attachment (Granqvist, 1998; Granqvist & Hagekull, 1999; Granqvist & Kirkpatrick, 2004; Kirkpatrick & Shaver, 1990; see also Hardin et al., in press). Furthermore, threats to religious beliefs like atheism should be defended as a function of parental attachment. People with high parental attachment should respond to threats to their religious beliefs with a greater ability (or willingness) to defend against the threat, perhaps by bolstering religious commitment or associated attitudes. In contrast, people with low parental attachment should respond to threats to their religious beliefs with a lesser ability (or willingness) to defend against threat, resulting in

[8] It's important to note that there is the potential for confusion to arise around the use of the term attachment due to the words much broader colloquial use: People talk of feeling "attached" to many of the objects (and people) in their lives. In attachment theory terms, attachment refers to a very specific relationship with the primary caregiver(s).

diminished religious commitment or associated attitudes. Congruent with this analysis, several experiments show the powerful role that shared reality plays in religious commitment, and in particular, how parental relationship engagement, as measured by parental attachment, is implicated in this process (Birgegard & Granqvist, 2004; Magee & Hardin, 2010).

Birgegard and Granqvist (2004) were the first to experimentally demonstrate that parental attachment is implicated in shared reality processes. In an experiment demonstrating that a threat to a specific relationship in turn threatens religious shared realities linked to that relationship, Birgegard & Granqvist (2004) threatened separation from the participant's maternal relationships with unconscious subliminal presentations of the phrase "Mother is gone." Participants with high parental attachment responded to the unconscious threat to the maternal relationship with increased emotionally-based religiosity, whereas participants with low parental attachment responded to the threat with decreased emotionally-based religiosity. Birgegard & Granqvist (2004) also found similar results in another experiment in which they subliminally primed participants with the phrase "God has forsaken me."

Recently, Magee & Hardin (2010) have more directly demonstrated the role of shared reality in religiosity across two experiments that used subliminal primes to threaten religious beliefs with unconscious thoughts of evolution. In one experiment, the role of relationship engagement implied by shared reality theory, was tested by observing how the evolution threat was defended as a function of parental attachment. Participants with high parental attachment responded to the unconscious threat of evolution with increased religious commitment, whereas participants with low parental attachment responded to the unconscious threat of evolution with reduced religious commitment. In another experiment, shared reality was assessed directly by observing how the threat of evolution was defended as a function of perceived religious shared

reality with parents. Participants who perceived religious shared reality with their fathers responded to the unconscious threat of evolution with increased self-religiosity (a measure of religious commitment), whereas participants who did not perceive religious shared reality with their fathers responded with reduced self-religiosity.

Anti-Atheist Prejudice in Defense of Parental Religious Shared Realities

Demonstrating that religiosity is expressed in the context of multiple social relationships, further results from Magee & Hardin (2010) suggest that anti-atheist prejudice is also implicated in the defense of religious shared realities with parents. The subliminal presentation of words related to evolution caused complementary changes in anti-atheist prejudice. Across two experiments, participants with high parental attachment (or who perceived religious shared reality with their fathers) responded to the unconscious threat of evolution with increased anti-atheist prejudice, whereas participants with low parental attachment (or who did not perceived religious shared reality with their fathers) responded to the threat of evolution with reduced anti-atheist prejudice. These results are important, not only because they indicate that religious beliefs are implicated in a dynamic web of interpersonal relationships, but because they show that parental attachment moderates the defense of religious shared realities, which can be observed via the differential evaluation of a (presumably) threatening social target: the atheist. Results of Magee & Hardin (2010) indicate that parental attachment moderates anti-atheist prejudice. Hence, this dissertation research took the direct approach and explored the degree to which religiosity and associated attitudes like anti-atheist prejudice were used in the regulation of religious shared realities by manipulating exposure to atheism in addition to exploring the degree to which parental attachment moderated these effects.

Regulating Shared Reality with Social Tuning

Regulating shared reality within the complex milieu of multiple interpersonal relationships involves two interacting processes: the pursuit and creation of new shared realities within new relationships, and the defense and maintenance of extant shared realties already established within existing relationships. In other words, when confronted with new competing shared realities, how or in what direction shared reality is regulated depends upon a cognitive *tug-of-war* between the extent to which the new relationship is desired or obligatory (process 1), and the extent to which the extant shared realities in existing relationships engaged are perceived to be vital and worth defending (process 2). The first of these interacting processes (process 1) has received considerable empirical support in research documenting the most common indication of shared reality regulation, social tuning.

Social tuning is the degree to which one aligns one's own attitudes toward the ostensible attitudes of others (Lowery, Hardin, & Sinclair, 2001; Lun, Sinclair, Whitchurch, & Glenn, 2007; Sinclair, Huntsinger, Skorinko, & Hardin, 2005; Sinclair, Lowery, Hardin, & Colangelo, 2005). According to shared reality theory, if a new relationship is desired or obligatory, then one's relationship-relevant attitudes will 'tune' toward the ostensible attitudes of the other — thereby establishing part of the shared reality elicited by engaging in an interpersonal relationship. Alternatively, if the new relationship is neither desired nor obligatory, then one's relationship-relevant attitudes should 'anti-tune' away from the ostensible attitudes of the other.

Research demonstrates that social tuning operates on a variety of attitudes as a function of the relationship-relevance of the attitude and relationship status, and has been typically captured in a paradigm that involves tuning to the ostensible attitudes of the experimenter. In one

example, highlighting social tuning of racial attitudes, automatic anti-Black bias among white participants was eliminated or reversed in the presence of a black versus white experimenter (Lowery et al., 2001), an effect that occurs to the extent that participants desire to get along with the experimenter (Sinclair et al., 2005). Other social tuning research has manipulated the ostensible attitudes of the experimenter, as well as other experimenter characteristics such as likability (e.g., Lun et al., 2007; Sinclair et al. 2005). Further demonstrations of social tuning include attitudes regarding gender and ethnic self-stereotyping (e.g., Sinclair, Hardin, & Lowery, 2006), prejudice and self-stereotyping (Cheung, Noel, & Hardin, in press), political ideology (Jost, Ledgerwood, & Hardin, 2008), ostracism and rejection (Cheung, Noel, & Hardin, in press), and in communication and memory in people speaking to an audience (Ectherhoff, Higgins, Kopeitz, Groll, 2008).

Social tuning as a consequence of temporary relationship regulation is well-established. But that is only half of this social-cognitive tug-of-war. When religious people interact with atheists, the direction in which they tune (that is, whether or not their attitudes toward atheists become more positive or more negative) should vary as a function of their motivation to protect religious shared reality with their parents.

Overview of Experiments

This dissertation research presents three experiments that examine how anti-atheist prejudice is regulated in the defense and protection of religious shared realities with parents as implied by shared reality theory. The first two experiments demonstrate that people tune their atheism-related attitudes toward those of others to the extent that social tuning does not betray attitudes shared in vital, long-term relationships. In Experiment 1, automatic attitudes toward

atheists were assessed after the experimenter incidentally mentioned either that he was an atheist, or did not. It was hypothesized that participants with high parental attachment would respond with increased automatic anti-atheist prejudice in the presence of an atheist experimenter relative to an atheism-neutral experimenter, whereas participants with low parental attachment would respond with reduced anti-atheist prejudice in the presence of an atheist experimenter relative to an atheism-neutral experimenter.

Experiment 2 tested the causal role of parental attachment by experimentally manipulating parental attachment. Anti-atheist prejudice was assessed after participants were asked to recall a time in their past with their parents epitomized by mutual trust, safety, and understanding (high parental attachment) or a time in their past with their parents epitomized by a *distinct lack of* mutual trust, safety, and understanding (low parental attachment). The parental attachment manipulation was the only difference between Experiment 1 and Experiment 2 — in all other respects both experiments were identical. Congruent with predictions of Experiment 1, it was predicted that participants with high parental attachment would respond with increased automatic anti-atheist prejudice in the presence of an atheist experimenter relative to an atheism-neutral experimenter, whereas participants with low manipulated parental attachment would respond with reduced anti-atheist prejudice in the presence of an atheist experimenter relative to an atheism-neutral experimenter.

The atheist experimenter in Experiments 1 and 2 is conspicuous and introduces a demand characteristic (Orne, 1962) — on top of the considerable relationship demands already in place — that the participants, who are bright, undergraduate, psychology majors enrolled in a research methods class and more knowledgeable than most about psychological research, may or may not deal with in myriad ways. Participants who find themselves in the company of an atheist

experimenter who is asking them to respond to questions about their religious attitudes, which include their attitudes toward atheists, are in conscious control of their responses and can manage them idiosyncratically in any number of ways for any number of reasons. For example, some participants might formulate an idea about what they think the experimenter is "really looking for" and answer in a way that they feel is "right" or socially desirable (Paulus, 1984), or do the opposite. Others might engage in self-presentation strategies and answer in ways that make them feel better about themselves (Breckler & Greenwald, 1986; Goffman, 1959; Greenwald, & Breckler, 1985). Others might not care. Still others might lie. It's impossible to tell. Implicit measures, like the ones used in Experiments 1 and 2, circumvent these issues because they tap responses that are beyond conscious control (e.g., Devine, 1989; Lowery et al., 2001; Wittenbrink, Judd, & Park, 1997). However, several explicit measures of anti-atheist prejudice and religiosity *were* used in Experiments 1 and 2 for the purpose of replicating and extending previous findings (Magee & Hardin, 2010; Birgegard & Granqvist, 2004). For these reasons, the results obtained on the explicit measures in Experiments 1 and 2 should be treated with healthy skepticism; precedence should be given to the implicit measures.

To test the possibility that the mere cognitive salience of the concept ‘atheist’ may be sufficient to elicit the kind of relationship-relevant social tuning effects predicted for Experiments 1 and 2 in the absence of interacting with an ostensibly atheist experimenter, Experiment 3 employed a subliminal priming technique (e.g. Devine, 1989; Fazio et al., 1995). Explicit anti-atheist prejudice and self-reported religious commitment were assessed after a computerized judgment task in which the word atheist versus a non-word (tsiehta) was subliminally exposed. If the cognitive salience of atheists operates in the same way as the relationship demands of actually interacting with an atheist, then participants with high parental

attachment would respond with increased anti-atheist prejudice and religious commitment following exposure to the subliminal atheist prime, whereas participants with low parental attachment would respond with reduced anti-atheist prejudice and religious commitment following exposure to the subliminal atheist prime.

Experiment 1: Parental Attachment & Social Tuning with an Atheist

Experiment 1 explored how social interactions with atheists affect automatic atheist attitudes, which operate outside of conscious awareness, and are unintentionally and inescapably activated during an encounter with an attitude object (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Specifically, Experiment 1 explored social tuning with an atheist experimenter as a function of parental attachment. Following an interaction with an experimenter who casually mentioned that he was an atheist or did not, participants completed a computerized subliminal sequential priming task which assessed automatic attitudes toward atheists[9]. It was hypothesized that while in the presence of an atheist experimenter, automatic attitudes toward atheists would tune *toward* or *away from* the ostensible attitudes of the experimenter as a function of parental attachment, such that automatic attitudes toward atheists among those with high parental attachment would become more negative, and automatic attitudes toward atheists among those with low parental attachment would become more positive. Hence, automatic attitudes toward atheists were assessed as a function of parental attachment following the manipulation of the experimenter's ostensible atheistic attitudes in a 2 (experimenter attitudes: atheist vs. atheism-neutral) x 2 (parental attachment: high vs. low) between subjects factorial design.

Method

Participants. One hundred fifty six students enrolled in an introductory psychology course were recruited for a study on "Parents, Vigilance, & Religious Attitudes" from the Brooklyn College subject pool and received partial course credit for their participation. Participants who indicated that they were atheists or agnostics (16), spiritual (3), or Hindu (1)

[9] This measure was used more for unobtrusiveness and not necessarily to test for strict automaticity per se.

were removed from an analysis that focused on the three primary religious groups. The final sample in the analysis reported (N = 136; 33 male, 103 female) comprised 72 participants who self-identified as Christian, 52 as Jewish, and 12 as Muslim. The mean age of the sample was 23 (range 17 – 61).

Measurements

Explicit Anti-Atheist Prejudice Scale. The 7-item Explicit Anti-Atheist Prejudice Scale (Magee & Hardin, 2010; see Appendix A) was designed to measure explicit anti-atheist prejudice and comprises items such as, "I could never fully trust and atheist," and "I would be uncomfortable with an atheist teaching my child." (Cronbach's $\alpha = .85$)

Warmth toward Atheists Scale. In the Thermometer of Religious Ethnocentrism (Hunsberger & Altemeyer, 2006; see Appendix B), participants rate their overall attitude — or warmth — toward several religious groups (atheists among them), using a thermometer scale ranging from 0 – 100, with higher numbers indicating more favorable attitudes.

Parental Attachment. Parental attachment was assessed using a retrospective self-report measure, the 8-item parental relationship inventory[10] (see Appendix C; Birgegard & Granqvist, 2004). Originally conceived from Hazan's (1990) mother and father categorical prototypes, the parental relationship inventory is a continuous measure consisting of four short paragraphs per parent describing prototypical parental behavior, representing each of the four attachment styles: secure, dismissing, preoccupied, and fearful. Participants were asked to think back to when they were much younger and to indicate how closely each of the paragraphs applied to their mother and father during this time using a 7-pt scale (1 = does not at all apply, 7 = applies very well).

[10] The parental relationship inventory was presented before the manipulation in the questionnaire packet.

For example, higher scores on item 1, “She was generally loving and understanding. She was good at knowing when to be helpful and when to let me do things on my own,” indicated greater attachment. Items 2 – 4 for each parent were negatively valenced, so those items were reverse scored before responses to all eight items were aggregated to create a composite parental attachment score, such that higher scores indicate higher levels of parental attachment[11] (Cronbach’s $\alpha = .66$).

Parental Religious Shared Reality. The Socialization-Based Religiosity Scale (SBRS; Granqvist & Hagekull, 1999) is a 20-item scale (10 items for each parent) designed to measure the degree to which a child perceives their religious experience to be shared with each of their parents. Items tap the shared religious dimensions of behavior, cognitions, commitment, values, and standards with items such as, “My father and I are equally active religiously,” and “My father and I share the same values regarding religious issues.” The mother items are identical (Cronbach’s $\alpha = .94$, parent scale; $\alpha = .93$, father scale; $\alpha = .90$, mother scale; see Appendix D for complete scale). Parental religious shared reality was operationalized as a composite of responses to this measure[12].

Emotionally-Based Religiosity Scale. The 10-item Emotionally-Based Religiosity Scale (EBRS; Birgegard & Granqvist, 2004; Granqvist & Hagekull, 1999) was designed to assess the emotional regulating functions of turning to and maintaining contact with God and religion to obtain felt security, and comprises items such as, "I turn to God when I am in pain," and "My

[11] Four participants missed one item from the parental attachment measure. Their averages were calculated from the three existing responses. One participant omitted all of the father items, indicated that her father was dead and that she was raised by her mother. For this participant, the maternal attachment items were averaged and used as her parental attachment score.

