ABSTRACT

Better Understanding the Paradoxical Relationship between Religiosity and Prejudice
through Priming Religious Concepts: An Intergroup Bias Perspective

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Across two experiments, the paradox of religiosity and prejudice was examined
through priming methods in a laboratory setting. The effects of priming religiosity
(religious, control) and religious group membership (Christian, Muslim, atheist) on
resource distributions (Experiment 1) and physical aggression through hot sauce
allocation (Experiment 2) were examined. Across both studies, individuals demonstrated
intergroup bias toward atheists relative to Muslims and Christians. In Experiment 1,
priming religiosity decreased the number of raffle tickets given to atheists but increased
the number of raffle tickets given to Muslims. In Experiment 2, priming religiosity had
no effect on aggression toward individuals. However, individuals gave atheists
significantly more hot sauce than Muslims.

These results indicate the effects of priming religiosity do depend, in some cases,
on the religious group identification of the person with whom one is interacting.
Moreover, these studies demonstrate atheists as the out-group (compared to Muslims)
that experiences the most intergroup bias. Namely, individuals gave fewer resources, and

aggressed and reported the most negative and least positive emotions toward atheists.

Results are discussed within an intergroup bias framework.

Better Understanding the Paradoxical Relationship between Religiosity and Prejudice
through Priming Religious Concepts: An Intergroup Bias Perspective

by

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A Dissertation

Approved by the Department of Psychology and Neuroscience

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For Patrick
For his love, devotion, patience, laughter, and encouragement

CHAPTER ONE

Background and Significance

The Psychology of Religion

The theory that religion[1] is a strong motivator for a variety of human behaviors is not new. For centuries, humans have behaved both prosocially and aggressively in the name of religion. History is replete with examples of individuals whose strong religious convictions led them to do great prosocial acts. For instance, Mother Teresa helped the poor, sick, and orphaned. Mahatma Gandhi became a spiritual and political leader through his nonviolent protests for India's independence. Within American society, Martin Luther King, Jr. is a prominent example of a religious individual who fought for the rights of himself and others. More recently, religious motivations led an individual to offer hope and condolences associated with her faith to a robber holding her at gunpoint (Hamacher, 2010). However, violence and aggression have also been motivated in large part by religion. For instance, in the 11-13th centuries, portions of Latin Christian Europe waged a series of brutal military campaigns in the name of religion, popularly known as the Crusades. On September 11, 2001, America was attacked by Muslim extremists in the name of religion. Religious motivations have also led insurgent groups to bomb innocent civilians, including local Ugandans watching the World Cup (Kron & Ibrahim, 2010). These stories show religiosity has served as a powerful motivator for both positive and negative behaviors for centuries.

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[1] Please note the terms religion, religiosity, and religiousness will be used somewhat interchangeable throughout the document to refer to the concept of *religion*, the *religiosity* (degree of religiousness reported by an individual), and one's *religiousness* (also degree of self-reported religiosity).

Today, 96% of Americans express a belief in God (Stark, 2008). Compare this to the 94% who reported belief in God in 1987 and it becomes clear the level of religious belief in America is quite "stable" (Gallup & Castelli, 1989). In fact, "basic religious beliefs, and even religious practice, today differ relatively little from the levels recorded fifty years ago" (Gallup & Castelli, 1989, p. 4). Due to its prevalence in society, religion as a motivator of human behavior cannot be ignored in the field of experimental psychology.

Psychologists have long known of the power of religion, driving them to study its effects on various attitudes and behaviors. Initially, researchers were intrigued by describing religious individuals and the religious experience. Edwin Starbuck (1899) was one of the first to theorize about the psychology of religion. He noted religious experiences could come in a multitude of forms and all could influence individuals' day-to-day lives. Another psychologist, William James (1902), was interested in examining psychological understandings of these religious experiences. James (1902) was the first psychologist to note the dual nature of religion in his theory of the sick-souled versus healthy-minded religion. According to James's (1902) theory, sick-souled religion was associated with psychopathology, whereas healthy-minded religion was linked with an absence of signs of psychopathology. This theory of the dual role of religion in psychological functioning remained prominent in the field. Sigmund Freud (1964) viewed religion itself as a type of delusion whereas Carl Jung (1933) considered religion a necessity for good mental health. Gordon Allport (1954) noted people have different motivations for being religious and these motivations relate in seemingly opposite ways with prejudice.

Since early work on the psychology of religion in the early to mid-1900s, it has become a burgeoning subfield in social and personality psychology (cf. Emmons & Paloutzian, 2003). The psychology of religion has contributed to our knowledge of human behaviors, attitudes, motives, and social influences. Darley and Batson (1973), for example, laid some of the foundations of the scientific study of religion with their ground-breaking study about helping which demonstrated being in a hurry, but not religiosity, influenced helping behaviors. Given that religiosity was expected to be linked with helping behaviors, the results of this study demonstrated empirical studies of religiosity might uncover seemingly counterintuitive findings. Since then, the field has continued to grow. Empirical studies examining the role of religion in psychological functioning have continued to be featured in top social and personality psychology journals such as *Journal of Personality and Social Psychology* (cf. McGregor, Nash, & Prentice, 2010; Norenzayan & Lee, 2010) and *Personality and Social Psychology Bulletin* (cf. Aydin, Fischer, & Frey, 2010; Brandt & Reyna, 2010). The scientific study of religion is also now being featured in mainstream journals such as *Science* (Norenzayan & Shariff, 2008) and *Psychological Science* (Ginges, Hansen, & Norenzayan, 2009; Preston & Epley, 2005; Shariff & Norenzayan, 2007). So much work has been done in the psychology of religion that social and personality psychology journals have had issues devoted solely to religion. For instance, *Personality and Social Psychology Review*, ranked #1 in Social Psychology's 2009 impact factor rating (impact factor = 6.594), had a special issue on religion in 2010 (Vol. 14, number 1). *Journal of Personality* also had a special issue devoted to religion in 1999 (Vol. 67, number 6). Additionally, Emmons and Paloutzian (2003) wrote a review article on the psychology of

religion in *Annual Review of Psychology.* Despite this explosion in the scientific study of religion, there is still much work left to be done to understand this complex component of psychology.

The Light and Dark Side of Religion: Positive and Negative Outcomes

As noted, religiosity has been tied to both positive and negative outcomes. Among these, many studies show conflicting evidence within the same domain. For example, religiosity has been associated with *physical health* (Koenig, McCullough, & Larson, 2001; Powell, Shahabi, & Thoresen, 2003) and *mental health* (Larson, Swyers, & McCullough, 1998; Miller & Kelley, 2005; cf. Batson, Schoenrade, & Ventis, 1993 for review). Alternatively, religiosity has been associated with some aspects of *mental distress*, such as neuroticism and anxiety (Batson et al., 1993). Religiosity has been associated with positive personality traits such as *humility* (Rowatt, Powers, et al., 2006) and *optimism* (Koenig et al., 2001), but it has also been linked with negative personality traits such as *authoritarianism* (Altemeyer & Hunsberger, 1992). Positive behaviors and attitudes have been associated with religiosity such as *gratitude* (McCullough, Emmons, & Tsang, 2002), *coping* and *self-esteem* (Maynard, Gorsuch, & Bjorck, 2001), *tolerance* (Batson et al., 1993; Hall, Matz, & Wood, 2010), and *helping* behaviors (Saroglou, Pichon, Trompette, Verschueren, & Dernelle, 2005). Religiosity has also led to a reduction in negative behaviors. Religion has been associated with *less substance abuse* (Hadaway, Elifson, & Petersen, 1984; Michalak, Trocki, & Bond, 2007), *less alcohol use* (Patock-Peckham, Hutchinson, Cheong, & Nagoshi, 1998), *less nonmarital sexual behavior* (Paul, Fitzjohn, Eberhart-Phillips, Herbison, & Dickson, 2000), and *less cutting of classes* (Goldsen, Rosenberg, Williams, & Suchman, 1960). However, religiosity has

also been associated with negative attitudes and behaviors such as: *prejudice* (Batson et al., 1993; Hall, Matz, & Wood, 2010; Whitley, 2009) and attitudes toward and support of *terrorism* (Ginges et al., 2009; Nielsen, 2001).

Although empirical research on religiosity has grown since the early 1900s, the story remains similar to that theorized by James (1902), Jung (1933), Allport (1954), and Freud (1964). Namely, religiosity has a dualistic relationship with psychological functioning in that it is associated with a large variety of both positive and negative outcomes. This is also true in regard to religiosity's relationship with prejudice. Although most world religions teach tolerance, a multitude of research demonstrates this is not necessarily true. Empirical investigations of religiosity's relationship with prejudice demonstrate it is, as Allport (1954) astutely pointed out, "…paradoxical. It makes prejudice and it unmakes prejudice" (p. 444).

The Psychology of Religion and Prejudice

Does religion make and unmake prejudice? Religiosity's dualistic role in predicting both tolerance and prejudice relates to which dimension of religiosity and what type of attitudes are examined. For instance, various dimensions of religiosity differentially predict tolerance and prejudice toward African Americans (Hall et al., 2010). Despite the paradox between religiosity and racial prejudice, most dimensions of religiosity (e.g., religious fundamentalism, intrinsic religious orientation) correlate negatively with attitudes toward persons perceived to violate religious worldviews (i.e., Muslims, atheists, homosexuals; Altemeyer & Hunsberger, 1992; Duck & Hunsberger, 1999; Herek, 1987; Laythe, Finkel, & Kirkpatrick, 2001; Rowatt & Franklin, 2004;

Rowatt, Franklin, & Cotton, 2005; Rowatt, LaBouff, Johnson, Froese, & Tsang, 2009; Rowatt, Tsang, et al., 2006; Whitley, 2009).

Religiosity and Racial Prejudice

Several studies indicate the relationship between religiosity and racial prejudice is complex (see Batson et al., 1993, for a review; see Hall et al., 2010, for a meta-analytic review). A recent meta-analysis of 55 studies since the Civil Rights Act in 1964 demonstrated some dimensions of religiosity correlated positively with racial prejudice (i.e., extrinsic religiosity, fundamentalism) whereas others correlate negatively with racial prejudice (i.e., intrinsic and quest religiosity) (Hall et al., 2010). However, what Allport and Ross (1967) first noted when distinguishing between intrinsically religious individuals (less racially prejudiced) and extrinsically religious individuals (more racially prejudiced) and what Altemeyer and Hunsberger (1992) later emphasized is these findings are not necessarily paradoxical because, "there are different ways of being religious, and only one of these will be tapped by a [single] measure…" (p. 116).

Religious identification and racial prejudice. Some studies ignored these various "ways of being religious" and thus examined only religious identification's relationship with racial prejudice. Hall et al.'s (2010) meta-analysis examined the relationship between religious identification and racial prejudice. Religious identification was qualified as "ratings of the subjective importance of religion in one's life or self-reported degree of religiosity" (Hall et al., p. 129). Across 55 studies, greater religious identification was positively correlated with racism (*r* equivalent = .10; Hall et al., 2010).