[12] Three participants skipped or missed a couple items which excluded them from analysis. For each, scale averages were calculated from the existing responses.

religious faith helps me feel less lonely." (Cronbach's α = .92; see Appendix E for complete scale)

Self-Religiosity Scale. The 22-item Self-Religiosity Scale (Magee & Hardin, 2010; see Appendix F for complete scale) was designed as a measure of individual religious experience and comprises items such as, "I am a religious person," and "Religion is important to my everyday life." (Cronbach's α =.94)

Death Thought Accessibility. The level of activation of death-related thoughts was assessed using a word-stem completion task (Arndt, Greenberg, Pyszczynski, & Solomon, 1997) in which participants were presented with 20 word-stems, 6 of which could be completed with a neutral or a death-related word. For example, neutral words included TAB _ _ (*table*), _ _ OK (*book*), and WAT _ _ (*water*). The death-related words were DE _ _ (*dead* or *deed*), GRA _ _ (*grave* or *grape*), SK _ _ L (*skull* or *skill*), COFF _ _ (*coffin* or *coffee*), and STI_ _ (*stiff or stick).* Death-thought accessibility was the total number of death-related words completed. (See Appendix G)

Demographics. Standard demographic information, including age, gender, and religious identification was collected (see Appendix H).

Procedure

After obtaining consent, participants were seated in individual rooms containing a computer, and told that they were about to take part in a psychological study exploring the relationship between their relationship with their parents, their religious attitudes, and their performance on a vigilance task. Participants were given a questionnaire packet, instructed to complete the first few pages (containing the pretest measures), and told to wait for further

instructions from the experimenter who would return momentarily to explain the vigilance task and to answer any questions. Before returning, a coin flip randomly determined whether or not the experimenter would mention that he was an atheist or not when showing participants how to indicate their religious identification on the demographic page. The religious identification item provided multiple choices: Christian, Protestant, Catholic, Jewish, Muslim, Buddhist, none, and other (with a space to specify). After explaining the vigilance task, the experimenter reviewed the remaining pages in the questionnaire and said the following.

> "This item here is where you are to indicate your religious identification (pointing to the item with a pen). We couldn't possibly list all of the various religions and denominations, but the major ones are here. If yours does not appear, simply write your response here in this line next to the word *other*.
>
> **Participants who are atheists – *like me*** (hand taps chest) **– or agnostics or secular humanists should circle *none*** (pointing to the word *none* with a pen)."

The last sentence above was omitted for participants who were in the atheism-neutral condition. When the experimenter finished the instructions, he asked if there were any more questions, left the room, and shut the door leaving the participant alone to complete the study. Average time to complete the study was approximately 25 minutes.

Vigilance Task. Participants were told that they were going to participate in a vigilance task in which the word *good* or the word *bad* would appear in the center of the screen, and that they were to indicate which of those two words had appeared by pressing the appropriate key

("Q" for *good* and "P" for *bad*) as quickly as possible. Participants were also told that the task was very easy, but boring, and that to do well they would have to stay vigilant and focus on the orientation symbol in the center of the screen (*)[13] that would precede the words. Finally, participants were warned that, in an attempt to distract them, a string of X's would randomly flicker in one of the four corners of the screen before each word appeared; they were told to ignore the X's as best they could and focus on their *good* and *bad* judgments. The vigilance task was actually a measure of automatic attitudes toward atheists, and unbeknownst to the participants, the flash of X's was actually a tripartite flicker containing a forward mask of X's (50ms), the prime word (33ms; either 'atheist' or neutral non-word comparison prime containing the same letters 'tsiehta'), and a backward mask of X's (50ms)[14]. Stimulus delivery and response recording were controlled by E-Prime (Psychology Software Tools, Pittsburgh, PA; www.pstnet.com)[15]. Before the real, timed trials started, participants had to achieve at least 80% accuracy on a practice block of 10 presentations[16]). Once 80% accuracy was achieved, participants were in control of a short break before starting the timed trials. The first 16 presentations of the timed trials were buffer trials (responses not recorded) to get the participants up to speed, which was seamlessly followed by 80 timed trials in which response times and

[13] The orientation symbol is presented for random variable durations (e.g., 250ms, 500ms, 750ms, 1000ms, or 1250ms) to facilitate attentiveness and to prevent habituation.

[14] A reasonable concern when presenting stimuli so briefly is whether or not the monitor used actually has the capability to present the stimuli for the required durations. Related to this is how long it actually takes the light emitted by each pixel to decay, something that was more of an issue with CRT's. However, the stimuli were presented on 17-inch Dell 1708FPt TFT LCD Flat Panel Monitors, which have a response time (the time it takes for a pixel to turn on and decay) of 5ms. Therefore, if masks had not been used, the prime presented for 33ms might have had a margin of error of < 5ms, and at worst could have actually been presented for < 38ms. But masks were used and, additionally, all duration presentation errors were 0.

[15] The vigilance task was designed and administered using E-Prime version 1.2. In spite of the timing controls and checks contained in the E-Prime software, and in an effort to be as confident as possible that the presentation durations were in fact those specified, the timings in the design were multiples of 17 and take advantage of a monitor refresh rate of 60hz (60hz refresh rate means the that monitor is completely refreshed 60 times every second or every 16.67ms).

[16] The flashes in the practice trials contained no primes, but instead contained the word *apples*.

accuracy were recorded[17]. Automatic attitudes toward atheists was operationalized as the degree to which judgments of *good* were relatively quick and judgments of *bad* were relatively slow following the atheist subliminal prime, and were calculated by subtracting the average response latency to the word *good* from the average response latency to the word *bad* for trials with the atheist prime (see Spalding & Hardin, 1999).

Checks on Subliminality of Stimuli. To assess whether the stimuli used in the automatic atheist attitude measure were presented subliminally, participants were asked if they noticed anything unusual during the vigilance task or if they had seen anything other than X's and, if so, to provide as much detail as possible. Participants who responded in the affirmative, provided numerous and varied details of their perceptual experiences — many of them curious and interesting, though none of them possible (e.g., "I saw stars," or "Sometimes I saw a flashing light."). None of the participants indicated that they had seen or were aware of any words at all (See Appendix I).

Statistical Analysis. Reaction times can only be so fast, but they can be infinitely slow. This creates a positively skewed distribution with a long tail pulled by the more extreme slower times. Consequently, reaction time data require specialized treatment involving different transformations and cut-off criteria, all of which are considered standard for priming studies (Ratcliff, 1993). In the analysis reported here, reciprocal transformations of the accurate judgments were used[18]: errors were removed, then each individual reaction time was divided into

[17] 80 presentations = 5 x 2 (both targets) x 2 (preceded by both primes) x 4 (presented randomly once in each corner of the screen).

[18] All errors (reaction times associated with incorrect judgments) were removed before the transformation, aggregation, and automatic attitude calculation.

1[19] (incidentally, converting reaction time into speed), and the quotients were averaged. From these averages, automatic attitudes toward atheists were calculated by subtracting the average time it took to respond to the word *bad* when it was preceded by the word *atheist* from the average time it took to respond to the word *good* when it was preceded by the word *atheist*. The mean accuracy score for responses used in analysis was 96.89% (range 90% - 100%). Two participants with accuracy scores below this range were removed from analyses.

Additionally, because parental attachment is a continuous variable, the predicted interactions were explored using standard multiple regression analyses (Cohen, Cohen, West, & Aiken, 2003). The Experimenter Attitude conditions were dummy coded (atheism-neutral = 0, atheist = 1). Parental attachment scores were standardized and, from the standardized scores, the Experimenter Attitude x Parental Attachment product (the interaction term) was created. A two-step hierarchical regression analysis was conducted using SPSS with the Experimenter Attitude and Parental Attachment variables (standardized) introduced as predictors in the first step (or block) and the Experimenter Attitude x Parental Attachment product, representing the two-way interaction, was introduced in the second step (or block). Whenever possible, both standardized and unstandardized coefficients are reported – as β and *b*, respectively. Simple effects were calculated at -1*SD* and +1*SD*, for low and high, respectively.

Results

Automatic Anti-Atheist Prejudice. Consistent with predictions, automatic social tuning of anti-atheist prejudice was activated and regulated as a function of parental attachment, as

[19] As an added step to remove zeros and facilitate ease of visual inspection, the resulting reciprocally transformed reaction times were further multiplied by 1,000 and had no effect on the subsequent calculations.

indicated by an Experimenter Attitude x Parental Attachment interaction, β = -0.238 (b = -.056), t(134) = -1.852, p = .066, which was marginally significant. As shown in Figure 1, interacting with an atheist experimenter increased automatic attitudes toward atheists among those with low parental attachment, b = .078, t(134)= 1.893, p = .06, but not among those reporting high parental attachment, b = -.030, t(134)= -0.732, p = .46. However, and contrary to predictions, automatic attitudes toward atheists were not moderated by or related to parental religious shared reality, as indicated by the non-significant Experimenter Attitude x Shared Reality interaction, β = -0.031 (b = -.007), t(135) = -.217, p = .81[20].

Explicit anti-atheist prejudice. Explicit anti-atheist prejudice and warmth toward atheists were unaffected by the experimenter's ostensible atheistic attitudes, neither as a function of parental attachment, nor as a function of parental religious shared realities. Explicit anti-atheist prejudice was unrelated to parental attachment as indicated by a non-significant Experimenter Attitude x Parental Attachment interaction, β = .059 (b = .091), t(132) = .461, p = .645. Warmth toward atheists was unrelated to parental attachment as indicated by a non-significant Experimenter Attitude x Parental Attachment interaction, β = .043 (b = 1.568), t(132) = .332, p = .740. Explicit anti-atheist prejudice was unrelated to parental religious shared reality as indicated by a non-significant Experimenter Attitude x Shared Reality interaction, β = -.170 (b = -.255), t(132) = -1.345, p = .181. Finally, warmth toward atheists was unrelated to parental religious shared reality as indicated by a non-significant Experimenter Attitude by Shared Reality interaction, β = .192 (b = 6.899), t(132) = 1.471, p = .144.

[20] The maternal and paternal religious shared reality moderators were also looked at independently: neither was significant (ps < .42).

Religiosity. Unexpectedly, interacting with an atheist (versus an atheism-neutral) experimenter did not affect religiosity as a function of parental attachment, but did affect religiosity as a function of parental religious shared realities — and did so in the wrong direction. Emotionally-based religiosity and self-religiosity were related to parental religious shared realities, as indicated by significant atheist Experimenter Attitude x Shared Reality interactions: β = -.350 (b = -.508), t(132) = -3.153, p = .002 (EBRS), β = -.313 (b = -.405); t(130) = -3.081, p = .003 (self-religiosity). As seen in Figure 2, interacting with an atheist experimenter significantly increased emotionally-based religiosity among those reporting low parental religious shared reality, b = .787, t(131)= 3.326, p = .001, but not among those reporting high parental religious shared reality, b = -.229, t(131)= -1.092, p = .277. Additionally and as shown in Figure 3, interacting with an atheist experimenter significantly increased self-religiosity among those reporting low parental religious shared reality, b = .591, t(130)= 3.313, p = .002, but not among those reporting high parental religious shared reality, b = -.219, t(130)= -1.309, p = .193. Emotionally-based religiosity and self-religiosity were highly correlated, r = .88, p < .001.

Death-Thought Accessibility. Death-thought accessibility was explored to determine whether or not atheists might be somehow existentially threatening to the religious participants in our sample. However, there were no significant effects of interacting with an atheist experimenter on death-thought accessibility as a function of parental attachment (p = .223), nor as a function of parental religious shared reality (p = .835)[21]. However, there might be another

[21] Unfortunately analogous comparisons to standard terror management effects typically captured with this DTA scale might be impossible due to the order in which the instruments were presented to participants. The Thermometer of Religious Ethnocentrism appeared on the page directly before the word-stem completion task in the paper packet. This gave all participants a chance to bolster their own worldview and derogate opposing worldviews before the word-stem completion task. In other words, the participants were inadvertently given a terror

way to test the hypothesis that thinking about atheists is somehow similar to thinking about one's mortality, or at least in some way existentially threatening.

The terror management literature is replete with examples of mortality salience manipulations — when people consider the unstoppable approach of their ultimate death — causing people to bolster their self-esteem either by affirming their own cultural worldview (e.g., via positive evaluations of another ingroup member), or by derogating outgroup members holding opposing cultural worldviews (see Greenberg, Solomon, & Arndt, 2008 for review). Both acts serve the same terror management function. From responses to the Thermometer of Religious Ethnocentrism, we can look at how those in our sample judged members of their religious ingroup, relative to how they judged members of the religious outgroup, relative to how they judged the members of the atheist outgroup. A *religious ingroup* variable was created from the average rating each group (Christians, Jews, and Muslims) gave to their own group, and a *religious outgroup* variable was created from the average rating each group gave to the other two groups[22]. To test the hypothesis that interacting with an atheist experimenter had an effect on religious ingroup favoritism, religious outgroup derogation, or *atheist outgroup* derogation relative to those in the control condition, the religious ingroup, religious outgroup and the atheist outgroup variables were subjected to a 2 (experimenter attitude: atheist vs. atheism-neutral) x 3 (group judgment: religious ingroup vs. religious outgroup vs. atheist outgroup) mixed factorial ANOVA, with experimenter attitude included as a between-subjects variable and the group judgments included as within-subjects variables. Results did not support the hypothesis. Interacting with an atheist experimenter did not affect group judgments, as indicated by a non-

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management outlet before the death thought accessibility measure, which, from a terror management perspective, should effectively reduce the level of death related thoughts (see Hayes et al., 2010 for review).

[22] For Christian participants, the religious outgroup variable was the average of their ratings of Jews and Muslims. For Jewish participants, the religious outgroup variable was the average of their ratings of Christians and Muslims. For Muslim participants, the religious outgroup variable was the average of their ratings of Christians and Jews.

significant Experimenter Attitude x Group Judgment interaction, $F(1,130) = .289$, $p = .586$, $\eta_p^2 = 0.002$. However and irrespective of the atheist-experimenter prime, a main effect of group judgment was observed, $F(1,130) = 133.122$, $p < .001$, $\eta_p^2 = 0.506$. Results of paired *t*-tests indicated that evaluations of the religious ingroup were significantly more positive than evaluations of the religious outgroup, $t(131) = 14.231$, $p < .000$, which in turn were significantly more positive than evaluations of the atheist outgroup, $t(133) = 1.989$, $p = .05$.

Discussion

Not only does this experiment demonstrate that automatic anti-atheist prejudice is engaged when religious people interact with atheists and used in the regulation of religious shared realities, it also demonstrates that parental attachment moderates the process. Here for the first time, the role of relationship engagement, implied by shared reality theory, has been empirically observed moderating automatic attitudes toward atheists and social tuning effects with an atheist experimenter. After interacting with an atheist experimenter, automatic attitudes toward atheists became more positive among those reporting low parental attachment, and became more negative among those reporting high parental attachment. These results provide further support that when conflicted with competing shared realities presented in new immediate relationships, religious familial shared realities are only maintained and defended to the extent that the parental relationships engaged within them are perceived to be stable and vital, else the new relationship holds sway and wins in this interpersonal social-cognitive *tug-of-war*.

Complementary effects were not observed for explicit anti-atheist prejudice. However, explicit measures capture evaluations after intentional, conscious and controlled processes have been engaged, potentially affecting the response, and disconnects are known exist between

implicit and explicit evaluations, which vary as a function of a person's motivation to manage their explicit responses and their opportunity to do so (Fazio & Olsen, 2003; Nosek, 2005). Moreover, this disparity has been shown to vary to the extent that the attitudes in question are perceived to be social sensitive or personally undesirable, making explicit measures more prone to self-presentational strategies than implicit measures (Greenwald, McGhee, & Schwartz, 1998; see also Breckler & Greenwald, 1986; Goffman, 1959; Greenwald, & Breckler, 1985). Add to this the possibility that some of the participants might have also been affected by issues of social desirability (see Crowne & Marlowe, 1960; Paulas, 1984; also Arkin & Lake, 1983; Hadaway, Marler, & Chaves, 1993) in response to demand characteristics (see Orne, 1963; Rosnow, 2002; Rosnow & Rosenthal, 1997) introduced during their interaction with the atheist experimenter who is in a position of authority (see Milgram, 1974) [23], and it is reasonable to assume that the explicit measures were potentially compromised by uncontrolled variability. Indeed, the previous effects captured with the Explicit Anti-Atheist Prejudice Scale (Magee & Hardin 2010) were in response to an unobtrusive, consciously undetectable subliminal prime, which substantially reduces the possibility of a participant adjusting explicit responses whatever the reason.

The religiosity finding was surprising and contrary to theoretical predictions. First, in response to an interaction with an atheist (versus atheism-neutral) experimenter religiosity did not vary as function of parental attachment. Second, religiosity increased (rather than decreased) after interacting with an atheist experimenter (relative to an atheism-neutral experimenter) among those reporting low parental religious shared reality (and was unaffected among those reporting high parental religious shared reality), the opposite of predictions. This result is

[23] This, however, was not true for all. Several participants were confidently vocal in their disdain for the experimenter when he revealed himself to be an atheist, with one commenting through a harsh glare, "That figures. All scientists are atheists."

confusing. And even though self-reported religiosity is probably a less socially sensitive topic than explicit anti-atheist prejudice, because there was no implicit religiosity measure included in the design, similar comparisons like those above cannot be made. Perhaps this is evidence of some sort of attempt by those with low parental religious shared reality to bolster personal religious commitment in response to interacting with an atheist upon realizing that they, indeed, do not share much of their religiosity with their parents. Or maybe something about those with low parental religious shared reality made them uniquely sensitive to experimental demand and self-presentation and/or social desirability factors. However, as mentioned previously, prior results on these explicit religiosity measures were elicited in response to an unobtrusive and consciously undetectable subliminal prime (Birgegard & Granqvist, 2004; Magee & Hardin, 2010), and thus analogous comparisons should be made with caution, if at all. Given the considerable relationship demands encountered during their interactions with the atheist experimenter, explicit nature of the interaction, and the ability of people to manage their explicit responses, in this experiment, automatic associations should take precedence because they are beyond conscious control. Future research should explore this further with the use of an implicit religiosity measure as well as an explicit religiosity measure to contrast the two.

Interacting with an atheist does not seem to pose an existential threat, at least according to the measures used. There were no differences detected in levels of death-thought accessibility, nor were there any differences in judgments or derogations of the religious outgroup relative to the atheist outgroup as a function of experimenter attitudes. However and although unrelated to the experimental manipulation, it's interesting to note that atheists were judged differently and less favorably than those in the religious outgroup, indicating that, at least for those in our

sample, people who hold oppositional religious views are preferred to those who hold no religious views at all.

Finally, the experimenter was not blind to conditions, an issue which had the potential to increases confounds. Even though the experimenter practiced and stuck to a script, it is uncertain as to whether or not the experimenter actually behaved the same in both conditions. For example, the experimenter could have exhibited heightened anxiety in the atheist-experimenter condition when faced with the task of "outing" himself (a possibility that, fortunately, does not easily explain the observed interaction). Unfortunately, there is no way to test for this with the existing data. But similar future designs might want to employ a mood measure to assess possible unintended emotional manipulations.

Experiment 2: Manipulated Parental Attachment & Social Tuning with an Atheist

The results of Experiments 1 and those from previous research (Birgegard & Granqvist, 2004; Magee & Hardin, 2010; Exp.2) suggest that parental attachment causes the moderation of anti-atheist prejudice and religiosity when religious familial shared realities are challenged, either by thoughts of evolution (Magee & Hardin, Exp. 2, 2010), thoughts of maternal separation (Birgegard & Granqvist, 2004; Exp. 2), thoughts of divine separation (Birgegard & Granqvist, 2004; Exp. 1), or competing shared realties in a new relationship with the experimenter (Experiment 1). However, in all of these experiments, parental attachment was a personality variable — a self-reported trait — and not the result of a manipulation: Parental attachment's causal role in the regulation of attitudes has technically only ever been *implied* by the previously observed moderating effects. Hence, the need remained to directly test the causal role of parental attachment. Experiment 2 did this with an essay task in a social tuning paradigm identical to the one in Experiment 1. In Experiment 2, however, immediately following the experimenter interaction, participants were further randomly assigned to a condition where they were either asked to write a short essay about a time shared with their parents characterized by mutual trust, safety, and understanding (high parental attachment) or about a time shared with their parents characterized by *a distinct lack of* mutual trust, safety, and understanding (low parental attachment). Because parental salience is activated in both of the manipulated parental attachment conditions, a third non-parental-salience comparison condition – the *friend* condition – was also included, in which participants were asked to write a short essay about a time shared with their friends.

In Experiment 2 automatic anti-atheist prejudice was assessed as a function of manipulated parental attachment and the experimenter's ostensible attitudes in a 2 (experimenter

attitude: atheist vs. atheism-neutral) x 3 (manipulated parental attachment: high vs. low vs. friend) between subjects factorial design.

Method

Participants. One hundred eighty students enrolled in an introductory psychology course were recruited for a "Parents, Vigilance, & Religious Attitudes" from the Brooklyn College subject pool, and received partial course credit for their participation. As in Experiment 1, participants who indicated they were atheist or agnostic (34), spiritual (6), Hindu (6), or Buddhist (5) were removed for an analysis that focused on the three primary religious groups. The final sample in the analysis reported here (N = 129; 34 males, 95 females) comprised 77 participants who self-identified as Christian, 30 as Jewish, and 22 as Muslim. The mean age of the sample was 22 (range 18 - 48). Participants were randomly assigned to condition within each factor in a 2 (experimenter attitude: atheist vs. atheism-neutral) x 3 (manipulated parental attachment: high vs. low vs. friend) between-subjects factorial design.

Procedure. The procedure was identical to Experiment 1, with one exception: Immediately following the experimenter's departure and before the vigilance task, participants were further randomly assigned to one of three essay conditions to manipulate parental attachment (detailed below). Average time to complete the study was approximately 30 minutes.

Manipulated Parental Attachment. To manipulate parental attachment, participants were randomly assigned to one of three essay conditions in which they were asked to reflect upon and write about a memory from their childhood significant to their relationship with their parents (or about a time spent with their friends). The instructions for the three conditions were as follows.

High manipulated parental attachment: We are interested in the "defining moments" in people's relationships with their parents. Specifically, we are interested in knowing about a time shared with your parents **characterized by mutual trust, safety, and understanding**. In the space below, please write a short essay about that time. Please be as detailed as possible.

Low manipulated parental attachment: We are interested in the "defining moments" in people's relationships with their parents. Specifically, we are interested in knowing about a time shared with your parents **characterized by a DISTINCT LACK of mutual trust, safety, and understanding**. In the space below, please write a short essay about that time. Please be as detailed as possible.

Friend (non-parental salience) condition: We are interested in the "defining moments" in people's relationships with their friends. Specifically, we are interested in knowing about a time shared with your friends. In the space below, please write a short essay about that time. Please be as detailed as possible.

The remaining procedure, all measures used (with the exception of the self-reported parental attachment measure which was omitted), and reaction time transformations are identical to Experiment 1. The Cronbach's alphas for the scales in Experiment 2 are as follows: Socialization-Based Religiosity Scale, $\alpha = .92$ (father), $\alpha = .91$ (mother), $\alpha = .93$ (parent); Emotionally-Based Religiosity Scale, $\alpha = .93$; Self-Religiosity Scale, $\alpha = .94$; Explicit Anti-Atheist Prejudice Scale, $\alpha = .81$.

Results

Manipulated parental attachment moderated the regulation of automatic anti-atheist prejudice in response to social tuning with the experimenter. As shown in Figure 4, interacting with an atheist experimenter increased automatic attitudes toward atheists among participants with low manipulated parental attachment, decreased automatic attitudes toward atheists among participants with high manipulated parental attachment, and had no effect on automatic attitudes toward atheists among those *not* reminded of their parents in the friend condition, as indicated by a significant Experimenter Attitude x Parental Attachment (2 x 3) interaction, $F(2,123) = 8.532$, $p < .001$, $\eta_p^2 = 0.122$. Participants with low parental attachment exhibited significantly more positive automatic attitudes toward atheists after interacting with an atheist experimenter ($M = .230$, $SE = .038$) relative to interacting with an atheism-neutral experimenter ($M = .055$, $SE = .031$), $F(1,123) = 12.983$, $p < .001$, $\eta_p^2 = 0.095$. Participants with high parental attachment exhibited marginally less positive automatic attitudes toward atheists after interacting with an atheist experimenter ($M = .049$, $SE = .034$) relative to interacting with an atheism-neutral experimenter ($M = .133$, $SE = .029$), $F(1,123) = 3.576$, $p = .06$, $\eta_p^2 = 0.028$. And participants in the friend non-parental-salience comparison condition exhibited no change in automatic attitudes toward atheists after interacting with an atheist experimenter ($M = .074$, $SE = .038$) relative to interacting with an atheism-neutral experimenter ($M = .113$, $SE = .030$), $F(1,123) = .658$, $p = .42$, $\eta_p^2 = 0.005$. Additionally, there was a significant simple effect of the essay condition within the atheist-experimenter condition, $F(2,123) = 7.140$, $p = .001$, $\eta_p^2 = 0.104$, such that those with low parental attachment indicated significantly more positive automatic attitudes toward atheists than either those with the high manipulated parental attachment ($p = .001$) or those in the friend comparison condition ($p = .004$), who did not significantly differ from each other.

Contrary to the results of Experiment 1, interacting with an atheist experimenter in Experiment 2 caused changes in death-thought accessibility as a function of manipulated parental attachment. As shown in Figure 5, interacting with an atheist experimenter increased death-thought accessibility among participants with both low parental attachment conditions high, and had no effect on those in the friend comparison condition, as indicated by a significant Experimenter Attitude x Parental Attachment interaction, $F(2,123) = 3.908$, $p = .023$, $\eta_p^2 = 0.060$. Participants with low parental attachment exhibited a substantial increase in death-thought accessibility after interacting with an atheist experimenter ($M = 1.063$, $SE = .188$) relative to interacting with an atheism-neutral experimenter ($M = .333$, $SE = .154$), $F(1,123) = 9.009$, $p = .003$, $\eta_p^2 = 0.068$. Participants with high parental attachment exhibited a marginally significant increase in death-thought accessibility after interacting with an atheist experimenter ($M = .700$, $SE = .168$) relative to interacting with an atheism-neutral experimenter ($M = .321$, $SE = .142$), $F(1,123) = 2.951$, $p = .09$, $\eta_p^2 = 0.028$. Whereas participants in the comparison friend condition exhibited no change in death-thought-accessibility after interacting with an atheist experimenter ($M = .625$, $SE = .188$) relative to interacting with an atheism-neutral experimenter ($M = .840$, $SE = .151$), $F(1,123) = .796$, $p = .37$, $\eta_p^2 = 0.006$. There was a simple effect of the essay conditions within the atheism-neutral-experimenter condition, $F(2,123) = 3.924$, $p = .022$, $\eta_p^2 = 0.060$, with those in the comparison friend condition exhibiting significantly higher death-thought-accessibility than both those with low parental attachment ($p = .020$) and those with high parental attachment ($p = .014$). There was no simple effect of the essay conditions within the atheist-experimenter condition, $F(2,123) = 1.576$, $p = .211$, $\eta_p^2 = 0.025$, though, those with low parental attachment exhibited death-thought accessibility that was greater than those with high parental

attachment (p = .15) or those in the friend condition (p = .10), though these effects were only marginally significant.

Unlike Experiment 1, interacting with an atheist experimenter did cause changes in religiosity, though not according to predictions. As shown in Figure 6, interacting with an atheist experimenter caused changes in emotionally-based religiosity, as indicated by a significant Experimenter Attitude x Parental Attachment interaction, $F(2,123) = 3.181$, $p < .045$, $\eta_p^2 = 0.051$. However, follow-up simple effects analysis revealed that the interaction was carried primarily by those in the friend condition. Participants in the friend condition indicated significantly higher emotionally-based religiosity after interacting with an atheist experimenter (M = 4.72, SE = .300) relative to interacting with an atheism-neutral experimenter (M = 3.94, SE = .237), $F(2,119) = 4.136$, $p < .044$, $\eta_p^2 = 0.034$. However, those with high parental attachment exhibited no change in emotionally-based religiosity after interacting with an atheist experimenter (M = 4.16, SE = .267) relative to interacting with an atheism-neutral experimenter (M = 4.57, SE = .220), $F(2,119) = 1.395$, $p < .240$, $\eta_p^2 = 0.012$. And those with low parental attachment exhibited no change in emotionally-based religiosity after interacting with an atheist experimenter (M = 4.71, SE = .300) relative to interacting with an atheism-neutral experimenter (M = 4.11, SE = .237), $F(2,119) = 2.464$, $p < .119$, $\eta_p^2 = 0.020$.

An almost identical pattern emerged for the Self-Religiosity Scale. As shown in Figure 7, interacting with an atheist experimenter caused changes in self-religiosity, as indicated by a significant Experimenter Attitude x Parental Attachment interaction, $F(2,123) = 3.187$, $p < .045$, $\eta_p^2 = 0.051$. Participants in the friend condition indicated significantly higher self-religiosity after interacting with an atheist experimenter (M = 3.64, SE = .199) relative to interacting with an atheism-neutral experimenter (M = 4.310, SE = .243), $F(2,118) = 4.503$, $p < .036$, $\eta_p^2 = 0.037$.

However, those with high parental attachment exhibited no change in self-religiosity after interacting with an atheist experimenter (M = 4.01, SE = .218) relative to interacting with an atheism-neutral experimenter (M = 4.35, SE = .184), $F(2,118) = 1.489$, $p < .225$, $\eta_p^2 = 0.012$. And those with low parental attachment exhibited no change in self-religiosity after interacting with an atheist experimenter (M = 4.28, SE = .270) relative to interacting with an atheism-neutral experimenter (M = 3.84, SE = .203), $F(2,118) = 1.629$, $p < .203$, $\eta_p^2 = 0.014$. There was also an additional simple effect of the essay conditions within in the atheism-neutral condition, $F(2,118) = 3.730$, $p < .027$, $\eta_p^2 = 0.059$, such that those with high parental attachment indicated significantly higher self-religiosity than those in the friend condition, $p = .010$, and marginally higher self-religiosity than those with low parental attachment, $p = .066$. There was no simple effect of the essay conditions within the atheist experimenter condition, $F(2,118) = .524$, $p = .594$, $\eta_p^2 = 0.009$. The Emotionally-Based Religiosity Scale and the Self-Religiosity Scale were highly correlated, $r = .88$, $p < .001$.

No significant results were found on the Explicit Anti-Atheist Prejudice Scale or the Warmth toward Atheists Scale.