Religious beliefs and racial prejudice. Another aspect of religiosity examined in the religiosity-racial prejudice relationship was religious beliefs. The most common belief examined was Christian orthodoxy (Fullerton & Hunsberger, 1982), or the degree to which individuals hold beliefs associated with the Christian faith (e.g., belief in God). A meta-analysis found religious beliefs did not reliably correlate with racial prejudice (Hall et al., 2010).

Religious orientation and racial prejudice. Allport and Ross (1967) did early work in the various "ways of being religious." They examined religious orientations, or different ways of approaching one's religious faith, by dividing them into three distinct categories: 1) intrinsic religiosity, or "ends" religion, 2) extrinsic, or "means" religion, and 3) "indiscriminately pro," describing individuals high in both intrinsic and extrinsic religiosity. Although the latter religious orientation is rarely used in the literature today, intrinsic and extrinsic religious orientations have been heavily examined (cf. Batson et al., 1993). Individuals high in intrinsic religiosity tend to view their religion as more of an ends, valuing religion simply for itself. Alternatively, individuals high in extrinsic religiosity tend to view their religion as a means and see their religion as something used to gain rewards (e.g., social, personal rewards). Batson introduced a third type of religious orientation called quest. Individuals high in quest religiosity tend to have a more mature religious orientation which allows for existential questions as well as doubt and questioning of religion to exist (Batson & Schoenrade, 1991; Batson et al., 1993).

Each of these religious orientations is differentially related to racial prejudice. Individuals high in intrinsic religiosity report lower levels of prejudice on direct measures of prejudice but not on indirect measures (Batson, Flink, Schoenrade, Fultz, & Pych,

1986; Batson, Naifeh, & Pate, 1978). Examples of direct and indirect measures include individuals' preferences for sitting next to a physically handicapped or non-handicapped individual in a movie when a) the movie in each room was the same (direct) or b) the movie in each room was different (indirect) (Batson et al., 1986). These disparities in intrinsic religiosity's association with racial prejudice may be due to social desirability (Batson et al., 1993; Hall et al., 2010). Across a meta-analysis of 55 studies, intrinsic religiosity showed an overall negative relationship with racial prejudice (r equivalent = -.07; Hall et al., 2010). Alternatively, individuals high in extrinsic religiosity were among the most prejudiced with extrinsic religiosity being positively associated with racial prejudice (r equivalent = .17; Hall et al., 2010). Quest, however, was the only religious orientation to consistently show a negative relationship with racial prejudice (r equivalent = -.07; Hall et al., 2010). Batson et al. (1993) originally conceptualized individuals with a quest religious orientation as believing, "There may or may not be a clear belief in a transcendent reality, but there is a transcendent, religious aspect to the individual's life" (p. 166). However, many researchers now consider quest as a form of agnosticism (Donahue, 1985; Hall et al., 2010). This view is supported by data demonstrating quest orientation has been negatively correlated with religious attendance and personal prayer (Altemeyer & Hunsberger, 1992; Lavrič & Flere, 2008) and has shown weak associations with belief in God (Jackson & Hunsberger, 1999). Because it is still uncertain if quest religious orientation is truly a measure of religiosity or lack of religiosity, it is difficult to determine if any dimension of religiosity predicts racial tolerance.

Religious fundamentalism and racial prejudice. Although these certain "ways of being religious" are often religious orientations, they can also be a specific framework for

interpreting the world and moral framework therein. This thinking of the world can often influence intergroup attitudes (Hunsberger & Jackson, 2005). For example, closed-minded ideologies such as religious fundamentalism (RF) and right-wing authoritarianism (RWA) have been associated with racial prejudice (cf. Hall et al., 2010). RF is a closed-minded set of beliefs there is one fundamental, inerrant set of teachings about humanity and the deity and this viewpoint must be defended against the evils which oppose it (Altemeyer & Hunsberger, 1992). As such, religious fundamentalists think less complexly about a variety of issues, including issues related to prejudice such as holding stereotypes (Pancer, Jackson, Hunsberger, Pratt, & Lea, 1995). It was speculated "fundamentalism cloaks a general closed-minded, ethnocentric mindset, which is shown here as a general tendency to discriminate" (Glock & Stark, 1966, p. 333). Consistent with this speculation, RF was positively correlated with racial prejudice across 55 studies ($r = .20$; Hall et al., 2010).

   Right-wing authoritarianism and racial prejudice. Right-wing authoritarianism (RWA) also represents rigid thinking and shows a very strong positive correlation ($r = .41$; Hall et al., 2010) with racial prejudice. Although RWA is not a direct measure of religiosity, right-wing authoritarians have a tendency to act religiously in a variety of ways (Altemeyer, 1981, 1988; Altemeyer & Hunsberger, 1992). Specifically, right-wing authoritarians tend to attend church, pray, and read scripture more often (r's ranging from .40-.50) as well as carry their childhood religious beliefs into their adulthood (Altemeyer & Hunsberger, 1992).

Religiosity and Homosexual Prejudice

Although the relationship between religiosity and racial prejudice is somewhat unclear, the relationship between religiosity and attitudes toward lesbians and gay men is less paradoxical. A meta-analysis of 64 studies found nearly all dimensions of religiosity have at least a small negative association with attitudes toward lesbians and gay men (Whitley, 2009). This relationship could exist because prejudice toward lesbians and gay men is considered a religiously permitted prejudice, unlike racial prejudice which is a religiously proscribed prejudice (Whitley, 2009).

Religious attendance and homosexual prejudice. Like religious identification's relationship with racial prejudice, religious service is negatively correlated with attitudes toward homosexuals (Whitley, 2009). This negative relationship was even stronger among the general population (*r* equivalent = -.36) than college students (*r* equivalent = -.23).

Religious beliefs and homosexual prejudice. As noted, Christian Orthodoxy did not have a significant relationship with racial prejudice. However, it was negatively related to attitudes toward gay men and lesbians (*r* equivalent = -.18; Whitley, 2009).

Religious orientation and homosexual prejudice. Whereas intrinsic religious orientation was associated with self-reported tolerance toward African Americans (Hall et al., 2010), it was associated with intolerance or negative attitudes toward lesbians and gay men (*r* equivalent = -.19; Whitley, 2009). Extrinsic religiosity, which had the largest positive association with racial prejudice (Hall et al., 2010), had a non-significant

relationship with homosexual prejudice. Quest was positively correlated with attitudes toward lesbians/gay men (r equivalent = .26; Whitley, 2009).

Religious fundamentalism and homosexual prejudice. Fundamentalism emerged as the religious measure most strongly associated with negative attitudes toward lesbians and gay men (r equivalent = -.44; Whitley, 2009). RF had a stronger negative association with attitudes toward lesbians and gay men among college students (r equivalent = -.50) than among the general population (r equivalent = -.45) (Whitley, 2009).

Right-wing authoritarianism and homosexual prejudice. RWA was also associated with negative attitudes toward lesbians and gay men (Whitley & Lee, 2000). When RWA was statistically controlled in predicting homosexual prejudice, RF's negative relationship with homosexual prejudice was generally reduced (Laythe, Finkel, Bringle, & Kirkpatrick, 2002). RF and RWA have consistently emerged as the strongest predictors of discriminatory attitudes toward lesbians and gay men (Kirkpatrick, 1993; Whitley, 2009; Whitley & Lee, 2000). RF and RWA's ability to predict prejudice toward lesbians and gay men exists cross-culturally (i.e., Ghana and Canada; Hunsberger, Owusu, & Duck, 1999) and across different religions (i.e., Hindus, Muslims, Jews, and Christians; Hunsberger, 1996).

The large difference in the trend seen among religiosity's relationship with racial and homosexual prejudices may be due to racial prejudice being religiously proscribed whereas homosexual prejudice is religiously permitted (Whitley, 2009). Gay men are not widely accepted by committed religious individuals because they are seen as a value-violating out-group (Herek, 1987). In fact, opposition to gay rights to civil freedoms is argued to be a proxy measure for religious commitment (Herek, 1991). These prejudicial

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views of gay men and lesbians among religious individuals might also be held toward

other value-violating groups such as atheists and Muslims.

Religiosity and Value-Violating Prejudices

Similar to religiosity's relationship with homosexual prejudice, religiosity is

associated with prejudice toward a variety of other out-groups, namely religious out-

groups. In American culture, religious value-violating out-groups are any group

considered a social or religious group lying outside of the Judeo-Christian faith which

violates Judeo-Christian values or beliefs. Gay men and lesbian women are viewed as

part of a value-violating out-group because their homosexual lifestyle is considered by

many Christians to be a violation of Biblical teachings and Christian beliefs (Herek,

1987). Other value-violating groups could be non-Christian religious faiths, including

but not limited to: Muslims, atheists, Buddhists, and Hindus. Very little research to date

has examined religiosity's relationship with attitudes toward these various out-groups.

Nevertheless, existing empirical research shows a similar relationship to that between

religiosity and homosexual prejudice.

Religiosity and prejudice toward Muslims. General religiosity (i.e., "How

religious are you?") was negatively associated with attitudes toward Muslims relative to

Christians (Johnson, Rowatt, & LaBouff, in press), demonstrating self-identifying as a

religious individual was associated with more negative attitudes toward Muslims relative

to Christians. Religious beliefs, or Christian Orthodoxy, showed a positive association

with implicit preferences for Christian names relative to Muslim names (Rowatt et al.,

2005). RF also showed a negative relationship with attitudes toward Muslims (Rowatt et

al., 2005).

Religiosity and prejudice toward atheists. General belief in God showed negative associations with attitudes toward atheists (Jackson & Hunsbeger, 1999). General religiosity was negatively associated with attitudes toward atheists relative to Christians (Johnson et al., in press). Christian Orthodoxy was also negatively associated with attitudes toward atheists (Jackson & Hunsberger, 1999). This is not surprising given atheists' violation of Christian Orthodox's belief system. Each of the religious orientations showed a unique relationship with attitudes toward atheists compared to other prejudiced attitudes. Both intrinsic and extrinsic religious orientations were negatively associated with attitudes toward atheists (Jackson & Hunsberger, 1999). Quest was non-significantly related to attitudes toward atheists (Jackson & Hunsberger, 1999). RF (Jackson & Hunsberger, 1999) and RWA (Duckitt & Sibley, 2007) have both been negatively associated with attitudes toward atheists. Religiosity has also been associated with implicit distrust and dislike of atheists (Gervais, Shariff, & Norenzayan, in press).

In examining the observed relationships between religiosity and attitudes toward a variety of religious out-groups (i.e., lesbians/gay men, atheists, Muslims), it appears most measures of religiosity are negatively associated with attitudes toward value-violating groups. These findings extend to behavioral prejudice as well. For instance, religious fundamentalists have been shown to hold value-threatening out-groups (homosexuals, single mothers), but not nonthreatening out-groups (Canadians, students), responsible for an unemployment problem (Jackson & Esses, 1997). Moreover, individuals high in intrinsic religiosity helped gay individuals less than non-gay individuals, even if those individuals were not going to use their money to promote the behavior of homosexuality

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(Batson, Floyd, Meier, & Winner, 1999). Given these findings, one possible explanation for the paradoxical relationship seen between religiosity and prejudice could be intergroup bias. Namely, religious individuals may favor their in-group (e.g., Christians) and derogate value-violating out-groups (e.g., gay men/lesbians, Muslims, atheists).