Discussion

The results of Experiment 2, for the first time, demonstrate parental attachment's causal role in moderating automatic anti-atheist prejudice which is activated during interactions with atheists, and provide support for the assumptions inherent in Experiments 1 and prior research (Magee & Hardin, 2010), that parental attachment is causally related to the defense of religious shared realities. Furthermore, these results provide an interesting illustration of the idea that relationship engagement is something that can fluctuate temporally even in established long-term

relationships in response to situational factors, pressures and demands, and even to something seemingly trivial like writing an essay. Participants who interacted with an atheist experimenter and then wrote an essay about a time with their parents characterized by a *distinct lack* of mutual trust, safety, and understanding, temporarily diminishing the level of parental relationship engagement invested in their religious shared realities — weakening them — and tuned their attitudes to those of the experimenter. Whereas, those who interacted with an atheist experimenter and then wrote an essay about a time with their parents characterized by mutual trust, safety, and understanding, temporarily bolstered the level of parental relationship engagement invested in their religious shared realities — strengthening them — and anti-tuned *away from* the attitudes of the experimenter, whose attitudes were challenging those tethered to the parental bond. Additionally, participants who were not made to think about their relationship with their parents, and who instead wrote an essay about a time shared with their friends, showed no difference in their automatic attitudes toward atheists whether they had recently interacted with an atheist experimenter or not.

The death-thought accessibility results from Experiment 2 are inconsistent with the results of Experiment 1 and puzzling. After interacting with an atheist, death-thought accessibility increased for those who had been thinking about their parents (either positively or negatively) and did not increase for those who had been thinking about their friends during the essay task. Somehow writing an essay about friends after interacting with an atheist buffered thoughts of death in ways that writing about parents did not. Why? How could friends serve a greater buffering function against existential anxieties activated after interacting with an atheist experimenter then one’s parents? It's hard to tell because these results are not in line with predictions nor are they consistent with previous terror management results that show that, in

response to the typical mortality salience manipulation, parents attenuate death-thought accessibility not increase it; but this has only been shown when priming *positive* recollections of mother; priming negative recollections of mother did not attenuate death-related thoughts, nor did priming positive recollections of an acquaintance (Cox et al., 2008). Perhaps this effect is not entirely representative of existentially anxiety, but rather representative of existentially anxiety in combination with another type of anxiety — perhaps anxiety specific to parental relationships like separation anxiety, something that is not activated when thinking about friends. Or perhaps this effect is a combination of anxieties specifically shared with parents — separation anxieties and existential anxieties, which are apparently exacerbated even more so for those also combining negativity in to the mix by thinking about bad times with their parents. Maybe this separation anxiety gets compounded because relationship-relevant anxiety nodes — those shared with parents — have already been activated during the interaction with the atheist experimenter. But this is purely speculative. More research is needed to explore the relationship between the atheist-threat and existentially anxiety, and between the buffering effects of friendships versus parents and mood.

Finally, the religiosity findings on both explicit measures were also not in line with predictions and do not seem to be related to the parental attachment manipulation per se, but rather to not connecting with parents. Although shared reality theory predicts that the defense of religious shared realities with parents should occur to extent the parental relationships engaged are healthy, stable and vital and previous research has seen evidence of this across both of these scales as a function of parental attachment (Birgegard & Granqvist, 2004; Magee & Hardin, 2010), as mentioned above, the prior results captured with these scales were elicited by unobtrusive and consciously undetectable subliminal primes. Perhaps there's a fundamental

difference between the way people respond when relationships activate a particular concept and the way people respond to the mere cognitive salience of a particular concept, like atheism.

This raises an empirical question: How do responses on these explicit scales following an interaction with an atheist differ from those elicited from a much more subtle subliminal cognitive salience manipulation? Experiment 3 addresses this question, and to some extent tests whether or not the observed social tuning effects in Experiment 1 and Experiment 2 are strong enough to be elicited automatically from merely activating the cognitive salience of atheism, and not from an interaction with the real human being, in a conceptual replication of Magee & Hardin's (2010) subliminal-evolution-threat experiment that uses a subliminal-atheist-threat.

Experiment 3: Subliminal Atheist-Threat

The results of Experiments 1 and 2 provide strong support that automatic anti-atheist prejudice is activated during social interactions with atheists and regulated as a function of parental attachment. Furthermore, the results of Experiments 1 and 2 show that the relationship demands of actually interacting with an atheist are sufficient to elicit the observed effects: But are they necessary? Experiment 3 tested the possibility that the mere cognitive salience of the concept 'atheist' was sufficient to reproduce the same kind of relationship-relevant social tuning effects observed in Experiments 1 and 2. Experiment 3 tested the main prediction — that atheists are threatening to the extent that they challenge religious shared realties with parents, and that religious shared realties with parents will be defended to the extent that the parental relationships engaged in them are perceived to be healthy, stable, and vital — with the use of a subliminal priming methodology, a technique that has been used to eliminate self-presentational strategies for over 20 years (e.g. Devine, 1989; Fazio et al., 1995; Greenwald & Banaji, 1995; see also Bargh & Chartrand, 2000). In so doing, Experiment 3 provides an opportunity to examine how the explicit measures used in Experiments 1 and 2 fared in response to an implicit prime in the absence of relationship demands. Experiment 3 also provides a conceptual replication and extension of previous research (Birgegard & Granqvist, 2004; Magee & Hardin, 2010). If the cognitive salience of atheists operates in the same way as the relationship demands of actually interacting with an atheist as they did in Experiments 1 and 2, then participants with high parental attachment would respond with increased anti-atheist prejudice and religious commitment following exposure to the subliminal atheist prime, whereas participants with low parental attachment would respond with reduced anti-atheist prejudice and religious commitment following exposure to the subliminal atheist prime. Experiment 3 assessed explicit anti-atheist

prejudice and religiosity as a function of parental attachment after manipulating subliminal exposure to the concept 'atheist' in a 2 (prime word: atheist vs. non-word) x 2 (parental attachment: high vs. low) between-subjects factorial design.

Method

Participants. Two hundred and one students enrolled in an introductory psychology course were recruited for a study on "Perception and Religiosity" from the Brooklyn College subject pool, and received partial course credit for their participation. Similar to Experiment 1 & 2, participants who indicated they were atheist or agnostic (31), spiritual, or Hindu (3) were removed from an analysis that focused on the three primary religious groups. The final sample in the analysis reported here (N = 148; 39 males, 108 females, 1 not reported) comprised 76 who self-identified as Christian, 40 as Jewish, and 32 as Muslim. The mean age of the sample was 22 (range 17 – 49). Participants were randomly assigned to condition in a 2 (prime word: atheist vs. non-word) x 2 (parental attachment: high vs. low) between-subjects factorial design.

Measurements. With the exception of the visual discrimination task (described below), all measures used were identical to those in the previous experiments. The Cronbach's alphas for the scales in Experiment 3 are as follows: parental attachment, α = .67; Socialization-Based Religiosity Scale, α = .91 (father), α = .87 (mother), α = .91 (parent); Emotionally-Based Religiosity Scale, α = .93; Self-Religiosity Scale, α =.95; Explicit Anti-Atheist Prejudice Scale, α = .82.

Checks on Subliminality of Stimuli. To assess whether the subliminal stimuli were truly subliminal, on the last page of the questionnaire, participants were asked if they noticed anything unusual during the visual discrimination task or if they had seen anything other than B's, b's and

X's and, if so, to provide as much detail as possible. Participants who responded in the affirmative, provided numerous and varied details of their perceptual experiences — many of them curious and interesting, none of them possible (e.g., "I saw stars," or "Sometimes I saw a d instead of a b"). None of the participants indicated that they had seen or were aware of any words at all (see Appendix I).

Statistical Analysis. Interactions were explored using standard multiple regression analyses identical to those in Experiment 1. The Atheist Prime conditions were dummy coded (control = 0, atheist = 1).

Procedure. Participants were seated at individual computer stations and told that they were about to take part in a study exploring the relationship between religious attitudes, personality traits, and certain cognitive abilities — specifically visual perception. Participants were instructed to complete the first few pages of a questionnaire packet (containing the pretest measures) before embarking on a computerized visual discrimination task. Upon completion of the visual discrimination task, participants were instructed to return to and complete the questionnaire packet. Average time to complete the entire study was approximately 25 minutes.

The Visual Discrimination Task. Participants were asked to take part in a visual discrimination task, ostensibly designed to examine their ability to accurately detect small deviances in visual stimuli presented for a fraction of a second. In fact, this task was a subliminal priming methodology adapted from Karremans, Stroebe, & Claus (2006; see also Bargh & Chartrand, 2000) and used to subliminally prime half of the participants with the word *atheist*, and the other half with a neutral control non-word containing the same letters (i.e., *tsiehta*). Participants were told that a string of capital B's (BBBBBBBBB) would very quickly appear five

times in the center of the screen, and that a single small b *could* appear in any position within the string of capital B's (e.g., BBBBBBbBB, BbBBBBBBB, or BBBbBBBBB). Participants were told that each five-presentation burst could contain 0 – 5 b's, and that after each five-presentation burst they would be asked to indicate how many b's they had seen and how confident they were in their judgment by entering the appropriate numbers into the computer. To ensure participants were focusing on the right spot when they needed to, before each string of B's appeared, a string of X's appeared as an orienting cue. In fact, the X's served to mask the primes. The order and duration of the stimuli were as follows: The orientation string (front mask) of X's (XXXXXXXX) was presented (500 ms), followed by the prime (17 ms), followed by another string (back mask) of X's (250 ms), followed by the B-string (300 ms), with an interstimulus interval (ISI) of 500 ms before the sequence repeated. Stimulus delivery and response recording were controlled by E-Prime (Psychology Software Tools, Pittsburgh, PA)[24]. There were 10 five-presentation bursts, or 50 presentations in total.

Following the visual discrimination task, participants completed the remaining pages of the questionnaire packet, which included 59 statements regarding their religious attitudes (to which they were to indicate their level of agreement using a 7-point Likert-type scale), a measure of attitudes toward religious groups, a word-stem completion task, a short demographic questionnaire, and a subliminality check. Upon completion of the questionnaire, all participants were thoroughly debriefed and thanked for their participation.

Results

[24] As with Experiment 1 and 2 timings were designed to take advantage of a monitor refresh rate of 60hz (60hz refresh rate means the that monitor is completely refreshed 60 times every second or every 16.67ms).

Subliminal exposure to the word *atheist* affected explicit anti-atheist prejudice and warmth toward atheists both as a function of parental attachment and as a function of parental religious shared reality, complementing the results obtained on the automatic measures of anti-atheist prejudice in Experiments 1 and 2. As can be seen in Figure 8, explicit anti-atheist prejudice was related to parental attachment, as indicated by a significant Atheist Prime x Parental Attachment interaction, β =.218 (b = .373), t(140) = 2.035, p = .044. Exposure to the subliminal atheist prime significantly reduced anti-atheist prejudice among those reporting low parental attachment, t(140)= -2.235, p = .027, but not among those reporting high parental attachment, t(140)= 0.644, p = .521. Independently and as can be seen in Figure 9, explicit anti-atheist prejudice was related to parental religious shared reality, as indicated by a significant Prime x Shared Reality interaction, β =.259 (b = .435), t(139) = 2.392, p = .018. Exposure to the subliminal atheist prime significantly reduced anti-atheist prejudice among participants low in parental religious shared reality, t(139)= -2.355, p = .019, but not among participants high in paternal religious shared reality, t(139)= 1.082, p = .281.

When the parental religious shared reality variable was divided into its constituent parts, and *maternal* and *paternal* religious shared reality were looked at independently, the observed pattern held for both, though, the effect was slightly stronger for paternal religious shared reality[25], β =.258 (b = .431), t(133) = 2.287, p = .024, than it was for maternal religious shared

[25] Thirteen participants failed to answer at least one of the 20 SBRS items, which effectively eliminated their inclusion in analysis using the measure. Sometimes items were omitted because one of the parents was deceased and/or they indicated being raised by the other single parent. Others simply skipped (intentionally or otherwise) 1-3 items. In an effort to include as many participants from the sample as possible in the analysis, these missing data were adjusted on a case-by-case basis as follows. If a participant was missing all father items and they indicated being raised by their mother (or vice versa), their maternal religious shared reality score was used also as their parental religious shared reality score, or a single-parent attachment score, if you will. If the participant missed 3 items (as only one participant did; all others omitted less than three items) from father items, their paternal religious shared reality score was calculated as the average of the completed items (seven in this case), and their parental religious shared reality score was created from an average of this and their responses to the mother items. These adjustments did not significantly affect the results obtained in the regression analyses using the full 20-item SBRS

reality, β =.197 (b = .344), t(138) = 1.887, p = .061, which was marginally significant. Exposure to the subliminal atheist prime significantly reduced anti-atheist prejudice among those reporting low paternal religious shared reality, b = -.491, t(133) = -2.007, p = .047, but not among those reporting high paternal religious shared reality , b = .303, t(133) = 1.228, p = .221. Exposure to the subliminal atheist prime also marginally reduced anti-atheist prejudice among those reporting low maternal religious shared reality, b = -.425, t(138)= -1.779, p = .077, but not among those reporting high maternal religious shared reality, b = .225, t(138) = .915, p = .362.

In addition to affecting explicit anti-atheist prejudice, exposure to the subliminal atheist prime affected feelings of warmth toward atheists (positive feelings) in complementary ways, both as a function of parental attachment and as a function of parental religious shared reality. As can be seen in Figure 10, warmth toward atheists was related to parental attachment, as indicated by a significant Atheist Prime x Parental Attachment interaction, β = -0.209 (b = -8.8481), t(141) = -1.952, p = .05. Exposure to the subliminal atheist prime significantly increased warmth toward atheists among those reporting low parental attachment, b = 13.946, t(141)= 2.266, p = .025, but not among those reporting high parental attachment, b = -3.016, t(141)= -0.515, p = .607. And as can be seen in Figure 11, independently, warmth toward atheists was related to parental religious shared reality, as indicated by a marginally significant Atheist Prime x Shared Reality interaction, β = -0.210 (b = -8.289), t(141) = -1.879, p = .06. The subliminal atheist prime significantly increased warmth toward atheists among participants low in parental religious shared reality, b = 13.375, t(141) = 2.089, p = .038, but not among participants high in parental religious shared reality, b = -3.203, t(141) = -0.565, p = .573.

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scale (unadjusted p = .013, adjusted p = .018), or the two 10-item subscales (mother subscale unadjusted p = .081, adjusted p = .061; father subscale unadjusted p = .005, adjusted p = .024).

Contrary to predictions, exposure to the subliminal atheist prime had no observed effect on either explicit religiosity scale as a function of either parental attachment or parental religious shared reality. Emotionally-based religiosity was not related to parental attachment, as indicated by a non-significant Atheist Prime x Parental Attachment interaction, β =.071 (b = .131), t(142) = .659, p = .511. Nor was emotionally-based religiosity related to parental religious shared realities, as indicated by a non-significant Prime x Shared Reality interaction, β =.033 (b = .059), t(141) = .323, p = .747. Additionally, self-religiosity was not related to parental attachment, as indicated by a non-significant Atheist Prime x Parental Attachment interaction, β =.017 (b = .027), t(142) = .160, p = .873. Nor was self-religiosity related to parental religious shared realities, as indicated by a non-significant Atheist Prime x Shared Reality interaction, β =.013 (b = .019), t(141) = .130, p = .897. Independent of the effects of the subliminal atheist prime, there was a main effect of parental religious shared reality, such that those high in parental religious shared reality indicated significantly greater levels of religiosity across both religiosity scales than those low in parental religious shared reality, as indicated by significant multiple regression terms for the emotionally-based religiosity (β =.448 (b = .544), t(141) = 5.970, p < .001) and self-religiosity (β =.494 (b = .506), t(141) = 6.785, p < .001), respectively.

Subliminal exposure to the atheist prime did not appear to be existentially threatening. Death-thought accessibility was not related to parental attachment as indicated by a non-significant Atheist Prime x Parental Attachment interaction, β = -.041 (b = -.051), t(144) = -.382, p = .703. Nor was death-thought accessibility related to parental religious shared realities, as indicated by a non-significant Atheist Prime x Shared Reality interaction, β = -.074 (b = -.089), t(143) = -.652, p = .515. As with Experiment 1, to test the hypothesis that subliminal exposure to the atheist prime had an effect on religious ingroup favoritism, religious outgroup derogation, or

atheist outgroup derogation relative to those in the control condition, the religious ingroup, religious outgroup and the atheist outgroup variables were subjected to a 2 (prime word: atheist vs. non-word) x 3 (group judgment: religious ingroup vs. religious outgroup vs. atheist outgroup) mixed factorial ANOVA, with the atheist prime conditions included as between-subjects variables and the group judgments included as within-subjects variables. The results were inconclusive. The subliminal atheist prime did not have an effect on group judgments, as indicated by a non-significant Atheist Prime x Group Judgment interaction, $F(1,142) = 1.393$, $p = .240$, $\eta_p^2 = 0.010$. However and similar to the results of Experiment 1, there was a significant main effect of group judgment, $F(2,142) = 175.489$, $p < .001$, $\eta_p^2 = 0.553$, such that evaluations of one's religious ingroup were significantly more positive than evaluations of the religious outgroup, which were significantly more positive than evaluations of the atheist outgroup (all *p*s < .001).

An additional comparison can be made which gives an even better understanding of how atheists are regarded by this sample. The Thermometer of Religious Ethnocentrism Scale also included judgments of Muslim fundamentalists, a group associated with highly organized and effective global terrorism and for whom those in our New York sample would be expected to hold in considerable disregard considering the events of September 11, 2001. When evaluations of the religious outgroup were compared to those of the atheist outgroup and to those of Muslim fundamentalists using paired t-tests, results indicated that judgments of the religious outgroup were significantly more positive than those of the atheist outgroup, $t(143) = 4.917$, $p < .000$, or

the Muslim fundamentalists, $t(143) = 5.316$, $p < .000$, but judgments of the atheist outgroup did not significantly differ from those of Muslim fundamentalists, $t(145) = .127$, $p = .90$[26].

Discussion

Results of Experiment 3 demonstrate that unconscious exposure to atheists affects explicit anti-atheist prejudice in ways similar, though not identical, to the observed social tuning effects observed in Experiment 1 and Experiment 2. Results of Experiment 3 suggest that explicit anti-atheist prejudice is regulated in two ways predicted by shared reality theory: via relationship engagement, as measured by parental attachment, and shared reality. Subliminal exposure to the word atheist reduced explicit anti-atheist prejudice and increased warmth toward atheists among those with low parental attachment and low parental religious shared reality, but not among those with high parental attachment and high parental religious shared reality, suggesting that explicit attitudes toward atheists for those with low parental attachment or low parental religious shared reality are less rigidly anchored, more susceptible to competing ideas, and more likely to be recruited to regulate relationship relevant interpersonal dynamics. Additionally, these findings provide further support for the shared reality theory implication that relationship strength is a critical moderator of shared reality effects (e.g., Hardin & Conley, 2001).

However, the results of Experiment 3 do not suggest that the mere cognitive salience of the concept 'atheist' alone is sufficient to threaten religiosity. On neither of the explicit religiosity measures was religiosity affected by exposure to the subliminal atheist prime. This is noteworthy and surprising because previous research has shown that other threats toward

[26] This similarity in evaluations of atheists and Muslim Fundamentalists did not replicate in Experiment 1. In Experiment 1, the atheist out group and Muslim Fundamentalists were not judged with equal disdain: Muslim Fundamentalists were evaluated significantly less favorably than the atheist outgroup, $t(135) = 4.270$, $p < .001$.

religion, like evolution, can have a broad impact — not only affecting religiosity, but also extending to associated peripheral attitudes such as anti-atheist prejudice (Magee & Hardin, 2010). Why didn't that happen here? Why did subliminal exposure to the word atheist only affect attitudes toward atheists and not religious attitudes more generally? Or, conversely, why would evolution have a greater impact on personal religious experience than atheism or the atheist? Perhaps it is this very distinction, which has something to do with the observed effect; perhaps this discrepancy has something to do with the fact that the prime used was *atheist* and not *atheism*. Maybe the subliminal atheist prime only activated a judgment of the target person (the atheist) in this instance, rather than the broader concept and oppositional worldview they represent; maybe the attitudes affected by the subliminal atheist prime are only those about atheists and not religiosity more generally or across the board. After all, from a religious person's perspective, atheists might merely represent another person's opinion, which can easily be dismissed out of hand, whereas evolutionary theory represents a huge collection of facts (Coyne, 2009; Dawkins, 2009) in direct opposition to the tenets of most religious teachings—certainly for those from the Abrahamic traditions represented by our sample here. Or maybe these results say something about the strength of the cognitive association between atheism and religiosity. Maybe people don't think about atheists to the extent they think about evolution. Perhaps evolution has become an automatic threat to religion whereas atheists and atheism hasn't.

Additionally and perhaps for the same reasons speculated above, the subliminal atheist prime does not appear to be existentially threatening, at least as far as death-thought accessibility or ingroup favoritism/outgroup derogation is concerned. Subliminal exposure to the word atheist did not significantly increase death-thought accessibility as a function of parental attachment or

parental religious shared realities; the regression interaction terms were not significant (p's $\geq$ .515).

Finally and unrelated to the subliminal prime, it is noteworthy that, for those in our sample, atheists — a disorganized group that, in spite of the many pejoratives levied at them, not typically associated with violence or aggression in any way — are held in the same regard as Muslim fundamentalists, a group responsible for the worst terrorist attack on American soil in American history and the deaths of thousands of innocent people, in the name of Islam.

General Discussion

The research reported here provides support for the hypothesis that parental relationships are engaged in the regulation of anti-atheist prejudice among religious people. For the first time, two experiments have demonstrated the powerful role of relationship engagement, as determined by parental attachment and implied by shared reality theory, in response to social tuning with an atheist experimenter. In Experiment 1, following an interacting with an atheist experimenter, automatic attitudes toward atheists among those reporting low parental attachment became more positive and, if anything, the automatic attitudes toward atheists among those reporting high parental attachment became more negative. Results of Experiment 2 supported these findings and confirmed the causal assumption inherent in Experiment 1 by manipulating parental attachment with an essay task. In Experiment 2, following an interaction with an atheist experimenter, automatic attitudes toward atheists became more positive among those with low manipulated parental attachment, became more negative among those with high manipulated parental attachment, and were unaffected by those in a non-parental-salience comparison group. Additionally, the results of Experiment 3 suggest that explicit anti-atheist prejudice is regulated in much the same way when attitudes-relevant information is made cognitively salient by a subliminal prime. Taken together these experiments add to our understanding of the interpersonal foundations of anti-atheist prejudice and make several important contributions not only to the nascent social-cognitive psychological literature on anti-atheist prejudice (Gervais, 2011; Gervais, Shariff, & Norenzayan, 2010; Hammer, Cragun, & Hwang, under review; Harper, 2007; Magee & Hardin, 2010; see also Galen, 2009), but also to shared reality theory, and literatures on automatic intergroup, prejudice, and automatic attitudes, more generally.

By empirically demonstrating the role relationship engagement plays in regulating shared reality, this research fills a gap in the growing shared reality literature. Prior social tuning research has only looked at one side of this dynamic two-way interpersonal process, and only explored social tuning as a function of the ostensible attitudes held by social actors presenting new competing shared realities in short-term relationships, with designs that test the theory by manipulating characteristics of the actor (the stimulus) — *external* motivators, if you will — like obligation, race (Lowery, Hardin & Sinclair, 2001), affiliation (Sinclair, et al., 2005; Exp. 1), and likability (Sinclair, et al., 2005; Exp. 2), to the exclusion of possible *internal* motivators such as those elicited from long-term relationships engaged in the extant shared realities (but see Jost, Ledgerwood, & Hardin, 2007). Experiments 1 and 2, have nicely illustrated this by showing that, when relationship-relevant attitudes are challenged and relationship engagement in the extant shared realities is low, people tune more readily to the ostensible attitudes of those in the new relationship, whereas when relationship engagement in the extant shared realities is high, people anti-tune more readily away from the ostensible attitudes of those in the new relationship. Here anti-tuning is not only a way of achieving social distance (Sinclair, et al., 2006), but also a way of protecting extant shared realities. This suggests that future social tuning research should consider issues of relationship engagement in conjunction with the previously identified external moderators like obligation, race, affiliation, and likeability.

But relationship engagement is not the whole story. The degree to which one perceives shared reality with another also determines shared reality regulation. Indeed, Experiment 3 provides complementary findings that nicely illustrate the convergent properties of these two shared reality motives. In Experiment 3, parental attachment and parental religious shared reality moderated explicit anti-atheist prejudice and warmth toward atheists similarly. Following

exposure to the subliminal atheist prime, those with low parental attachment or low parental religious shared reality reported reduced explicit anti-atheist prejudice[27], whereas those with high parental attachment or high parental religious shared reality either reported, if anything, an increase in explicit anti-atheist prejudice. These results are consistent with Magee and Hardin (2010) who found that the threat posed by evolution was defended as a function of parental attachment and *paternal* religious shared reality (the degree to which people perceived themselves to share their religious experience with their fathers). Conversely, in Experiment 2 reported here, parental religious shared reality did not complement the moderating effects observed with parental attachment[28] on automatic atheist attitudes. In fact, in Experiment 2, parental shared reality results were only observed on the explicit religiosity measures and in the direction opposite than expected, such that those with low parental shared reality became more religious (instead of less religious) after interacting with the atheist experimenter (an issue more fully explicated below.) However, it just might be the case that parental attachment, in this type of situation, is a better predictor than shared reality. Future research will have to explore this further.

Observed effects on religiosity were curiously inconsistent or non-existent. Contrary to results of previous research that used an evolution threat (Magee & Hardin, 2010) or that threatened the maternal relationship or separation from God (Birgegard & Granqvist, 2004) and then observed subsequent changes in religiosity as a function of parental attachment, the atheist threat in the reported experiments did not similarly affect religiosity. In fact, it had no appreciable effect at all. That said, the religiosity results from Experiments 1 and 2, null or

[27] For clarity and because the results of the Explicit Anti-Atheist Prejudice Scale and the Warmth toward Atheists Scale were complementary, their combined effects have been consolidated and expressed here as explicit anti-atheist prejudice.

[28] The parental shared reality moderator could not be explored in Experiment 3 due to the difference in design.

otherwise, should be considered with healthy skepticism because the results obtained with these scales previously were elicited unobtrusively through the use of an implicit subliminal prime. Indeed, interacting with an atheist experimenter placed powerful relationship demands on the college students comprising our sample and introduced a potential demand characteristic that may or may not have affected their responses by putting some of the participants under pressure to engage in self-presentational strategies or to answer in ways that they thought socially desirable. However, the same cannot be said about Experiment 3, which used a subliminal atheist prime and also failed to observe any effects on the Emotionally-Based Religiosity Scale or the Self-Religiosity Scale. The obvious explanation is that atheists simply do not threaten religiosity in the same way evolution does. The reasons for this are likely many. Maybe atheists aren't discussed among the religious to the same degree as evolution. Or maybe the issue of atheism is too *new* to work the same way as evolution. But it could also have something to do with the fact that, as far as religious folks are concerned, atheists merely represent people with a different opinion and nothing more. Evolution on the other hand is a much larger and more complicated concept to contend with, one that directly challenges religious ideas about our human origin and our place in the cosmos with overwhelming support from incontrovertible facts that must be forcibly ignored if dissonant religious ideas are to be maintained (Festinger & Carlsmith, 1959). This raises an empirical question that could be addressed with future research that capitalizes on minor modifications of any of the three experiments presented here. One way would be a design that contrasts the effects that the cognitive salience of atheism, relative to the cognitive salience of evolution, has on religious commitment and anti-atheist prejudice. Additionally, and to more fully understand the automatic process involved in the regulation of anti-atheist prejudice, future

research should explore how automatic religious attitudes are regulated in response to social interactions with atheists.

This research also establishes the social-cognitive construct of the attachment belief by illustrating how the dynamics of early infant-parent socializations within the attachment relationship carryover their influence to the attitudes and beliefs founded upon that relationship. The theoretical implications of this are many, not least of which is to the application of racial prejudice. Elsewhere, parental identification has already been shown to moderate racial prejudice in children (Sinclair, Dunn, & Lowery, 2005). Perhaps exploring the influence of parental attachment in similar future research would be beneficial. Additionally and because much of what we think about ourselves comes from these early social-cognitive calibrations of attachment, as well as from internalizations of our parent's opinions of who they think we are, future research into the social tuning of self-evaluations and the self-concept would no doubt benefit by exploring how parental attachment might moderates these effects.

This dissertation research also adds to a growing body of research on the malleability of automatic attitudes and implicit intergroup prejudice providing evidence that automatic prejudice not only changes in response to social context, but that part of that social context is carried with us internally as a product of our internalized parental relationships. Additionally, results of these experiments add further support to the claim that religious attitudes, like those toward atheists, are not fixed and immovable. Rather religious attitudes are malleable. And like myriad others (e.g., Dasgupta, Greenwald, 2001; Mitchell, Nosek, & Banaji, 2003; Wittenbrink, Judd, & Park, 2001), religious attitudes are dynamic highly responsive to the social-situational context; they ebb and flow to specific contextual demands. They strengthen or wane in response to perceived psychological threat, whether that threat is the seemingly innocuous unconscious presentation of

a word in a computer game, an experimenter with whom one must interact, or even whether the perception of the relationships upon which they are founded are manipulated temporarily in the course of writing about a bad memory.

Finally, are atheists existentially threatening to religious people? This idea is plausible if one considers that interacting with atheists or thinking about atheists might challenge the cherished notions of an afterlife held by religious people by reminding them of the very real and evidence-based possibility that when you're dead, you're dead. The experiments presented here explored this interesting possibility by employing ideas and measures borrowed from the terror management literature, which has established that, among other things, relationships function to help manage terror (Mikulincer, Florian, & Hirschberger, 2003, 2004). Moreover, considerable evidence exists that attachment figures in particular play a significant role in defense of threat (Mikulincer & Shaver, 2003, 2004). However, results were inconsistent across the experiments and, unfortunately, during analysis several methodological issues appeared which prohibited a strict and analogous comparison to the results typically obtained by mortality salience manipulations in the terror management literature. That said, in Experiment 2, an increase in death-thought accessibility among those who wrote about their parents (but not among those who wrote about their friends) was observed following an interaction with the atheist experimenter, a puzzling result not supported by shared reality theory or terror management theory, suggesting that more research specifically focused on this question is needed.

Conclusion

Relationships matter. We are social creatures with brains that evolved within a highly social context, designed by millions of years of natural selection to solve important and specific

problems related to survival and reproduction. Some of these problems were social; being socially successful — for example, through cooperation or perspective taking (e.g., Axelrod, 1985) — afforded those that were significant survival advantages in the complex and nuanced social milieu. And what could possibly facilitate social interaction and cooperation better (and increase one's social advantage) than sharing another person's perspective? Indeed, recent neurological advances have unearthed the existence of systems of mirror neurons in the brain (Mukamel et al, 2010), the function of which seems to be the social-cognitive integration of the perceptual (and physiological) experiences of other people — perhaps the neural basis of empathy. For what is empathy if it's not perspective taking. If the human brain has evolved neurological systems to manage perspective taking, perspective taking must have been extremely important to the survival of those in our ancestral past — a point that cannot be overstated. The ability to adopt another person's attitude in a social situation is certainly advantageous to understanding their perspective. Social tuning could very well be part of this perspective taking system — perhaps even the same system merely observed from a different level of analysis[29].