Intergroup Bias: A Possible Explanation

> It is always possible to bind together a considerable number of people in love, so long as there are other people left over to receive the manifestations of their aggression.

- Sigmund Freud (1930)
-

One of the foundational principles of social psychology is that individuals are influenced by their environment. Although this often refers to the physical environment, it also refers to the group contexts surrounding individuals. McDougall (1920) noted the possible effects groups have on individuals' behaviors. He suggested certain social situations involving groups caused individuals to behave differently than they would individually. Floyd Allport (1924), however, argued group behavior could not be scientifically studied and the field of psychology should keep its focus on the study of the individual. Despite this initial resistance, researchers began to examine the effects of groups on individual behavior. Sherif (1936), Asch (1952), and Lewin (1952) each emphasized the importance of recognizing and studying the distinctiveness of social groups and their effects on individuals' behaviors.

Although these researchers highlighted the importance of studying groups, it was Sumner (1906) who originally coined the terms in-group and out-group. In-group/out-group terminology referred to preference for and attachment to one's in-group. Research has flourished demonstrating the powerful effects in-groups and out-groups have on human behaviors. In-groups exist for a variety of groups, including family and friends or

larger social groups based on gender, race, religion, and nationality (Brewer & Brown, 1998). Whereas in-group/out-group distinctions are most easily recognized in differences between these real groups, the tendency for humans to think of themselves in terms of in-groups and out-groups is so strong individuals demonstrate in-group/out-group feelings in the lab simply by being placed into arbitrary categories (Brewer, 1979; Tajfel, Billig, Bundy, & Flament, 1971; Turner, 1978).

Later research on in-groups/out-groups focused on how being members of specific in-groups affects group behavior. Like other large social groups, membership of a religious group may also produce in-group favoritism and a general intergroup bias. Intergroup bias refers to the tendency of individuals both to prefer and view their own group and its members more positively than outside groups and their members (Hewstone, Rubin, & Willis, 2002; Mullen, Brown, & Smith, 1992). Intergroup bias may be partially explained by *social identity theory* (Tajfel & Turner, 1986). According to social identity theory (Tajfel & Turner, 1986), individuals use group membership to maintain and enhance their self-esteem. To enhance self-esteem, individuals view their own in-groups as positively as possible. In the process, intergroup competition arises and strong biases can occur toward out-groups. Individuals may derogate the out-group to distinguish out-group members from in-group members, who are generally viewed more favorably.

This bias can affect multiple aspects of individuals' lives, including attitudes (prejudice) (Mackie & Smith, 1998; Wilder & Simon, 2001), and it can take on two forms. The first form, *in-group favoritism*, occurs when individuals favor or show

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preference towards their own in-group. The second form, *out-group derogation*, occurs when individuals treat out-groups more harshly and/or less fairly (Hewstone et al., 2002).

In-group favoritism has been demonstrated for a variety of social groups, but it has also occurred using the *minimal group paradigm* (Tajfel et al., 1971). In this paradigm, groups exist only in that a person is aware he or she has been placed in one category or the other. These categories are arbitrary, however. When given the opportunity to allocate money to other people, most individuals gave more money to in-group members than out-group members, despite how weak the in-group identity happened to be.

Intergroup bias has been demonstrated to exist among a variety of groups including those based on: *race* (Castelli & Tomelleri, 2008; Dovidio, Gaertner, Kawakami, & Hodson, 2002), *political affiliation* (Gaertner et al., 1999), *sexual orientation* (Stürmer, Snyder, & Omoto, 2005), *neighborhood location* (Flippen, Hornstein, Siegal, & Weitzman, 1996), and simply "us" vs. "them" categories (Perdue, Dovidio, Gurtman, & Tyler, 1990). Because religious beliefs are an important aspect of many individuals' social identity, intergroup bias has also been studied within religious groups (Harper, 2007; Islam & Hewstone, 1993; Jackson & Hunsberger, 1999). In fact, religion serves as such a strong in-group identity that many people categorize individuals on a religious dimension, over and above categorizing individuals by race (Weeks & Vincent, 2007). Religious individuals have shown very positive attitudes toward religious others while showing very negative attitudes toward non-religious others (Jackson & Hunsberger, 1999). Additionally, religious individuals have been shown to have diverse and often quite negative stereotypes of these non-religious individuals

(Harper, 2007). This in-group favoritism among religious individuals has been seen specifically in both Muslims and Hindus in Bangladesh (Islam & Hewstone, 1993). Both religious in-groups showed in-group-favoring attributions. Only Muslims showed out-group-derogating attributions (Islam & Hewstone, 1993).

Despite the strong theoretical framework intergroup bias theory provides, the relationship between religiosity and racial prejudice is still not clear. Although we understand the nature of the relationship between religiosity and prejudice, we do not fully understand the underlying mechanisms or causality of this relationship. Given the large variety of religious measures used to examine these relationships, it is not yet clear what the relationship is between religiosity and attitudes toward various groups. Past studies have relied predominantly on correlational and regression techniques to examine this relationship (cf. Hall et al., 2010; Whitley, 2009). More recent research, however, has begun to examine the relationship between religiosity and prejudice using mediation path analysis (MacKinnon, 2008; MacKinnon, Lockwood, & Williams, 2004) to determine which variables may mediate the religiosity-prejudice relationship. This approach is superior to previous multiple regression analytic approaches because: 1) it takes measurement error into account when statistically analyzing data (Schumacker & Lomax, 2004) and 2) it allows for testing the mediation of ideologies in the relationship between religiosity and prejudices.

Mediational Analysis of Religion and Prejudice

The current review indicates some dimensions of religiosity are associated with racial prejudice whereas other dimensions are associated with racial tolerance (Hall et al., 2010). Most dimensions of religiosity are negatively associated with attitudes toward a

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variety of value-violating out-groups such as lesbians and gay men (Whitley, 2009), Muslims (Johnson et al., in press; Rowatt et al., 2005), and atheists (Duckitt & Sibley, 2007; Gervais et al., in press; Jackson & Hunsberger, 1999). Once various possible predictors are statistically controlled, these relationships change. For instance, once RF was statistically controlled, individuals high in intrinsic religiosity showed more positive attitudes toward lesbians and gay men than those low in intrinsic religiosity (Fulton, Gorsuch, & Maynard, 1999). Given these results, the question arises as to whether religiosity itself is related to negative attitudes toward out-groups or if certain components of religiosity such as closed-minded ideologies mediate the relationship between religiosity and prejudice. Researchers are beginning to ask those questions by examining the religiosity-prejudice relationship using Structural Equation Modeling (SEM) and mediation path analyses (Johnson et al., 2011; Johnson, Rowatt, LaBouff, Patock-Peckham, & Carlisle, 2012).

Before using SEM and mediation path analyses, however, past studies examined the relationship between RF, RWA, and prejudice (cf. Hall et al., 2010; Whitley, 2009) with bivariate correlations or within the same regression model to examine what role each individual construct played (Laythe et al., 2001). Mavor, MacLeod, Boal, and Louis (2009) noted that there was a problem in examining RF and RWA within the same regression model. Namely, RF and RWA have conceptual and statistical overlap of concepts. Furthermore, RWA is actually composed of three components: 1) authoritarian aggression – promoting punitive behaviors toward evildoers, 2) authoritarian submission – belief that all legitimate authorities should be obeyed, and 3) conventionalism – a belief similar to religious fundamentalism that there is a certain, inerrant set of values and

morals that society must uphold (Altemeyer & Hunsberger, 1992; Mavor et al., 2009). This three-component model of RWA has been supported through confirmatory factor analysis (CFA; Mavor, Louis, & Sibley, 2010).

RWA conventionalism's statistical overlap with RF alters the apparent relationship between RWA, RF, and prejudice. When RWA was statistically controlled as a single construct, RF emerged as a negative predictor of racial prejudice but a positive predictor of homosexual prejudice (Laythe et al., 2001, *Study 1*). RWA remained a significant predictor of both types of prejudice when RF was statistically controlled. In another study, RF simply became a non-significant predictor of homosexual prejudice once RWA was statistically controlled (Laythe et al., 2001, *Study 2*). However, once the conventionalism component of RWA was removed, RF still had a positive relationship with prejudice (Mavor et al., 2009). Due to these overlapping relationships between RWA conventionalism and RF, SEM models examining the role of RWA and RF in mediating the religiosity-prejudice relationship have examined RWA aggression, RWA submission, and RF as possible mediators.

Since these original correlational examinations of RF, RWA, religiosity, and prejudice, a series of SEM models have examined if RF and RWA, closed-minded ideologies associated with religiosity, mediate the religiosity-prejudice relationship (Johnson et al., 2011; Johnson, Rowatt, & LaBouff, 2012). In these models, religiosity was defined as a latent variable with three indicators: intrinsic religiosity, general religiosity, and religious behaviors (e.g., prayer, religious service attendance). RF and RWA were chosen as possible mediators because these rigid ideologies consistently emerged as the strongest religious predictors of racial prejudice (Hall et al., 2010) and

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homosexual prejudice (Whitley, 2009) in meta-analyses. These rigid ideological components of religious belief may be what account for the variance in prejudicial attitudes.

It was found RWA aggression was the strongest mediator of the relationship between religiosity and racial prejudice, including prejudice toward African Americans (Johnson et al., 2011) and Arabs (Johnson, Rowatt, & LaBouff, 2012). RF was the strongest mediator of the relationship between religiosity and value-violating prejudices toward lesbians and gay men (Johnson et al., 2011) and atheists (Johnson, Rowatt, & LaBouff, 2012). These findings fit in line with past research demonstrating RWA aggression was the component of RWA most strongly associated with racial prejudice whereas RWA conventionalism was most strongly associated with homosexual prejudice (Mavor et al., 2009). From these studies, it appears rigid ideologies often associated with religiosity, rather than religiosity itself, account for prejudiced attitudes among religious individuals.

Due to RF's role as a strong predictor of prejudice, researchers have also begun to examine what variables may mediate the relationship between RF and prejudice. The need for cognitive closure has partially mediated the RF-homosexual prejudice relationship (Brandt & Reyna, 2010). Closed-mindedness and preference for order have also partially mediated the relationship between RF and "seven items culled from Altemeyer's RWA scale expressing the desire to protect society from immoral or deviant groups" (Brandt & Reyna, 2010, p. 720). Need for cognition has partially mediated the relationship between RF and homophobia (Hill, Terrell, Cohen, & Nagoshi, 2010). Preference for consistency has partially mediated the relationship between RF and

modern racism (Hill et al., 2010). Finally, RWA aggression mediated the relationship

between RF and racial prejudice toward Arabs and African Americans (Johnson, Rowatt,

LaBouff, Patock-Peckham, et al., 2012).

These mediation studies have helped further demystify the paradoxical

relationship between religiosity and prejudice. Despite the strengths of these studies,

they still lack the ability to determine causality of the relationship between religiosity and

prejudice. In order to examine the causality of the religiosity-prejudice relationship,

researchers have manipulated religion experimentally using priming techniques.