Related to this and the result of a different evolutionarily evolved system, the attachment system, the bonds we establish in our primary relationships early in our social-cognitive development have a profound and lifelong impact on the way we feel about ourselves, the way we feel about other people — on our perspective taking (Ainsworth et. al, 1978; Bowlby, 1969/1982; Freud, 1933). For it is upon these primary relational bonds that we fashion our very first ideas about the world around us — and these interpersonal foundations do not lie dormant; rather, they continue to regulate the attitudes built upon them, hidden and unseen by our

[29] The author does not find this claim at odds with previous research on social tuning (e.g., Sinclair, Lowery, Hardin, & Colangelo, 2005) which has suggested that observed social tuning effects are perhaps best explained by connectionist models and "on-the-fly" constructions resulting from spreading neural activation (McClelland & Rumelhart, 1985; Smith & DeCoster, 1998). The author thinks they are much the same thing.

conscious processing, as a function of the health, strength, and vitality of the relationships engaged in these all-important *foundational* shared realities. Thus shared reality theory provides a lens through which we can interpret the cognitive and behavioral manifestations of these evolutionarily derived neurological, biological, and psychological systems organized within a single theoretical framework centered on the interpersonal dynamics of social cognition.

This research tells a story about the one of the underlying forces driving anti-atheist prejudice in America today. And although the relationship between religious belief and prejudice is no doubt complex and multiply determined (see Hood et al. 1996) by factors such as cultural norms (Ponton & Gorsuch 1988), religious orientation religious orientation (Allport & Ross 1967), right-wing authoritarianism (Altemeyer & Hunsberger 1992), social dominance orientation (Altemeyer, 2004), and fundamentalism (Altemeyer, 2003; Kirkpatrick 1993; see also Hunsberger & Altemeyer, 2006), the results presented here suggest that atheists threaten cherished familial bonds and the prejudice atheists endure in return is, to some extent, motivated (and regulated) by the need to protect these bonds to a degree determined by the strength and vitality of the bond. But perhaps more important is the fact that anti-atheist prejudice, like other types of prejudice (e.g., Sinclair, Dunn, & Lowery, 2005), political attitudes, and eye color, is passed down through families from parent to child. Anti-atheist prejudice is nurtured in the family, and while there are signs that the number of people openly embracing atheism is on the rise in the United States (Kosmin & Keysar, 2008), anti-atheist prejudice remains practically unaddressed by laws, regulation, or social policy: A situation that will no doubt continue as long as anti-atheist prejudice remains institutionalized in the U.S. government and entrenched in the minds of the electorate. Currently, nine states — Arkansas, Maryland, Massachusetts, Mississippi, North Carolina, Pennsylvania, South Carolina, Tennessee, and Texas — have

articles in their state constitutions that explicitly discriminate against atheists by prohibiting them from holding public office — policies condoned, if not blatantly encouraged, by at least two former heads of state within the last 25 years. In 1987, in a public sentiment that went completely unchallenged by any political opposition, the media, or public outrage — and one that no doubt continues to be shared by many Americans, President George H. W. Bush declared, “I don't know that atheists should be considered as citizens, nor should they be considered patriots.” Think about the cultural ramifications of that statement for a moment. Would the president's comments have gone similarly undisputed if he had said the same thing about blacks, or Hispanics, or homosexuals, or Muslims? Indeed, the reader is challenged to find even one other social group with which to make a similarly socially acceptable substitution to the president’s statement. As the conservative-religious right in the U.S. continues to politicize issues related to religion, whether by trying to affirm "In God We Trust" as the national motto (Forbes, 2011), or by trivializing science education in America with their efforts to subvert the teaching of the facts supporting evolutionary theory by inserting thinly-veiled creationist propaganda into public-school classrooms (Kitzmiller vs. Dover, 2005; see also Superfine, 2009), atheists — like any other social group — deserve to have empirical support to substantiate and legitimize the overt prejudice and discrimination they face, and to know what social-cognitive factors may or may not be driving that prejudice.

Figure 1.

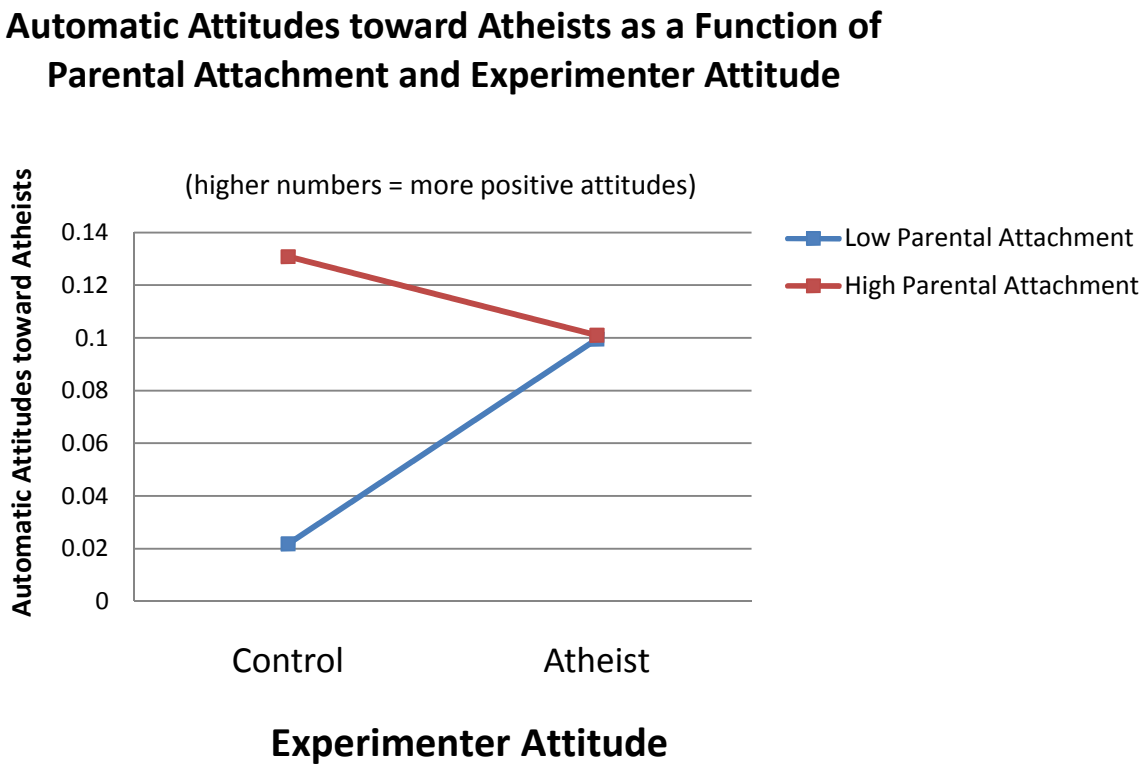

Figure 1. (Experiment 1) Simple slopes (±1*SD*) for automatic attitudes toward atheists as a function of self-reported parental attachment and experimenter attitudes (higher numbers = more positive attitudes).

Figure 2.

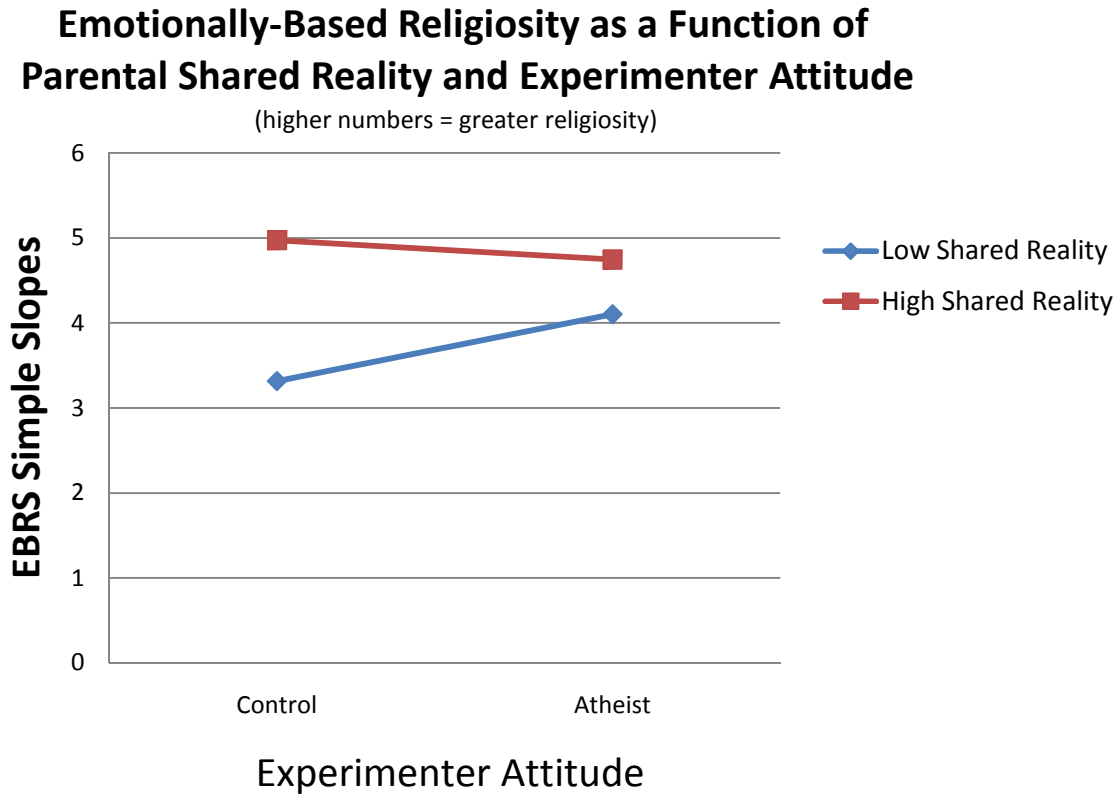

Figure 2. (Experiment 1) Simple slopes (±1*SD*) for Emotionally-Based Religiosity as a function of parental religious shared reality and experimenter attitudes (higher numbers = greater religiosity).

Figure 3.

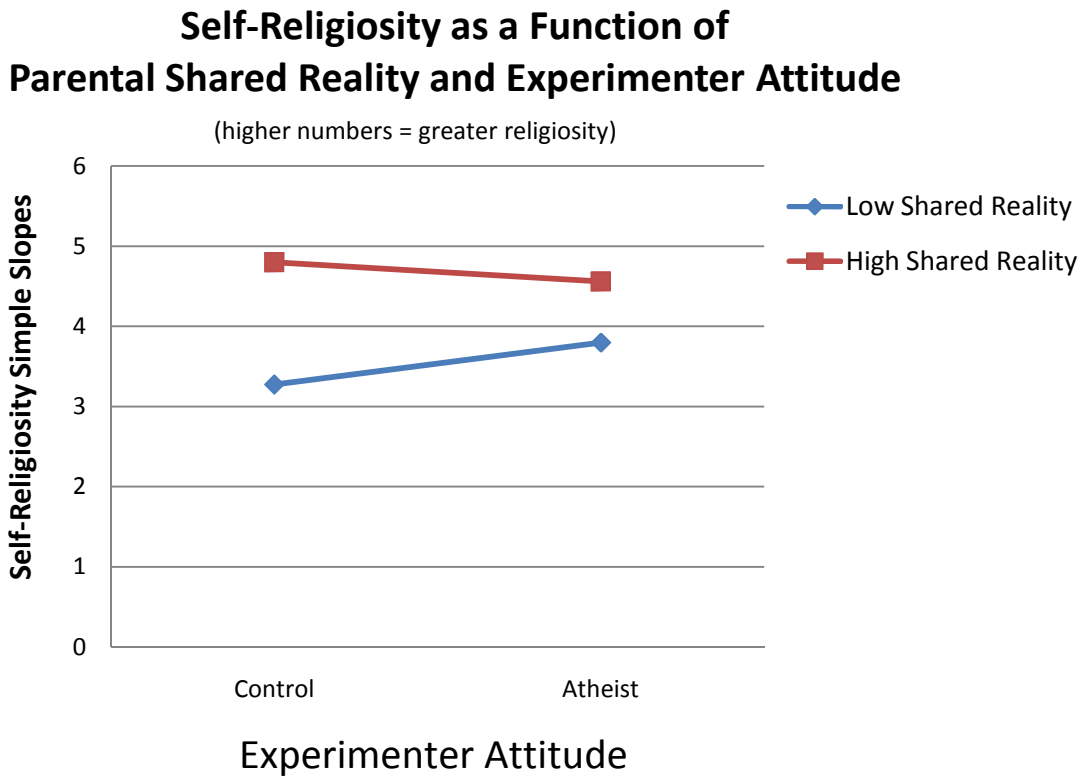

Figure 3. (Experiment 1) Simple slopes (±1*SD*) for Self-Religiosity as a function of parental religious shared reality and experimenter attitudes (higher numbers = greater religiosity).

Figure 4.

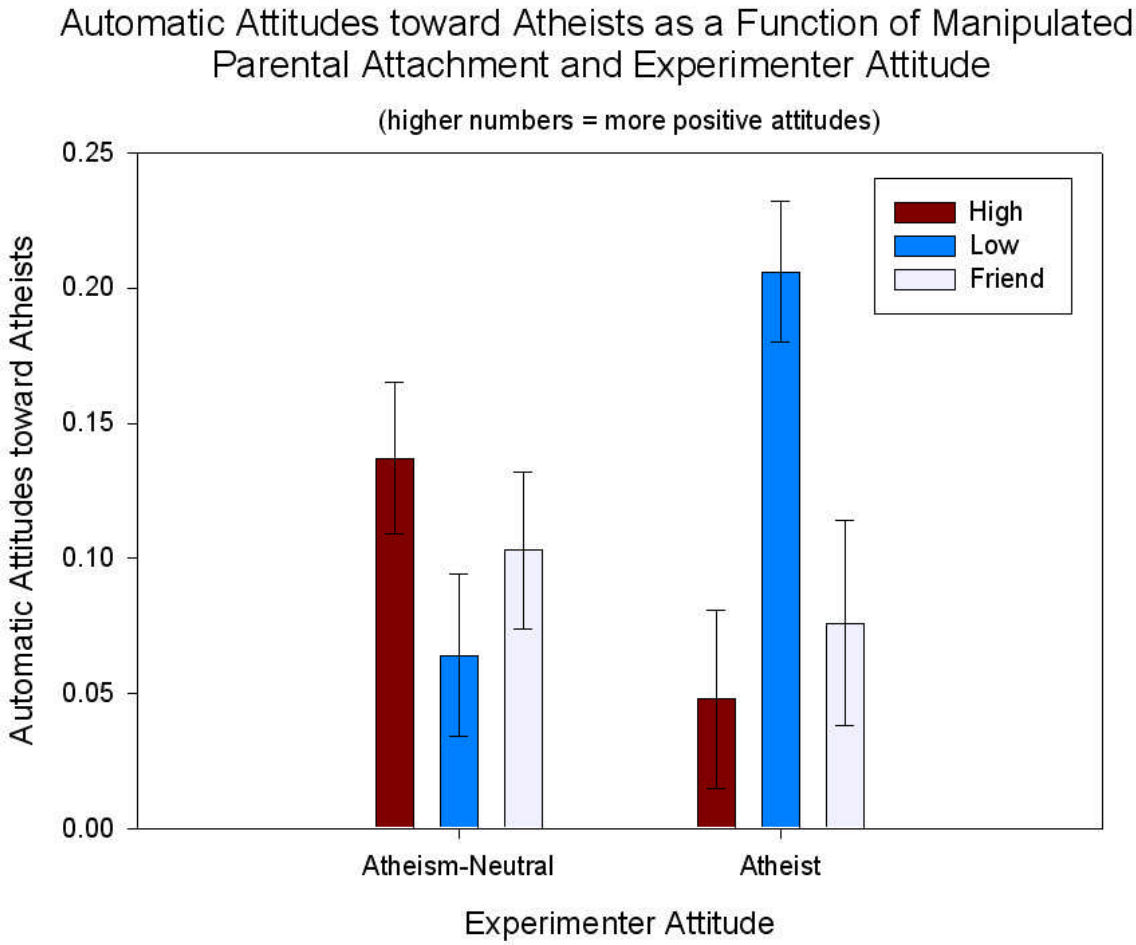

Figure 4. (Experiment 2) Estimated marginal means for automatic attitudes toward atheists as a function of manipulated parental attachment and experimenter attitudes. Bars are standard error (higher numbers = more positive attitudes).

Figure 5.

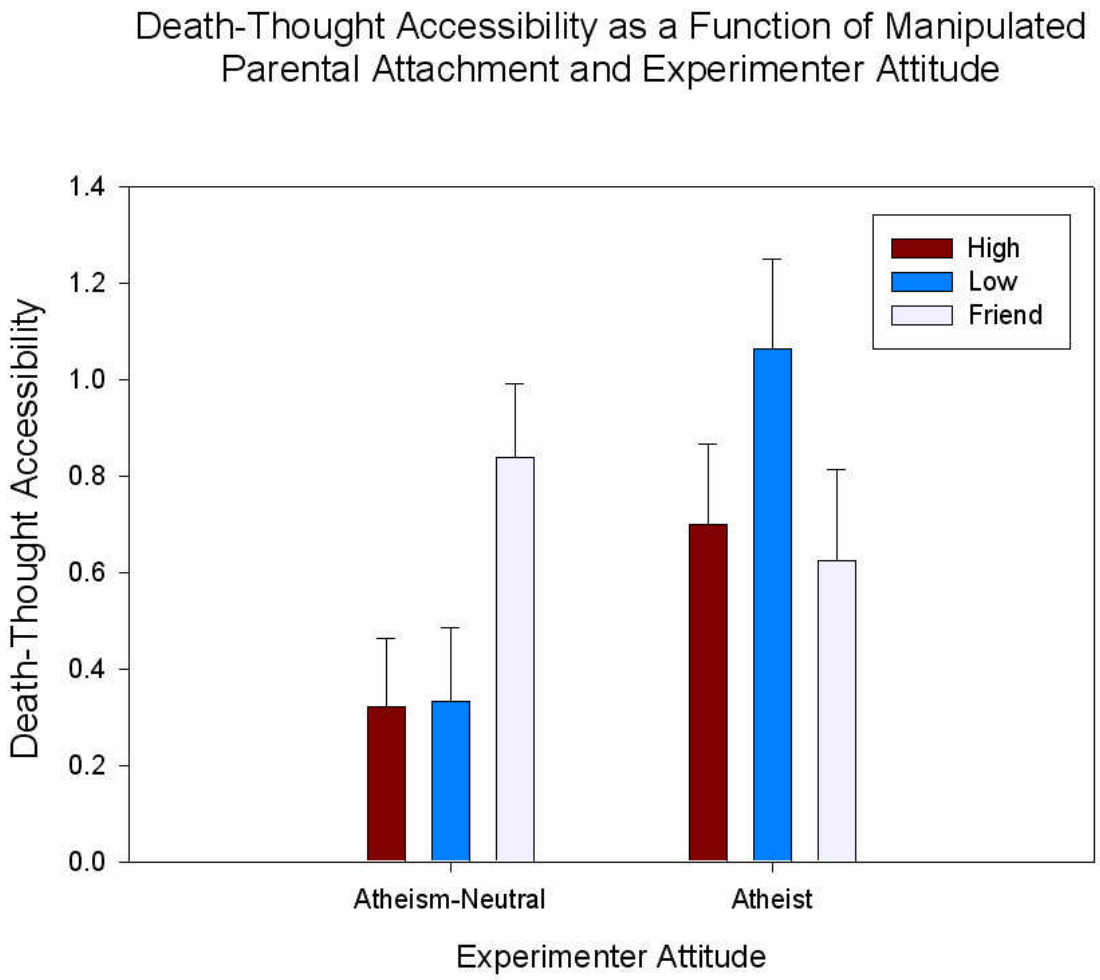

Figure 5. (Experiment 2) Estimated marginal means for death-thought accessibility as a function of manipulated parental attachment and experimenter attitudes. Bars are standard error. (higher numbers = more positive attitudes).

Figure 6.

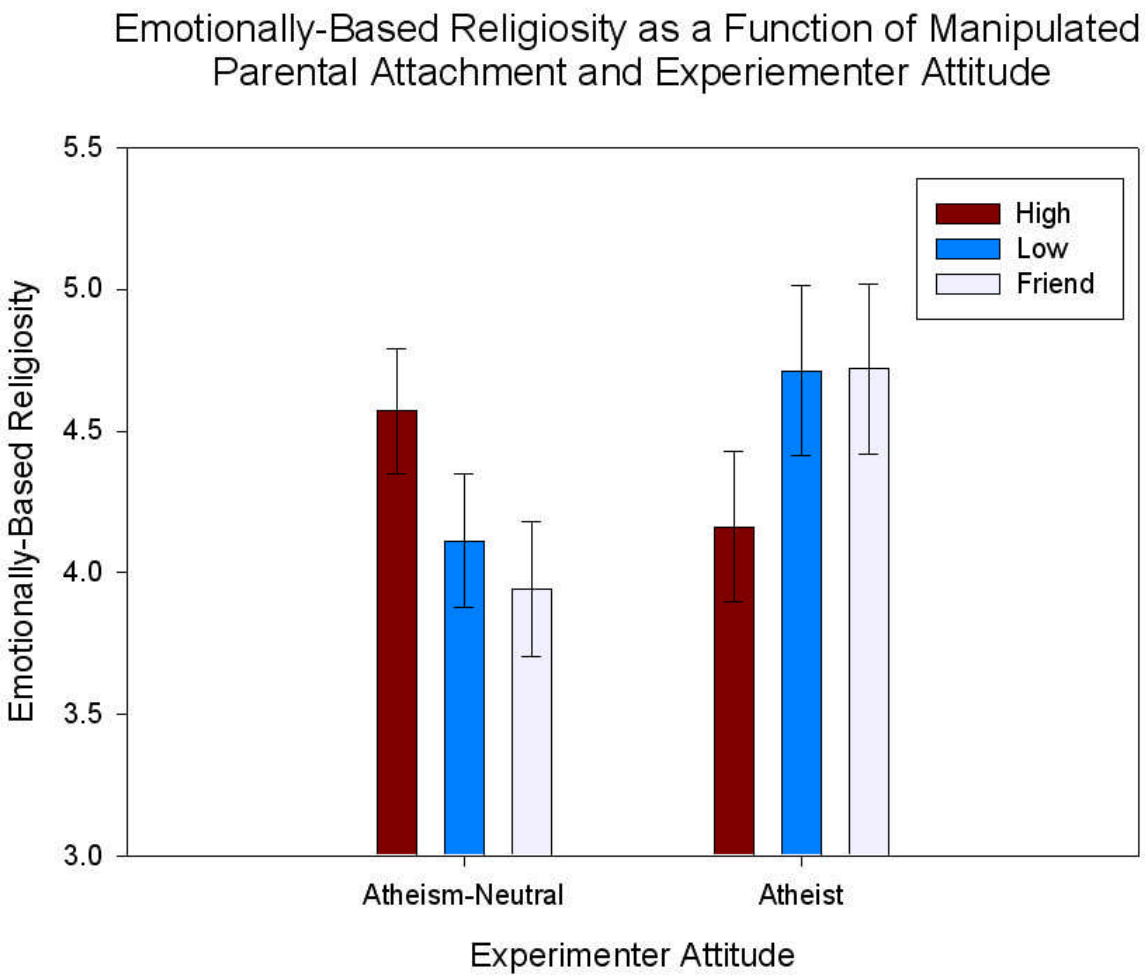

Figure 6. (Experiment 2) Estimated marginal means for self-religiosity as a function of manipulated parental attachment and experimenter attitudes. Bars are standard error (higher numbers = more positive attitudes).

Figure 7.

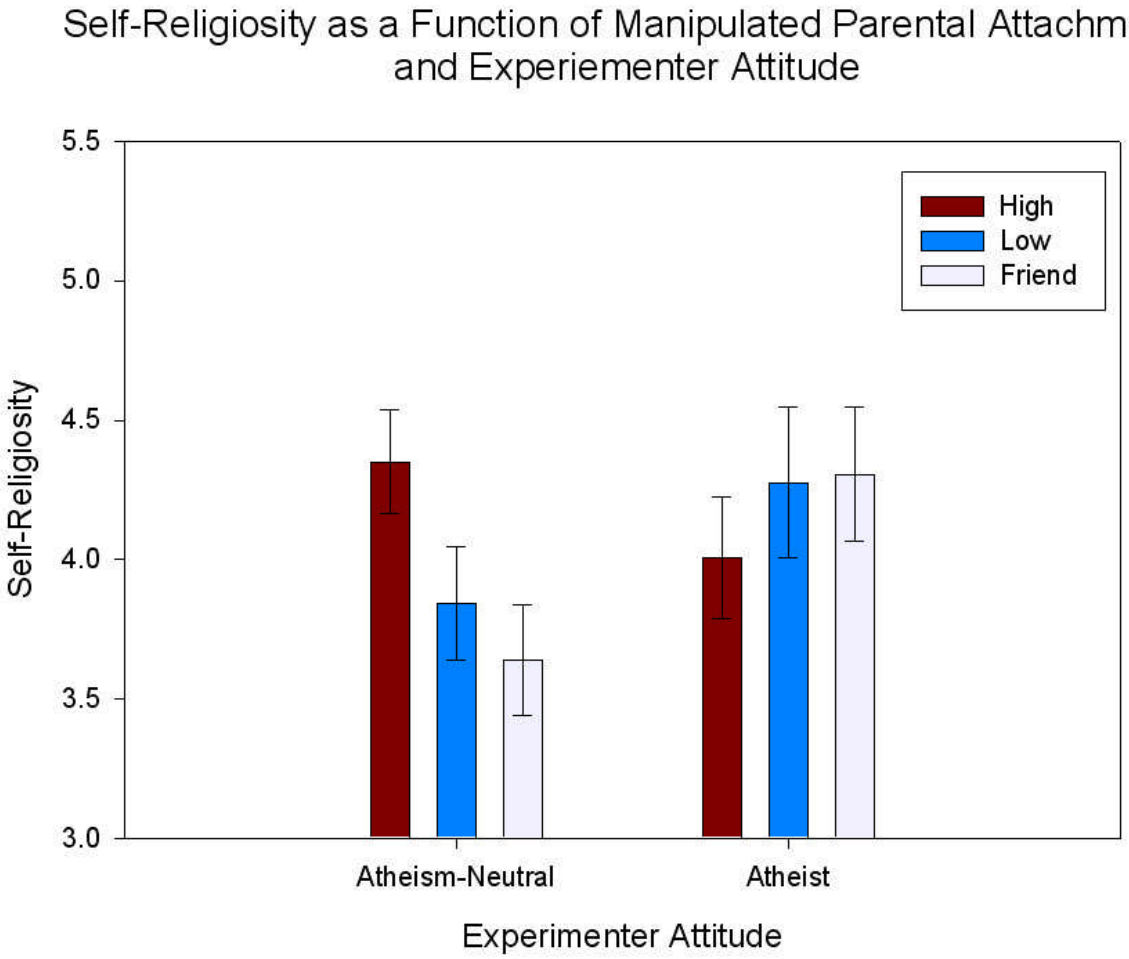

Figure 7. (Experiment 2) Estimated marginal means for emotionally-based religiosity as a function of manipulated parental attachment and experimenter attitudes. Bars are standard error (higher numbers = more positive attitudes).

Figure 8.

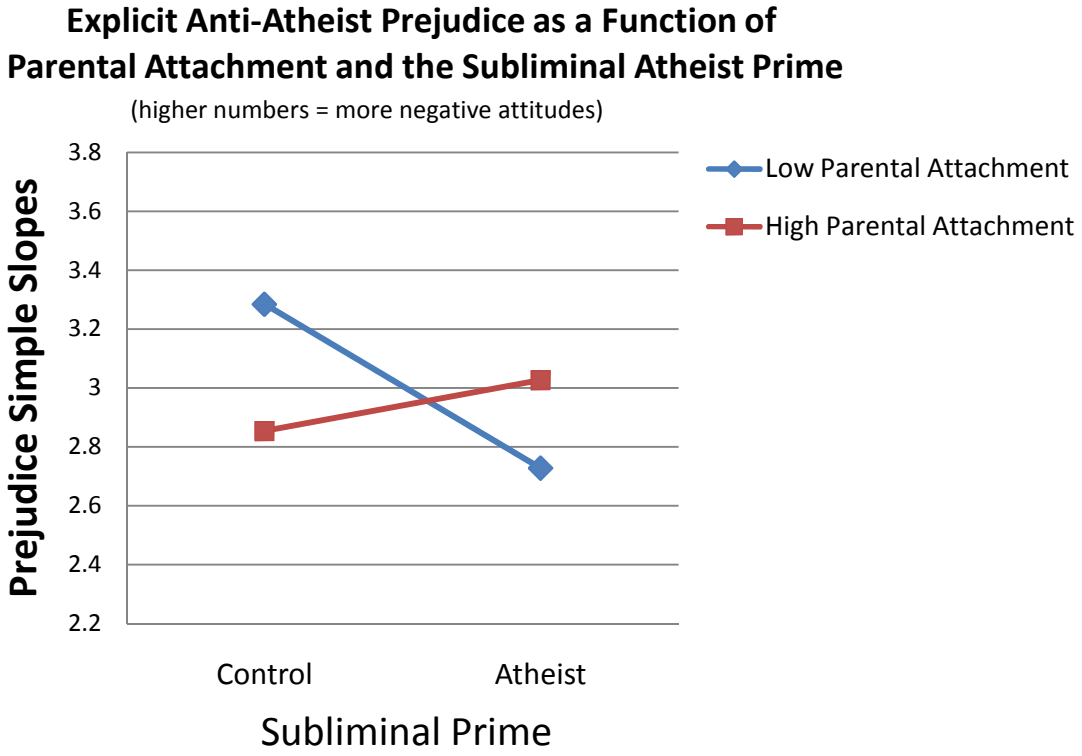

Figure 8. (Experiment 3) Simple slopes (±1*SD*) for explicit anti-atheist prejudice as a function of parental attachment and the subliminal atheist prime (higher numbers = greater negative attitudes).

Figure 9.