Priming Methodologies

The models previously discussed do not examine if religiosity can cause increases

or decreases in prejudice. To answer this question, researchers have turned to priming

methodologies to manipulate religiousness through supraliminal and subliminal priming.

Much like implicit measures, priming methodologies are used to examine the

nonconscious influences on one's attitudes and behaviors. However, instead of

examining nonconscious attitudes (e.g., Implicit Association Task; Greenwald, Nosek, &

Banaji, 2003), priming examines the nonconscious effects of one's environment (Bargh

& Chartrand, 2000). Priming research "centers on the temporary activation of an

individual's mental representations by the environment and the effect of this activation on

various psychological phenomenon" (Bargh & Chartrand, 2000, p. 256). By exposing

individuals to religious primes, one can examine the causal influence of religion at a

nonconscious level on attitudes toward various groups.

Origins of Priming Methodology

Recently, social and personality psychology has seen an increase in priming research used to activate various mental representations. Priming studies have been featured in top peer-reviewed journals such as *Science* (Williams & Bargh, 2008) and *Journal of Personality and Social Psychology* (Bargh, Chen, & Burrows, 1996). Priming's origins lie in Hebb's (1949) work on internal mental representations, or as he termed them *cell assemblies*. At the time, this form of thinking went largely against the common point of view held in the field of psychology by behaviorists. The idea that some form of internalized mental representations could influence an individual's behavior seemed foreign and implausible (Bargh, 2006). These activations of mental representations were later termed *priming* by Karl Lashley (1951). Lashley (1951) noted that in order to process language, one has to store mental representations of what was previously read.

Later, cognitive psychologists used the term *priming* empirically to refer to the influence of previously studied words on the probability that those words would appear in unrelated free-association tasks (Segal & Cofer, 1960). It more generally became known as the effect prior presentation of stimuli had on the recognition of certain other stimuli (Neely, 2003). For example, being exposed to the word "nurse" would subsequently lead to faster processing of the conceptually related word "doctor." This increased speed of processing a related word is assumed to demonstrate a mental representation of the priming stimulus (i.e., "nurse") has been activated in one's memory (Anderson & Bower, 1972; Collins & Loftus, 1975).

Priming Methodology in Social and Personality Psychology

Given social psychology's interest in examining how the social environment influences individuals' behavior, it is important to understand how the nonconscious aspects of peoples' environments influence them as well (Bargh & Williams, 2006). According to Bargh and Chartrand (1999), "most of a person's everyday life is determined not by their conscious intentions and deliberate choices but by mental processes that are put into motion by features of the environment and that operate outside of conscious awareness and guidance" (p. 462). For example, people who were assigned to vote in a school setting were more likely to support a school funding project (Berger, Meredith, & Wheeler, 2008). Thus, an unconcious prime in one's own environment can influence conscious behavior in some people. Because priming affords the opportunity to examine these nonconscious influences, social psychologists began to utilize this method in the 1970s as a way to activate mental representations which would influence behaviors. By examining the influence of subtle presentations of stimuli on evaluations of others, social psychologists began to understand a new way our environment influences us nonconsciously. Originally, priming studies focused on how activations of trait categories in one's environment affected individuals' social judgments in unrelated contexts (i.e., impression formation; Higgins, Rholes, & Jones, 1977). Within this framework, one of the first studies on priming demonstrated the presentation of positive words (e.g., kind, generous) caused individuals to rate a target person as more kind than individuals in a control group (Srull & Wyer, 1979).

Since this time, the field of social and personality psychology has made drastic empirical advances in priming methodology. Whereas trait characteristics were some of

the first concepts to be primed, researchers discovered a variety of other concepts could be primed. Among them were *social norms* [e.g., individuals voice intensity decreased when primed with pictures of a library (Aarts & Dijksterhuis, 2003)], *emotions* effect on responses to unrelated stimuli [e.g., effect of film clips on later purchases (Lerner, Small, & Loewenstein, 2004)], *goals* [e.g., achievement by increasing performance on an intellectual task, cooperation through more frequently replenishing a common resource, and egalitarianism through pursuit of consciously held goals (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Troetschel, 2001)], *stereotypes* (see Bargh, 1989; Higgins, 1996, for reviews), and even *social behavior* itself. For instance, individuals primed with *rudeness* acted more rude by interrupting an experimenter more quickly than those in a control group, and individuals primed with an *elderly stereotype* walked more slowly down a hall than those in a control group (Bargh et al., 1996). Individuals primed with the trait *intelligent* performed better on a test of general knowledge whereas those primed with the trait *stupid* performed worse on a test of general knowledge (Dijksterhuis & van Knippenberg, 1998). Those primed with *egoism* related words helped less than those primed with *altruism* related words (Walther, Müller, & Schoot, 2001). Researchers have also found words are not the only form of prime which can be used. More subtle and ecologically valid primes in one's environment can influence one's perception of others. For instance, individuals who held a warm cup of coffee rated a target person more warmly than those who held a cold cup of coffee (Williams & Bargh, 2008).

Most priming studies today use the "concept prime" approach in which some environmental stimulus (e.g., words, cup of coffee) influences subsequent evaluations, cognitions, or behaviors (Bargh & Chartrand, 2000). In priming "concepts" using words,

studies today use one of two approaches. The first method is supraliminal priming, a

method in which individuals are exposed to words above their level of awareness through

tasks such as a Scrambled Sentence Task (SST; Srull & Wyer, 1979). In the SST,

individuals are exposed to a set of sentences which each have five "scrambled" or mixed

up words. Individuals must make a grammatically correct sentence using four of the five

words. Within some of the sentences, participants must use a prime word to create the

sentence (e.g., "God" or "prophet" to prime religion in Shariff & Norenzayan, 2007).

The second, more commonly used method, is subliminal priming. In subliminal priming,

individuals are exposed to words below their level of awareness such as through a

Lexical Decision Task (LDT; see Pichon, Boccatto, & Saroglou, 2007, for example). In a

LDT, the priming stimuli are presented outside the level of conscious awareness. This is

done by having participants focus on a computer screen. Then, a prime word appears for

a brief period of time (e.g., 15-35 ms; see Pichon et al., 2007; Johnson, Rowatt, &

LaBouff, 2010). After the prime word appears, it is immediately masked by a string of

Xs (e.g., XXXXXXXXXX). Finally, either a neutral word or a non-word appears on the

screen and participants must categorize this string of letters as a word or non-word.

Using this method, individuals are led to believe the word task is the experiment;

however, the priming occurring before the LDT itself is the priming experimental

manipulation.

Much like the broad field of social and personality psychology, the sub-discipline

of the psychology of religion has begun to utilize priming methodologies to start

examining causal links between religiosity and various outcomes. Priming religion is

associated with a variety of both positive and negative behaviors.

Priming Religion

It has become well-established that priming influences social perceptions and behavior (Bargh, 2006). However, recent research demonstrates priming complicated mental representations such as *religiosity* also influences social perceptions and behavior. Currently, the subfield of psychology of religion is blossoming with experimental manipulations of religiosity through priming. Unfortunately, due partially to the complexity of the *religion* concept, the current research on the priming of religion lacks some of the consistency of prior priming studies. Because religiosity encompasses so many different domains, researchers' priming methodologies and measured outcomes vary across studies.

Priming religion and activation of religious concepts. Originally, studies priming religion focused on concept activation of religiosity among religious persons. For instance, when asked to list the three greatest events in the history of the world, committed Christians subliminally primed with religious words were more likely to list Biblical events than those primed with neutral words (Wenger, 2003). After examining the effects of priming religion on Christian individuals, the next step was to attempt to determine how priming religion affected religious individuals differentially based on their religious orientations (e.g., intrinsic, extrinsic; Wenger, 2004).

Effects of religious beliefs on priming religion. If religious orientation has a large impact on religious individuals' behaviors, attitudes, and beliefs, priming *religion* may also have differential effects on individuals based on their religious orientation. Wenger (2004) tested this hypothesis. He primed individuals supraliminally by exposing them to a religious word ("Christian") or neutral word ("student" or "housetop") for 200 ms on a

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computer screen. These priming methods were taken and adapted from Dovidio, Evans, and Tyler (1986) and Banaji and Hardin (1996), and are consistent with what Bargh (1994) outlines as a process which can be considered automatic. After being primed, individuals had to categorize if a hypothetical person could or could not (yes/no) perform a certain action. Four phrases described typical Christian actions (e.g., "worship God"), four phrases described typical student actions (e.g., "take tests"), and eight phrases described "nonsensical nonactions that cannot be performed by a person" (e.g. "climb grass"; Wenger, 2004, p. 113). Individuals primed with Christian words more quickly categorized Christian-like actions than student-like actions or nonactions. Wenger (2004) also found an interaction between priming and intrinsic religious orientation. Individuals high in intrinsic religiosity categorized Christian-like actions even faster when primed with religion.

The effect of priming religion's interaction with religious orientation on attitudes extends to religious behaviors. Individuals supraliminally primed with religion showed decreased moral hypocrisy, but only among individuals high in intrinsic religiosity (Carpenter & Marshall, 2009). Religion was primed differently than the methods generally used by researchers (SST or LDT). Individuals were primed by asking them to read either nine Bible verses highlighting intrinsic ideals or read nothing. According to Bargh's (1994) guidelines for what can be considered an "automatic" process, this task may not be considered automatic because participants are likely aware of how the "prime" affects their behavior. Nevertheless, it does seem to indicate making religion salient only affects the moral hypocrisy behavior of intrinsically religious peoples.

Religious fundamentalism has also demonstrated interaction effects with priming religion. Acceptance of extreme violence and extreme military interventions decreased when individuals were primed with religion by reading religiously compassionate passages (but not when reading religiously neutral, secularly compassionate, or secularly neutral) from either the Bible or the Koran (Rothschild, Abdollahi, & Pyszczynski, 2009). These effects, however, only existed for those high in religious fundamentalism. Thus, being reminded of compassionate values associated with one's religion only had an effect on individuals if the individuals were already religious fundamentalists. These results should be interpreted with caution, however, because the prime was not automatic as Bargh (1994) notes priming should be. Without automatic and unconscious primes, we cannot interpret how the unconscious aspects of environments affect individuals (Bargh, 2006).

Religious primes also differentially affect individuals based on their pre-existing images of God. For those with a pre-existing controlling God image, supraliminally priming religion led to increases in negative affect and decreases in life satisfaction but not for those with a pre-existing loving God image (Wiegand & Weiss, 2006). In some cases, priming more general religious concepts such as "God" affects religious individuals but not non-religious individuals. For instance, when individuals were primed with the word "God," they showed a decrease in feelings of authorship (Dijksterhuis, Preston, Wegner, & Aarts, 2008). This effect only existed for believers, however. Religious primes can also have opposite effects on believers and nonbelievers. These effects may occur at the neurological level, with priming influencing individuals' brain wave patterns. To measure brain waves, scientists can use electroencephalographs

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(EEGs) to measure brain waves. Event related potentials (ERPs) measure brain activity

through EEGs. ERPs specifically measure brain activity associated with a certain activity

at a certain time point. Error related negativity (ERNs) are a type of EEG component.