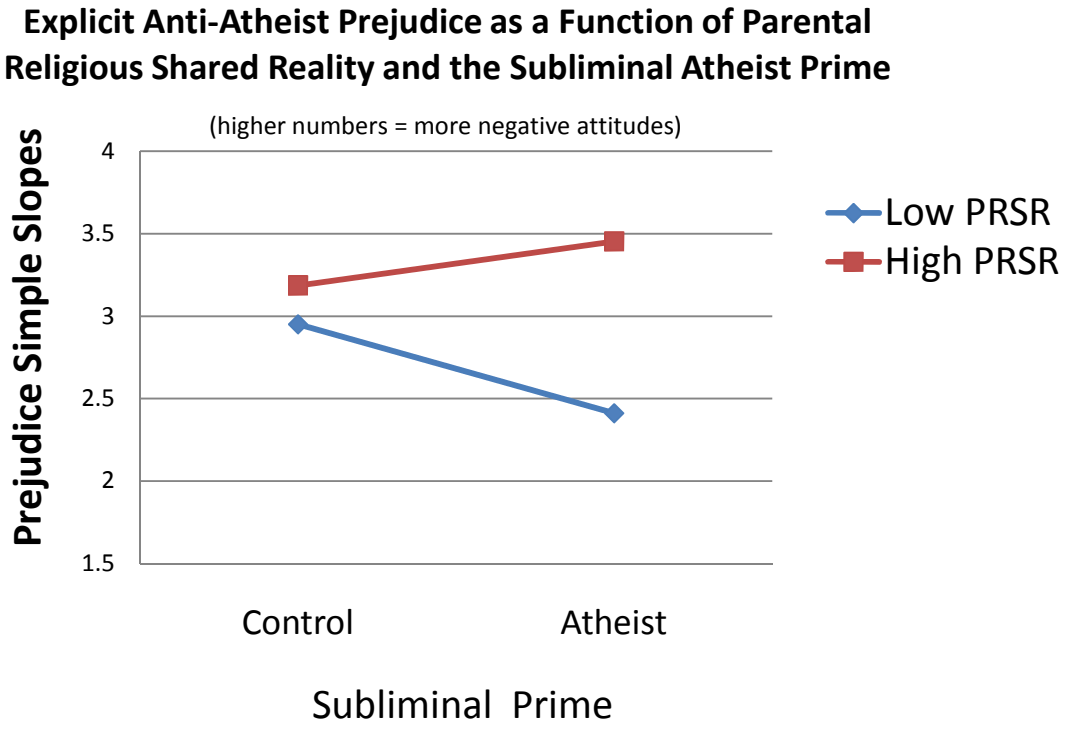

Figure 9. (Experiment 3) Simple slopes (±1*SD*) for explicit anti-atheist prejudice as a function of parental religious shared reality and the subliminal atheist prime (higher numbers = greater negative attitudes).

Figure 10.

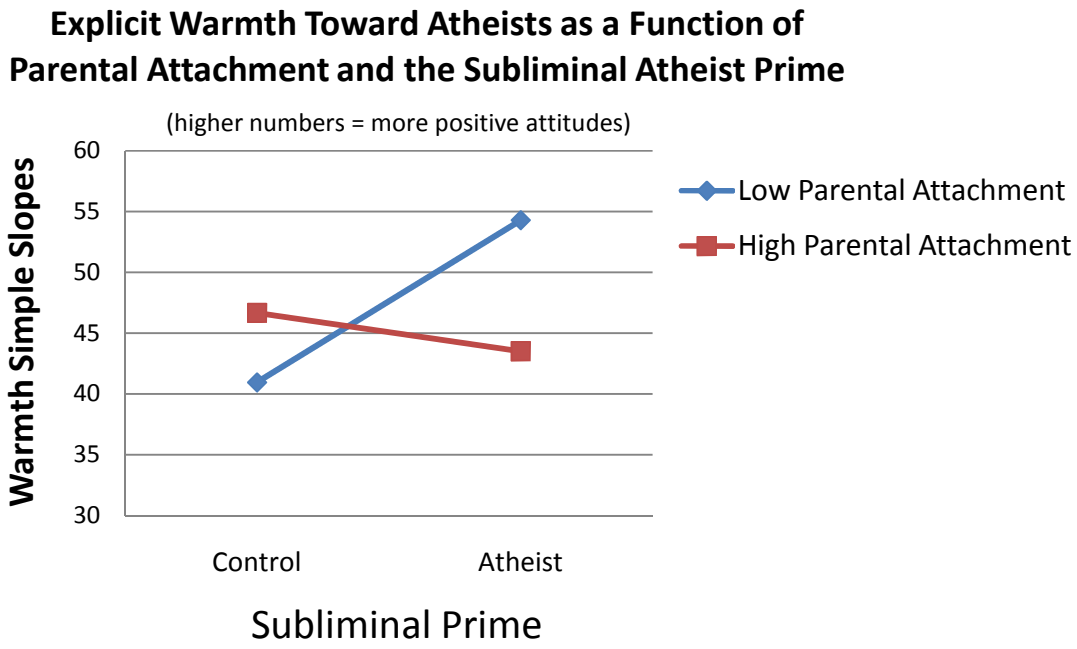

Figure 10. (Experiment 3) Simple slopes (±1*SD*) for warmth toward atheists as a function of parental attachment and the subliminal atheist prime (higher numbers = more positive attitudes).

Figure 11.

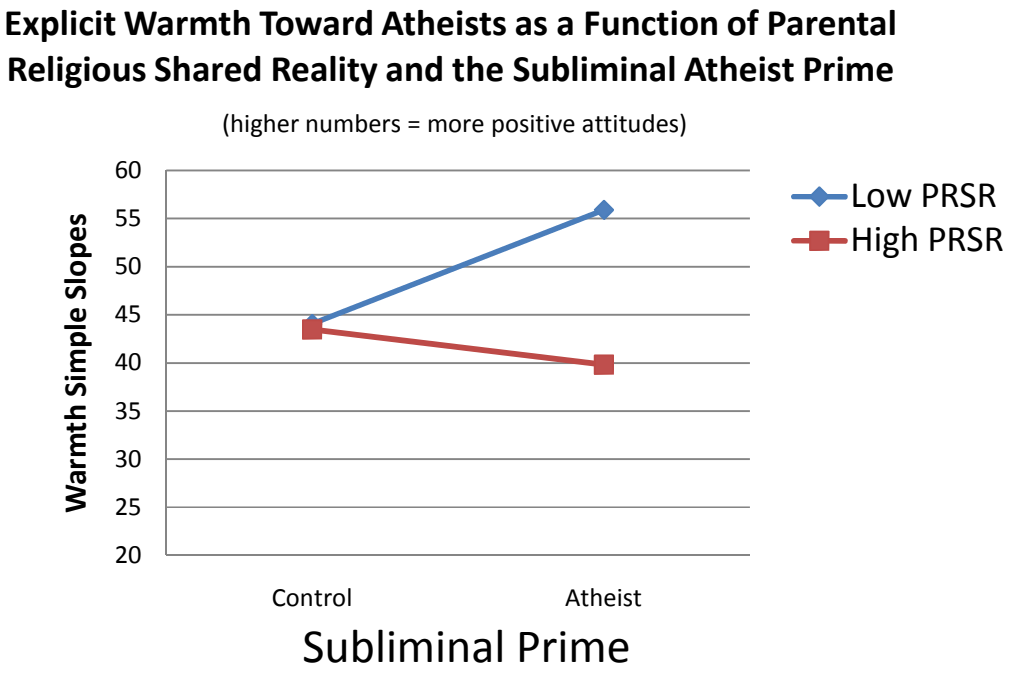

Figure 11. (Experiment 3) Simple slopes (±1*SD*) for warmth toward atheists as a function of parental religious shared reality and the subliminal atheist prime (higher numbers = more positive attitudes).

Appendices

Appendix A.

Explicit Anti-Atheist Prejudice Scale

1. I could never fully trust an atheist.

2. I find the word atheist offensive.

3. I feel uncomfortable around atheists.

4. I do not think that an atheist should be allowed to be president.

5. I would be uncomfortable with an atheist teaching my child.

6. Atheists do not act as morally as religious people.

7. Societies function better if everyone believes in God.

Appendix B.

Thermometer of Religious Ethnocentrism

Instructions: Please rate your *overall attitude toward* the groups below, using the "evaluation thermometer" printed to the right. If you have a favorable attitude toward a specific group, you would indicate a score somewhere between 50 degrees and 100 degrees, depending on how favorable your evaluation is of that group. On the other hand, if you have an *un*favorable attitude toward a specific group, you could give them a score somewhere between 0 degrees and 50 degrees, depending on how *un*favorable your evaluation is of that group. The labels provided will help you to locate your rating on the thermometer. However, you are *not* restricted to the numbers indicated—feel free to use any number between 0 degrees and 100 degrees.

100 Extremely favorable
90 Very favorable
80 Quite favorable
70 Fairly favorable
60 Slightly favorable
50 Neither favorable nor unfavorable
40 Slightly unfavorable
30 Fairly unfavorable
20 Quite unfavorable
10 Very unfavorable
0 Extremely unfavorable

1. _____ Christians

2. _____ Christian fundamentalists

3. _____ People who believe in a "traditional" God

4. _____ Atheists

5. _____ Hindus

6. _____ People who are not sure, one way or the other, whether the "traditional" God exists

7. _____ Jews

9. _____ Jewish fundamentalists

10. _____ Muslims

11. _____ Muslim fundamentalists

Appendix C.

Parental Relationship Inventory

FOR EACH OF THE FOUR PARAGRAPHS, use the scale below to indicate how each applies to your **MOTHER***. Write the number in the space next to each paragraph. (If this is not applicable to you, please write N/A in the space provided.)

Does not at all apply Applies very well 1 2 3 4 5 6 7

_____ She was generally loving and understanding. She was good at knowing when to be helpful and when to let me do things on my own.

_____ She was generally fine but not very affectionate. She taught me at an early age to be independent and self-sufficient.

_____ She was generally loving but not as understanding as I would have liked. She loved me but didn't always show it in the best way.

_____ She was generally unpredictable and sometimes even hurtful. She had her own problems and they sometimes got in the way of her ability to take care of me.

* The father items were identical.

Appendix D.

Socialization-Based Religiosity Scale

1. I feel sympathetic towards my mother's view of religious issues.
2. I will probably give/I give/ my children an equally religious/nonreligious upbringing as my mother gave me.
3. I will probably speak/I speak/ to my children about religious issues in a similar way as my mother did to me during my childhood.
4. Religion is equally important/unimportant to me in my everyday life as it was to my mother during my childhood.
5. I pray (e.g., say grace) to God as often/seldom as my mother did during my childhood.
6. My mother and I are equally active religiously.
7. My religious beliefs correspond to my mother's religious beliefs.
8. My mother and I do not at all share the same values regarding religious issues. [R]
9. My mother and I attend Church/Synagogue/Mosque/Temple (etc) about equally often/seldom.
10. I read religious literature (e.g., the Bible, the Koran, the Veda literature) as often/seldom as my mother did during my childhood.

Appendix E.

Emotion-Based Religiosity Scale

1. I feel most content when I experience a close communion with God.
2. When I experience situations of crisis I feel that God's accessibility is important if I am to handle the situation.
3. When I am under mental stress (e.g., during moments of sadness or anxiety), I may feel an urgent need for God's support.
4. I pray to God particularly when I find myself in difficulties.
5. When I feel lost I find support in my religious faith.
6. I would experience grief if I knew that I could never get in touch with God again.
7. I turn to God when am in pain.
8. I may feel worried or insecure when God is not accessible.
9. I strive to maintain closeness to God.
10. My religious faith helps me to feel less lonely.

Appendix F.

Self-Religiosity Scale

1. During times of illness, my religious beliefs have been strengthened.
2. For me, life without religion would be meaningless.
3. I am a religious person.
4. I believe God protects me from harm.
5. I believe that death is not the end of my being.
6. I distrust people who do not share my religious beliefs.
7. I enjoy attending religious functions held by my religious group.
8. I enjoy meeting or talking often with people who share my religious beliefs.
9. I feel certain that God in some form exists.
10. I feel that there have been times when my personal desires have conflicted with rules or tenants of my religion.
11. I feel uncomfortable around people who don't share my religious beliefs.
12. I have done personal research into the history and origins of my religion.
13. I have experienced peace of mind through my prayers and meditation.
14. I pray for help during bad times.
15. I seek out people from my religious community when I need help.
16. My religion alleviates my fear death.
17. Prayer or meditation has helped me cope during times of serious illness.
18. Religion is important in my day-to-day life.
19. When I am around my friends I feel more religious or spiritual.
20. When I feel lonely, I rely on people who share my religious beliefs for support.
21. When I need suggestions on how to deal with problems, I know someone in my religious community that I can turn to.
22. When another person shares my religious or spiritual beliefs it strengthens our relationship.

Appendix G.

Death Thought Accessibility

We are simply pre-testing this questionnaire for future studies. Please complete the following by filling in the blanks to create words. Please fill in the blanks with the first word that comes to mind. Write one letter per blank. Some words may be plural. Thank you.

1. CO __ __ SE
2. PLA __ __
3. __ __ OK
4. WAT __ __
5. DE __ __
6. MUS __ __
7. __ __ NG
8. __ __ ASS
9. GRA __ __
10. K __ __ GS
11. CHA __ __
12. CL __ __ K
13. COFF __ __
14. W __ __ DOW
15. TAB __ __
16. SK __ __ L
17. P __ P __ R
18. TR __ __
19. STI __ __
20. POST __ __

Appendix H.

Demographic Questionnaire

On this page we would like you to provide some biographical information. Either write in your responses or circle where appropriate.

· **Are you (circle one)?** Male Female · **How old are you? _____**

Are you the first born child in your family? Yes No I**f no, what number child are you in the birth order? _____ How many siblings in your family? _____**

Is your mother living or deceased? Living Deceased
Is your father living or deceased? Living Deceased
Do your parents still live together? Yes No N/A
Who raised you (circle one)? My mother raised me My father raised me Both my parents raised me.

· **How would you describe your ethnic background** (**circle all that apply**)?

African American	Asian American	European American (non-Hispanic)	Hispanic American	Native American	Other _____

· Of the choices below, which best describes **YOUR** current religious affiliation (**circle one**)?

Christian Protestant Catholic Jewish Muslim Buddhist None Other

· Of the choices below, which best describes your **MOTHER's** current religious affiliation (**circle one**)?

Christian Protestant Catholic Jewish Muslim Buddhist None Other

· Of the choices below, which best describes your **FATHER's** current religious affiliation (**circle one**)?

Christian Protestant Catholic Jewish Muslim Buddhist None/ Other

· Are **you** (**circle one**)?

Not at all Religious	1	2	3	4 moderately	5	6	7	Extremely Religious

· Your **mother** is (**circle one**)?

Not at all Religious	1	2	3	4 moderately	5	6	7	Extremely Religious

· Your **father** is (**circle one**)?

Not at all Religious	1	2	3	4 moderately	5	6	7	Extremely Religious

Appendix I.

Subliminality Checks

Just a few more questions. As before, either write in your responses or circle where appropriate.

· **During the perceptual judgment task, did you notice anything unusual (circle one)?**

Yes No

➔ **If you circled yes**, please explain below in as much detail as possible.

· **During the perceptual judgment task, did you see anything other than B's, b's and X's (circle one)?**

Yes No

➔ **If you circled yes**, please explain this below in as much detail as possible.

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