For ERNs, the activity associated with the brain activity is making an error on some task.

Lower ERNs are suggested to be linked with less anxiety and distress whereas higher

ERNs are linked with higher levels of anxiety and distress (Inzlicht & Tullett, 2010).

Priming religiosity has been linked to different effects on ERNs for believers and

nonbelievers. For instance, priming believers with religious concepts led to *decreases* in

error-related negativity (ERN) while completing a Stroop Task (Inzlicht & Tullett, 2010).

This is suggested to indicate a decrease in anxiety and distress. Alternatively, priming

nonbelievers with religious concepts led to *increases* in ERN during the Stroop task,

suggesting increases in anxiety and distress. Given these opposing effects of priming

religion among believers and non-believers, activating religious concepts could possibly

decrease anxiety and distress, or serve as a buffer against it, among believers but increase

anxiety and distress among non-believers. However, Toburen and Meier (2010) found

when believers and nonbelievers were primed with God-related primes, they persisted

more on an unsolvable anagram task and experienced more anxiety. No differences were

found based on religious affiliation (believer vs. nonbeliever). These two sets of

experiments used the same priming task, so the differences must lie in the physiology and

self-report measures used to assess anxiousness. Future research is needed to clarify this

relationship between religious concept activation and anxiousness.

　　　　Despite these experiments examining how priming religion might influence

various types of religious individuals, many priming religion studies have looked at how

priming religion affects a variety of outcome attitudes and behaviors despite individual differences in religious beliefs or orientations. Although this allows for more generalizable effects, these methodologies often lack mechanistic explanations of why priming religion causes such a variety of effects. Nevertheless, priming religion does affect both religious and non-religious individuals, and it is linked with a variety of positive and negative outcomes.

Priming religion and positive outcomes. Measures of religiosity have been associated with positive outcomes, but the question has remained as to whether religion can actually increase prosociality. Priming methodologies allow researchers to examine this question with more causal certainty by determining if activating mental representations of religion increases prosocial behavior. Priming religion has been demonstrated to lead to increases in prosocial behavior. Pichon et al. (2007) examined the effects of priming positive religious words (e.g., "heaven"), neutral religious words (e.g., "steeple"), positive non-religious words (e.g., "freedom"), and neutral non-religious words (e.g., "cloud"). Individuals were primed subliminally using the LDT task previously described. After being primed, individuals were given an opportunity to take as many pamphlets as they liked for an organization that helps feed impoverished people. They were informed they could take them and distribute them to others in order to spread the objectives of the organization. Individuals primed with religious words took more pamphlets than those primed with neutral words. Furthermore, individuals primed with positive religious words took more pamphlets than those primed with neutral religious words or positive non-religious words. Activations of religious, and especially positive religious, mental representations increased helping for an organization feeding the poor.

Shariff and Norenzayan (2007) also examined the effects of priming religion or "God concept" on prosocial behavior using an economic game. Shariff and Norenzayan primed individuals supraliminally with religious words (e.g. God, prophet) using the SST described earlier (adapted from Srull & Wyer, 1979). After priming, individuals were given a chance to distribute 10 one dollar coins between themselves and an anonymous other in a one-shot dictator economic game (adapted from Hoffman, McCabe, Shachat, & Smith, 1994). All individuals were told they had randomly been selected as the giver, and they could keep as many or as few of the coins as the liked. The leftovers would be given to the "randomly chosen" other, and their decision would be fully confidential and only the other participant would know how much money they left. Individuals primed with religious words gave significantly more money to the anonymous other than those primed with neutral words. This effect was present among both theists and atheists, although there was a larger effect size among atheists. Moreover, priming religion had the same effect on increasing prosocial behavior as priming secular moral institutions (Shariff & Norenzayan, 2007).

Although priming religion's influence on helping behaviors is of great interest, researchers have examined its influence on other prosocial behaviors as well. Randolph-Seng and Nielsen (2007) examined the effect of priming religion on honesty. They used both supraliminal priming (*Study 1*) using the SST (Srull & Wyer, 1979) and subliminal priming (*Study 2*) to prime religion. To subliminally prime, they used a parafoveal "vigilance task" (adapted from Devine, 1989) instead of the LDT. In this "vigilance task," religious stimuli were presented for 80 ms in the visual periphery in order to prime religion. To measure cheating, a circle test was utilized (based on Hartshorne & May,

1928). This measure was adapted from Leming (1980) and Bruggeman and Hart (1996). The circle test requires participants to write specific numbers inside of small circles with their eyes closed, alone in a room, unobserved by others. Motivation to cheat is induced by placing unrealistic expectations on individuals and providing extra credit for good performance. Individuals primed with religion cheated less than those primed with neutral or sports-related words. This effect occurred among both intrinsically religious and non-religious individuals.

Priming religion has been shown to increase other positive behaviors. Individuals primed with religion have working harder by solving more anagrams (Uhlmann, Poehlman, & Bargh, 2008), showed increases in-group cooperation (Preston & Ritter, 2012), and favored more "virtuous" choices (only for those who held a positive image of God; Newton & McIntosh, 2009).

Each of these studies demonstrates priming religion has the ability to increase stereotypical positive religious behaviors among religious individuals and non-religious individuals. These effects allow for some causality to be determined about the connection between religiosity and prosocial behaviors. Despite these positive effects of priming religion on behavior, the priming religion literature demonstrates priming religion has also been linked to negative outcomes.

Priming religion and negative outcomes. Given religion's link to terroristic acts and violent aggression toward others (cf. Hood, Hill, & Williamson, 2005), most of the negative outcomes associated with priming religion are linked to these more antisocial behaviors. Perhaps one of the most groundbreaking findings was individuals who read a violent passage said to come from the Bible aggressed more toward a loser in a mock

game than individuals who were told the passage (mob rape and resulting retaliatory tribal warfare) had come from an ancient scroll (Bushman, Ridge, Das, Key, & Busath, 2007). In the religious condition, there was an additional verse stating God commanded the violent retaliation, whereas the scroll condition lacked any equivalent control condition containing a more neutral or secular "authority." This makes it difficult to determine if it was the religiousness of the passage or the authoritativeness of the passage leading to increases in aggression. Additionally, religion was not primed in the strict sense where automaticity and lack of conscious awareness are required (Bargh, 1994). Despite these methodological issues, this study does indicate religiosity could have an effect on submission to authority since individuals were more likely to act in line with the passage if they believed it had come from the Bible, or a religious authority. Nevertheless, this question requires more rigorous experimental testing.

This hypothesis was tested more rigorously through a series of studies examining if activating religious concepts through priming would increase submission to an authority requiring one to aggress toward another individual (Saroglou, Corneille, & Van Cappellen, 2009). Once again, individuals were subliminally primed using the LDT from Pichon et al. (2007). Before being primed, however, individuals were given a negative review of an essay they had written from a fictitious other participant. After being primed, participants were given an opportunity to aggress toward the individuals by choosing difficult trivia questions for them to answer. In the submission condition, the experimenter (authority) encouraged participants to choose the most difficult questions because the review was so harsh. Those primed with religious concepts did show higher levels of submission to authority by choosing harder questions for the other participant

when prompted to by the experimenter. Additionally, individuals primed with religion

self-reported more submissive attitudes. Priming religious concepts increased submission

to an authority, even if the authority was not a religious authority. Consistent with

Bushman et al.'s (2007) finding, priming religion increased submission to an authority

requiring aggression toward another.

These findings tie in strongly with religion's frequent use of warfare language

(Larsson, 2004). Often, religious language is used to support war against value-violating

others such as the "war against evil" language used by terrorists and the "war against

terrorism" language used by Americans. Would priming religion increase support for

more ecologically valid measures of aggression, such as terrorism? Ginges et al. (2009)

examined this question by using supraliminal primes of religion to examine how

activation of religious concepts influenced attitudes toward terrorism among Israeli Jews

living in the West Bank and Gaza. Individuals were primed with religion by being asked

about one of these questions: synagogue attendance, frequency of prayer, or no question

(control condition). Following the religious prime, individuals were asked to what degree

they viewed a recent Jewish terrorist attack as heroic. Individuals primed with, or asked

about, religious attendance viewed the act as significantly more heroic than those primed

with frequency of prayer or no prime. Once again, this priming method does not

necessarily meet the standards of automatic primes as defined by Bargh (1994).

Nevertheless, it does demonstrate making religious attendance (but not prayer) salient

increases support for terrorism.

Although priming religious concepts has led to increases in negative outcomes,

sometimes religious primes actually decrease the effects of negative attitudes. For

instance, reading benevolent Islamic values decreased the amount of anti-Western sentiment felt among Iranian college students in a mortality salience condition (Rothschild et al., 2009). Previously, these students had expressed more anti-Western sentiment than those in a dental pain salience condition. Additionally, as noted earlier, Americans primed with Biblical compassion (e.g., love your neighbor as yourself) in a mortality salience condition expressed less support for extreme military action against an out-group, but this effect only existed among those high in RF (Rothschild et al., 2009).

Altruistic punishment, behavior in which individuals punish non-cooperators even at a cost to themselves, has also been examined within the context of priming religion. Religious individuals subliminally primed with religious concepts displayed significantly higher levels of altruistic punishment toward in-group defectors (McKay, Efferson, & Fehr, 2009). This could be a form of protecting the in-group because altruistic punishment has been suggested to be a mechanism of cooperation among groups (Bernhard, Fehr, & Fishbaucher, 2006; Fehr & Gächter, 2002). Thus, it is difficult to determine if this is a positive or negative outcome.

Priming and Intergroup Bias

Nonconscious influences of priming have allowed experimenters to make causal inferences about the role religious concept activation plays in influencing individuals' attitudes and behaviors. From this, it is apparent the dual role of religion as being associated with both positive and negative outcomes replicates when religion is experimentally manipulated through priming. Given their ability to test causal relationships between religiosity and various outcomes, priming methodologies may also

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be able to help provide more rigorous testing of the intergroup bias theory—that religiosity is related to both tolerance and prejudice.

That priming could activate stereotypes and attitudes related to social identity is not a new concept. Black stereotypes have been primed (e.g., Negroes, poor, lazy) and shown to lead to evaluating race-unspecified others as more hostile, a trait stereotype associated with African Americans (Devine, 1989, *Study 2*). Just as stereotypes and social identities are activated when priming race, they may also be primed when priming religion. Both race and religion are forms of social identity and as such can influence social attitudes and behaviors.

Priming religion and intergroup bias. Intergroup bias may play a role in the concept activation of religion. Namely, priming religion may increase identification of religious in-groups resulting in increases of in-group favoritism and out-group derogation. Current studies indicate this may be the case. For instance, individuals primed subliminally with Christian religious concepts using a LDT task had significantly higher levels of racial prejudice than individuals primed with neutral concepts on two measures: 1) subtle racism (as measured by the Racial Argument Scale; Saucier & Miller, 2003), and 2) general negative affect toward African Americans (items taken from Cottrell & Neuberg, 2005) (see Johnson et al., 2011). These effects remained even when controlling for pre-existing levels of religiousness and spirituality. Similarly, individuals primed subliminally with Christian religious concepts had significantly more negative attitudes toward atheists and Muslims relative to Christians and gay men relative to heterosexual men than those primed with neutral concepts (Johnson et al., in press).

These effects existed when controlling for pre-existing attitudes toward these religious and social groups.

These effects replicate when using different priming methodologies and less religious samples. For instance, Northern European individuals standing in front of a church reported significantly more negative attitudes toward a variety of groups (e.g., foreigners, gay men, Muslims) than individuals standing in front of a neutral city building (LaBouff, Rowatt, Johnson, & Finkle, in press). Only attitudes toward Christians, the presumed in-group, showed no between group differences. This effect existed for both religious and non-religious individuals.

Given these findings, more researchers are starting to examine the role group identification may play in influencing not only attitudes toward others but behaviors toward others. For instance, priming with religion led to increases in cooperation, but only among in-group members (Caucasians), not out-group members (Indians; Preston & Ritter, 2012). The importance of the role that group identification may play is especially apparent when reconsidering the effects of priming religion on giving money to an anonymous other (Shariff & Norenzayan, 2007). When a group identity of Muslim or Christian was given to the anonymous "other," individuals primed with religion gave more money to in-group members (Christians) than to out-group members (Muslims; Shariff, 2009). Because all individuals were primed with religion, however, this study did not allow for the chance to test a potential prime X group interaction effect.

Priming and intergroup bias among other groups. Increases in favorable attitudes and behaviors toward in-group members but not out-group members fit in line with the intergroup bias seen when priming other social identities. For instance, when primed

with Black and White faces, White students had a faster response time on positive

adjectives (e.g., attractive, likeable, wonderful) when they were preceded by a White face

but faster latency on negative adjectives (e.g., annoying disgusting, offensive) when they

were preceded by a Black face (Fazio, Jackson, Dunton, & Williams, 1995, *Study 1*).

The exact opposite pattern was found among Black participants. Thus, priming race

appeared to increase response time for valence judgments in favor of one's in-group and

derogating toward one's out-group. Effects of social identity occur even if the individual

does not identify with social identity. For instance, individuals had less prejudiced scores

on the modern racism scale (MRS; McConahay, 1986) when it was administered by a

Black participant than when it was administered by a White participant (Fazio et al.,

1995, *Study 3*). Much like priming race activated social identity, priming religion may

also serve to activate a mental representation of a social identity.

The Present Experiments

From this review, it is apparent the psychology of religion is a broad area of

study. The multitude of factors involved in clarifying the paradoxical religiosity-

prejudice relationship makes finding a mechanistic explanation difficult. However, a

number of researchers have begun to clarify this relationship through the combined use of

correlational techniques, mediational analysis, and priming methodologies. Based on

past findings, it appears priming religion may activate social identity which in turn

increases intergroup bias. This has not yet been formally tested over a series of

experiments.

The goal of the present experiments is to examine if priming Christian religious

concepts increases religious social identity, resulting in increases in intergroup bias. As

noted, intergroup bias consists of two components: *in-group favoritism* and *out-group derogation* (Hewstone et al., 2002; Mullen et al., 1992). The present experiments will test both components of this theory. Specifically, Experiment 1 will examine if priming religion directly increases in-group bias by increasing prosocial behaviors toward in-group members (Christians) and indirectly increases out-group derogation by decreasing prosocial behaviors toward out-group members (Muslims, atheists). Experiment 2 will examine if priming religion increases out-group derogation by increasing aggression toward out-group members (Muslims, atheists) but not in-group members (Christians). Although Christian religion may activate a number of social identities including race (Hall et al., 2010), these experiments will examine only religious in-groups and out-groups. This is the strictest test of the intergroup bias theory for religion.

Because priming religion has been shown to interact with pre-existing religious beliefs and orientations (e.g., intrinsic religiosity, RF), these experiments will also examine the role RF and RWA may play in moderating the effects of the primes on intergroup behaviors. RF and RWA consistently emerged as the strongest predictors of prejudice toward African Americans (Hall et al., 2010) and gay men and lesbian women (Whitley, 2009) and have been shown to mediate the relationship between religiosity and prejudice toward lesbians and gay men and African Americans (Johnson et al., 2011) and Arabs and atheists (Johnson, Rowatt, & LaBouff, 2012). Thus, their role in moderating the effects of priming religion on attitudes and behaviors toward in-group and out-group members must be examined.

CHAPTER TWO

Experiment One

Introduction

In Experiment 1, the effects of priming religion and religious group membership (Christian, Muslim, atheist) on distribution of resources was examined through a dictator economic game (Hoffman et al., 1994). Although priming religion has been shown to increase prosociality in a resource distribution game (Shariff & Norenzayan, 2007), previous research has not examined the potential interaction effects between priming religiosity (vs. control) and the target's group membership. Group membership may play an important role in the effects of priming religious concepts on prosocial behavior. Testing this assumption was the primary goal of Experiment 1.

Experiment 1 was a 2 (prime: religious, control) X 3 (group: Christian, Muslim, atheist) between-subjects design. In Experiment 1, participants were asked to complete testing in two sessions. The first session was an online pre-experimental survey completed through Qualtrics[1], an online survey software tool, at least 24 hours prior to arriving in the lab. This self-report questionnaire included questions about demographics, religiosity, personality, and attitude measures. The second session was completed in the lab. The first part of this session consisted of an experimental priming manipulation in which a Lexical Decision Task (LDT) was used to prime religious or control words. Following the prime, individuals participated in a single-shot, anonymous version of the dictator game (Hoffman et al., 1994; cf. Shariff & Norenzayan, 2007)

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[1] See http://www.qualtrics.com for software details.

against a confederate belonging to a specific religious group (i.e., Christian, Muslim, or atheist). The group to which the confederate belonged was the second experimental manipulation (group condition). The combined testing sessions took approximately one hour. The following predictions were examined in Experiment 1 to test the overarching hypothesis that priming religion would increase intergroup bias. Specifically, one component of this intergroup bias theory was examined, namely that priming religion would increase in-group favoritism:

- A main effect of group membership was predicted, such that Christians (in-group members) would be helped more or given more resources than Muslims or atheists (out-group members).

- A priming (religion vs. control) by group membership (Christian, Muslim, atheist) interaction effect was predicted, such that priming religion would increase the amount of money given to in-group members (Christians) but not the amount of money given to out-group members (Muslims, atheists).

Methods

Participants and Recruitment

Participants were recruited at a conservative Baptist university, Baylor University, through the university's online recruitment tool, SONA Systems.[2] Participants received one hour's worth of course credit in exchange for their participation. Individiuals were instructed to first complete an online survey through the Qualtrics survey administration tool. This online survey contained a battery of personality and religiosity tests. Upon completing the survey, individuals were then scheduled for an in-lab testing session in

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[2] See http://www.sona-systems.com for software details.

which they were assigned to one of the six possible condition combinations (priming X group). During the online survey, individuals were asked to give the last five digits of their student ID numbers. Individuals were asked for these same five digits at the in-person session. These unique codes were utilized to merge the online data with participants' in-lab data. All individuals were filtered from analyses who indicated awareness of the prime words, suspicion about the fictional participant, or who were an outlier ($M \pm 2.5$ SD; cf. Kirk, 2008 for exclusion criteria) on the dependent variable (amount of raffle tickets given).[3] In total, one hundred eighty-two participants were included in final analyses ($n = 138$ females; M age $= 18.84$ yrs., $SD = 1.12$). Participants' ethnicity was composed of the following: 53.3% White, 12.1% African-American/Black, 10.4% Hispanic, 8.8% Asian/Pacific Islander, 2.2% "other" race, 0.5% Native American, and 12.6% unspecified. The sample was predominantly Protestant (35.7%) and Catholic (18.7%), with a minority of participants reporting other religious affiliations (25.8% "other" religion, 3.3% no religion, 1.6% Muslim, 1.1% Hindu, and 13.7% unspecified).

Materials and Procedure

    Online survey. An online survey using Qualtrics was given and included items about demographics, religiosity, personality, and attitudinal measures (see Appendix for copy of survey). The pre-experimental survey was completed by participants a minimum of 24 hours before participation in the lab portion of the experiment to prevent any priming effects from filling out the survey.

- *Demographics.* Participants were asked about the following demographics: age,
  gender, race/ethnicity, religious affiliation, socioeconomic status (SES), political

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[3] Participants were filtered as follows: suspicious ($n = 37$), aware ($n = 20$), and outliers ($n = 13$, giving 10 tickets).

affiliation/ideology, and sexual orientation. A series of questions were also asked about completion of the survey, including where the survey was completed, how many other people were present, and what tasks the participant was engaged in while completing the survey. These questions were included to measure level of distraction while filling out the survey and appeared at the end of the survey.

- *Single-item religiosity/spirituality measures.* General single-item measures of religiosity (i.e., "To what extent do you consider yourself a *religious* person?;" 1 = not at all, 7 = very much) and spirituality (i.e., "To what extent do you consider yourself a *spiritual* person?;" 1 = not at all, 7 = very much) were included (cf. Johnson et al., in press). A single-item belief in God (BIG) question was also included (i.e., "Do you believe in God?;" 1 = yes, 2 = no, 3 = uncertain). Finally, a single-item measure of degree of interest in religion was included (i.e., "How interested are you in religion?"; 1 = not at all interested, 9 = extremely interested). These single-item measures of religiosity/spirituality were used to control for pre-existing levels of religiosity and spirituality.

- *Revised Religious Fundamentalism Scale.* (RF; Altemeyer & Hunsberger, 2004). The *12-item Revised Religious Fundamentalism Scale* evaluates religious fundamentalism, a belief that there is one, inerrant set of teachings about the deity and humanity (Altemeyer & Hunsberger, 1992). Items are scored on a 9-point scale (1 = very strongly disagree, 9 = very strongly agree; e.g. "God has given humanity a complete, unfailing guide to happiness and salvation, which must be totally followed"). A total RF score is attained by scoring the reverse-keyed items and summing them with all other items such that with the sum obtained, higher values

indicate higher levels of RF. Cronbach's α reliability coefficients for the RF Scale range from .91 to .92 (Altemeyer & Hunsberger, 2004).

- *Right-Wing Authoritarianism.* (RWA; Mavor et al., 2009; Smith & Winter, 2002). RWA is a rigid set of beliefs comprised of three subcomponents (as indicated by exploratory and confirmatory factor analyses; cf. Mavor et al., 2010): 1) authoritarian aggression – promoting punitive behaviors toward evildoers, 2) authoritarian submission – belief that all legitimate authorities should be obeyed, and 3) conventionalism – a belief similar to religious fundamentalism that there is a certain, inerrant set of values and morals that society must uphold (Altemeyer & Hunsberger, 1992; Mavor et al., 2009; Mavor et al., 2010).

    Three items measured authoritarian aggression (e.g., "What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path"), three items measured authoritarian submission (e.g., "What our country needs most is discipline, with everyone following our leader in unity"), and four items measured authoritarian conventionalism (e.g., "Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else" – reverse scored; 1 = strongly disagree, 7 = strongly agree). To score the RWA measure, all reverse-keyed items were reverse scored. A score for each component of RWA (aggression, submission, conventionalism) was attained by summing together the items pertaining to each subscale of RWA. Additionally, an overall RWA score was created by aggregating all items from the scale. Higher values indicate higher levels of RWA. The overall RWA scale shows good, internal consistency (Cronbach's α) of .87 in past research (Mavor et al.,

2009). The reliability coefficient (Cronbach's α) published for the RWA

conventionalism subscale was .83, showing good internal consistency. Reliability

coefficients for the RWA aggression (α = .69) and RWA submission (α = .65)

subscales do not have as good of internal consistency, but they still show acceptable

levels (Mavor et al., 2009).

- *Social Dominance Orientation.* (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994).

  SDO is a 14-item measure that assesses the degree to which an individual prefers

  inequality among social groups. Items are scored on a 7-point response scale

  indicating the degree to which individuals feel negative or positive toward certain

  statements pertaining to equality among social groups (1 = very negative, 7 = very

  positive; e.g. "Some people are just more deserving than others.") After reverse-

  coding the appropriate items, all items were summed to obtain an aggregate measure

  of SDO. Higher values indicate higher levels of SDO. The reliability coefficients

  published for SDO (Cronbach's α) range from .81 to .89 across 13 samples (Pratto et

  al., 1994).

- *Balanced Inventory of Desirable Responding – Impression Management Scale.*

  (BIDR-IMS; Paulhus & Reid, 1991). The impression management subscale of the

  Balanced Inventory of Desirable Responding (BIDR-IMS; Paulhus & Reid, 1991)

  examines the degree to which participants engage in impression management (e.g., "I

  never cover up my mistakes"). This scale uses a 7-point rating scale (1=not true,

  7=very true). To score the BIDR-IM, individuals receive one-point for each 6 or 7

  response and zero points for each response ≤ 5. Higher values indicate higher levels

  of impression management. Published reliability coefficient estimates (Cronbach's α)

range from .64 (Paulhus & Reid, 1991) to .70 (LaBouff, Rowatt, Johnson, Thedford, & Tsang, 2010).

- *Attitudes toward social groups.* (Johnson et al., in press). A series of thermometer items were administered to assess feelings toward various religious, ethnic, racial, and social groups. Individuals were asked to what degree they feel cold or warm toward certain groups (i.e., 0 = cold, 10 = warm). Groups included were: Whites, Blacks and African-Americans, young people, old people, rich people, poor people, Asian-Americans, European-Americans, Arab-Americans, Foreigners, Canadians, Americans, Christians, Muslims, atheists, agnostics, Jews, gay men, lesbian women, heterosexual men, and heterosexual women. These attitudes were measured to control for pre-existing attitudes toward the religious and racial groups examined in the experimental portion of this study.

- *Post-Critical Beliefs Scale (PCBS).* Post-critical beliefs were measured with an 18-item short form of the *Post-Critical Beliefs Scale* (PCBS; Duriez, Soenens, & Hutsebaut, 2005), which was adapted from the 33-item PCBS (Fontaine, Duriez, Luyten, & Hutsebaut, 2003). This scale was composed of four subscales: 1) orthodoxy, 2) second naiveté, 3) external critique, and 4) relativism. Participants were asked to rate to what degree they agreed with or opposed each statement given (1 = completely opposed, 4 = neutral, 7 = completely in agreement). Five items measured orthodoxy (e.g., "Only the major religious traditions guarantee admittance to God"), four items measured second naiveté (e.g., "The Bible is a rough guide in the search for God, and not a historical account"), five items measured external critique (e.g., "Science has made a religious understanding of life superfluous"), and four

items measured relativism (e.g., "My ideology is only one possibility among so many others"). Subscales were scored according to Fontaine et al. (2003) in order to get measures of inclusion and symbolic. To obtain a measure of inclusion, the orthodoxy and second naivéte subscales were added, and the external critique and relativism subscales were subtracted out. To obtain a measure of symbolic, the relativism and second naivéte subscales were added and the orthodoxy and external critique scales were subtracted out. This created two dimensions: inclusion and symbolic.

- *Big Five Personality Inventory.* To measure the Big Five personality traits, John and Srivastava's (1999) 44-item personality inventory was utilized. Individuals were asked about the degree to which they agree or disagree with statements about themselves ("I see myself as someone who…") based on characteristics representing the Big Five Personality traits (e.g., "is talkative"; "is reserved," "is original, comes up with new ideas"; 1 = disagree strongly; 7 = agree strongly). These items made up five personality dimensions: Extraversion, Conscientiousness, Agreeableness, Neuroticism, and Openness to Experiences.

- *Need for Cognition.* Need for cognition, the degree to which individuals like cognitive complexity and engaging in problem solving, was measured using Cacioppo, Petty, and Kao's (1984) 18-item *Need for Cognition Scale.* Individuals were asked to what degree certain statements (e.g., "I like to have the responsibility of handling a situation that requires a lot of thinking") are characteristic of them (1 = extremely uncharacteristic; 5 = extremely characteristic). Higher values indicate a higher need for cognition.

Priming procedure. A minimum of 24 hours after completing the online survey, participants arrived for their scheduled experiment in the lab in order to complete Experiment 1. Prior to their arrival in the lab, all participants were randomly assigned to a group within the 2 (priming: religious vs. control) X 3 (group: Christian, Muslim, atheist) between-subjects design.[4] Upon their arrival at the lab, participants were told they would be completing two separate experiments: 1) a word task and 2) a resource distribution task.

Each participant was situated alone in a private lab room behind closed doors with a desk and a personal computer. Participants first completed a LDT designed to subliminally prime religious ($n = 89$) or neutral concepts ($n = 93$). The LDT was run using Inquisit (version 3.0.3) software.[5] In the LDT, each participant was instructed that a string of letters would appear on the screen, that he or she needed to decide if the letter string was a word (e.g. shirt, butter, switch) or a non-word (e.g., tureb, gribe, bift), and to press a "word" key ("A") or a "non-word" key ("5") to indicate his or her lexical decision (see Wittenbrink, Judd, & Park, 1997).

During this LDT, half of the participants were subliminally primed with religious words and the other half with control words. Participants completed five blocks with 16 trials each (i.e., 80 trials). In each LDT trial, participants focused on a fixation point (+) for 1 s, followed by a pre-mask (XXXXXXXXX) for 70 ms, a prime word for 35 ms, and a post-mask (XXXXXXXXX) for another 70 ms (see Dijksterhuis et al., 2008).

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[4] Please note research assistants were not blind to conditions (in order to assign individuals to correct condition), which may have caused experimenter effects according to Doyen, Klein, Pichon, and Cleeremans (2012). However, because experimenters were not informed of hypotheses prior to data collection, experimenter effects should be greatly reduced or non-existent as Doyen et al. (2012) demonstrated that experimenter effects from priming only occurred if experimenters were led to believe a certain outcome would occur.

[5] See http://www.millisecond.com for software details.

Immediately after the masks and prime, persons focused on a blank screen for 395 ms at which point a letter string appeared on the screen. They were instructed to choose if this string of letters was a word or non-word. The following words were used to prime religion: Bible, faith, Christ, church, gospel, heaven, Jesus, Messiah, prayer, and sermon (Wenger, 2003). Neutral words were used as both neutral primes and as words for the "word" letter string (e.g., shirt, butter, switch, hammer; see Pichon et al., 2007).

Behavioral economic game. After being primed, individuals engaged in a one-shot version of the dictator game (Hoffman et al., 1994; Shariff & Norenzayan, 2007). In the dictator game, participants are told some individuals are chosen as the giver (to give resources) and some are chosen as the receiver (to receive resources distributed by the giver). All participants were told they were randomly chosen as the giver and must choose how many raffle tickets to keep for themselves and how many they wanted to give to the receiver. Participants were informed this task was a one shot game (i.e., there would be only one round of distributions). In Shariff and Norenzayan (2007), individuals were given 10 one dollar coins to split between themselves and the receiver. In this experiment, participants were given 10 raffle tickets to split between themselves and the receiver. Each raffle ticket entered participants into a contest to win a $50 gift card of their choice. Participants were given the following instructions (adapted from Shariff & Norenzayan, 2007):

> You have been randomly chosen as the **giver** in this economic decision making task. You will be given 10 raffle tickets to distribute between yourself and the receiver. Each raffle ticket is good for one chance at winning a **$50.00 gift card** from the store of the winner's choice. Only participants in this study are eligible for these raffles, so anyone who ends up with a number of tickets has a good chance of winning a gift card. Obviously, the more tickets you have at the end, the better your chance of winning. Your role is to take **and keep** as many of these raffle tickets as you would like, knowing that however many you leave, if any, will be given to the receiver participant to keep.

Raffle tickets were used instead of actual cash because they have been effectively used in economic games in past experiments (cf. Batson, Ahmad, et al., 1999; Tsang, 2007).

Participants were then told the receiver was instructed to fill out a brief biographical sketch about him or herself, which they would get to read as the distributors. The experimenter then gave the participant a form filled out by hand by the fake participant (whom the participants were led to believe is real). This "biographical sketch" contained general information about the fake participant (see Appendix for copy of the biographical sketch). Across all religious groups, age, classification, and race were held constant. All individuals were told the fake participant was 19 years old, a freshman, and White. To reduce the effects of cross-gender self-presentation (Jones & Pittman, 1982), the sketch was matched to participant by gender. Additionally, all biographical sketches had a "What are some of your favorite hobbies?" section filled out as: "reading, playing sports, watching movies, hanging out with friends." The only differences between the three group conditions (Christian, Muslim, atheist) were sections indicating the religious affiliation of the fake participant.

In the *Christian* condition, the religious affiliation circled was "Christian" and the fake participant rated religion as "7 – Extremely important." The "something unique about you" section was filled out as follows: "I am starting a campus group for other Christians like me where we can discuss our religious beliefs and how they relate to our everyday lives." In the *Muslim* condition, the religious affiliation circled was "Muslim" and the fake participant rated religion as "7 – Extremely important." The "something unique about you" section was filled out as follows: "I am starting a campus group for

other Muslims like me where we can discuss our religious beliefs and how they relate to our everyday lives." Finally, in the *atheist* condition, the religious affiliation circled was "Atheist" and the fake participant rated religion as "1 – Extremely unimportant." The "something unique about you" section was filled out as follows: "I am starting a campus group for other atheists like me where we can discuss our atheist beliefs and how they relate to our everyday lives."

After reading the form, the participants were given the raffle tickets and two envelopes: 1) one to put their raffle tickets in marked "Distributor's raffles" and 2) one to put the receiver's tickets in marked "Receiver's raffles." To reduce social pressure, participants were assured only the other participant would know about their distribution decision and their identity would be hidden from that participant. As noted, envelopes to place the raffle tickets in were given to ensure this confidentiality. Additionally, participants were told to put their names on the raffle tickets they placed in the envelope for themselves so that they could be entered into the raffle ticket drawing. Participants were informed receivers would put their own names on their tickets when they received the envelope with their raffle tickets.

Emotion ratings, manipulation check, and motivations for distribution. In order to determine if the resource distribution was connected to emotions felt toward the target, a series of emotion items were asked at the end of the experiment after the resource distribution. All emotion rating items were taken from Tsang (2007), Batson (1991), and Cottrell and Neuberg (2005). Participants were asked to rate to what extent they felt certain emotions toward the receiver on a 9-point scale (1 = feel very little of this emotion toward the other, 9 = feel an extreme amount toward the other). Emotions assessed were:

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pleased, softhearted, tender, happy, resentful, mad, annoyed, warm, hurt, moved,

obligated, empathic, compassionate, upset, sympathetic, angry, morally disgusted,

frightened, physically disgusted, negative, grossed out, positive, morally sickened, afraid,

physically sickened. They were also asked the following questions on a 7-point response

scale (1 = not at all, 7 = extremely): "How likeable do you think this person is?", "Under

normal conditions, how enjoyable do you think it would be to work with this person?",

"How similar to your own values do you think this person is?", "How similar are your

own activities compared to this person?", and "How likely is it that you have had the

same feelings as this person?" Finally, as a manipulation check for the group condition,

individuals were asked the following questions: "Did this person discuss any aspects of

religiousness/spirituality?" (yes, no) and "If so, what would you guess this person's

religion to be?" (Christian, Jewish, Muslim, Buddhist, Hindu, no religion – atheist, no

religion – agnostic, "other" religion).

Next, participants were asked about their motivations to distribute the money how

they did. Distribution items were taken from Tsang (2007). A few additional items were

adapted from Tsang (2007). Individuals were asked to rate on a 7-point scale (1 = not at

all, 7 = totally) to what degree they based their distribution decisions on certain things:

getting money, being fair, helping the other participant, establishing justice, acting

morally, teaching a lesson, dislike of the other participant, liking of the other participant,

and conflicting values between you and the participant. See Appendix for a copy of the

post-prime survey.

Awareness check and debriefing. After participants completed the dictator game,

they were fully debriefed to check for awareness of the prime words and to reveal the true

purpose of the study. To check for awareness of the prime words, a funneled debriefing method was used (see Chartrand & Bargh, 1996). Although some limitations are inherent in this form of debriefing (see Pleyers, Corneille, Luminet, & Yzerbyt, 2007), it remains widely used and is one of the few methods available to check for awareness of subliminal prime words (for examples, see Chartrand, van Baaren, & Bargh, 2006; Kay, Wheeler, Bargh, & Ross, 2004). During debriefing, participants were asked what they thought of the two tasks, if they thought the tasks were related, and if they remembered any of the words in the computer task (LDT). As noted earlier, any participants indicating awareness of the prime words were filtered from analyses.

Participants were fully and carefully debriefed about the deception of the study, being told the recipient and notes were fictitious. Participants were informed why deception was used and then signed a confidentiality agreement in which they agreed not to tell others about the details or purpose of the experiment. Experimenters took care to ensure participants' self-esteem was not negatively affected.

Results

Consistent with previous research (Johnson et al., 2011), self-reported rigid ideologies (RF, RWA) were positively correlated with attitudes toward in-groups (Christians) and negatively correlated with attitudes toward value-violating out-groups (Muslims, atheists). Self-reported religiosity/spirituality items; however, were not associated with attitudes toward social groups. See Table 1 for descriptives and correlations between self-reported religiosity/spirituality, RF, RWA, and attitudes toward various social groups.

Table 1

Zero-Order Correlations between Religiosity/Spirituality, RF, RWA, and Attitudes towards Social Groups

Variable	1	2	3	4	5	6	7	8	9	10	11	M	SD	α
1. Religiosity†	--											4.69	1.57	--
2. Spirituality†	.42**	--										5.25	1.42	--
3. RF	.65**	.51**	--									5.71	1.57	.89
4. RWA aggression	.25**	.10	.33**	--								3.78	1.21	.70
5. RWA submission	.28**	.16	.39**	.48**	--							3.78	1.09	.51
6. RWA conventionalism	.42**	.45**	.71**	.25**	.32**	--						4.06	1.55	.84
7. Inclusion	.40**	.62**	.75**	.16	.15	.61**	--					2.85	2.56	--
8. Symbolic	-.13	-.01	-.33**	-.25**	-.28**	-.28**	-.11	--				2.77	1.83	--
9. Christians†	.35**	.27**	.41**	.20*	.20*	.24**	.40**	-.07	--			8.80	1.63	--
10. Muslims†	-.01	.11	-.05	-.08	-.10	-.16*	.06	.03	.26**	--		6.59	2.50	--
11. Atheists†	-.19*	.01	-.23**	-.22**	-.25**	-.28**	-.03	.03	.07	.65**	--	5.30	2.92	--

Note: All measures are from pre-experimental scores. RF = Religious Fundamentalism; RWA = Right Wing Authoritarianism; Christians/Muslims/Atheists = thermometer items. Inclusion and Symbolic scales do not have reliabilities because they are dimensions created from sub-scales. Sub-scale reliabilities for post-critical belief scale range from .53 to .80. †Single-item measure. * $p < .05$, ** $p < .01$

Resource Distribution

To examine the effects of priming religiosity and group membership on resource distributions, a two-way Analysis of Variance (ANOVA) was run on the number of raffle tickets given to the receiver. As predicted, there was a significant interaction between prime (religious, control) and group membership (Christian, Muslim, atheist), $F(2, 176) = 3.104$, $p = .047$, partial $\eta^2 = .03$ (See Figure 1). That is, when participants were primed with religious words (relative to control words), they gave less raffle tickets when led to believe the other participant was an atheist but more raffle tickets when led to believe the other participant was a Muslim. Participants gave a consistently high number of tickets to Christian participants, regardless of priming condition. There were no significant main effects of priming or group membership on number of raffles given to receiver.
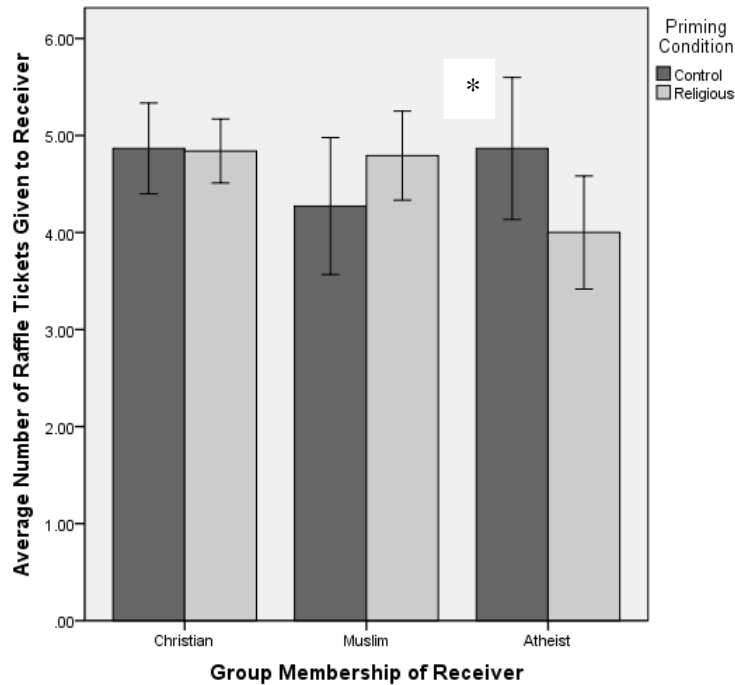
Figure 1. Mean number of raffle tickets given to the receiver by priming and group membership conditions. Note: *$p < .05$.

Follow-up analyses were run in order to examine these effects among only

Protestants and Catholics, for whom Christians are an in-group and Muslims and atheists

are value-violating out-groups. When examining only Protestants and Catholics, the

prime X group interaction effect was still significant with a larger effect size, $F(2, 93) =$

3.14, $p = .048$, partial $\eta^2 = .06$.

To examine if this effect was influenced by self-reported religiosity and

spirituality, an Analysis of Covariance (ANCOVA) was run examining the effects of

priming and group membership on raffles given to receiver, statistically controlling for

the single-item measures of religiosity and spirituality as covariates. When controlling

for religiosity and spirituality, the priming X group membership interaction effect was no

longer significant, $F(2, 147) = 1.522$, $p = .22$.

To examine if this effect was influenced by individuals' desirable responding, an

Analysis of Covariance (ANCOVA) was run examining the effects of priming and group

membership on raffles given to receiver, statistically controlling for pre-experimental

measures of impression management (as measured by the *Balanced Inventory of*

Desirable Responding; Paulhus & Reid, 1991). When controlling for impression

management, the priming X group membership interaction effect was no longer

significant, $F(2, 143) = 1.608$, $p = .20$.

Finally, an Analysis of Covariance (ANCOVA) was run examining the effects of

priming and group membership on raffles given to receiver, controlling for pre-existing

attitudes toward Christians, Muslims, and atheists. When controlling for attitudes toward

these various out-groups, the priming X group membership interaction effect was no

longer significant, $F(2, 149) = 2.03$, $p = .14$.

Emotion Items

As noted, individuals were asked about a variety of attitudes they felt toward the other participant with whom they shared resources. In order to examine the effects of priming, group membership, and the priming X group membership interaction on these various emotions, negative and positive emotion composites were created from emotion items. To categorize emotions, an exploratory factor analysis was run with two factors.[1] Two factors were found, with eigenvalues of 9.716 (negative emotions factor)[2] and 6.018 (positive emotions factor).[3] The negative emotions factor was composed of the following items: resentful, mad, annoyed, hurt, upset, angry, morally disgusted, negative, morally sick, frightened, physically disgusted, grossed out, afraid, and physically sick. The Cronbach's α for this composite was .94, indicating excellent internal consistency. The positive emotions factor was composed of the following items: pleased, softhearted, tender, happy, warm, moved, positive, obligated, empathy, compassion, and sympathy. The Cronbach's α for this composite was .94, indicating excellent internal consistency.

To determine the experimental effects of priming, group, and priming X group on these two emotion composites, Analyses of Variance (ANOVAs) were run. Group had a significant main effect on negative emotions felt toward the participant, $F(2, 174) =$

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[1] One limitation of the present factor analysis is that there were different priming and group manipulations. Because no "neutral" group condition existed, analyses were also run with only those in the neutral prime condition with a Christian other. Limits existed in this analysis as well due to the low sample size ($n = 32$). However, a similar factor structure existed to the one in the present sample, with positive and negative items loading together. The only items which did not load well on to either factor were "resentful" and "obligated." Future studies should focus on the factor structure of these items as felt toward a neutral other, in-group (Christian), and out-group members (atheist, Muslim) to examine if the factor structure changes depending on whether an in- or out-group member is being evaluated.

[2] Note that rotated factor loadings ranged from .629 (resentful) to .894 (angry).

[3] Note that rotated factor loadings ranged from .444 (obligated) to .718 (tender).

20.36, $p < .001$, partial $\eta^2 = .19$ (see Figure 2). Tukey post-hoc tests were run to examine which groups differed from one another. Results indicated individuals felt significantly more negative emotions toward atheists ($M = 2.34$, $SD = 1.48$) than toward Christians ($M = 1.20$, $SD = .59$) or Muslims ($M = 1.37$, $SD = .85$).
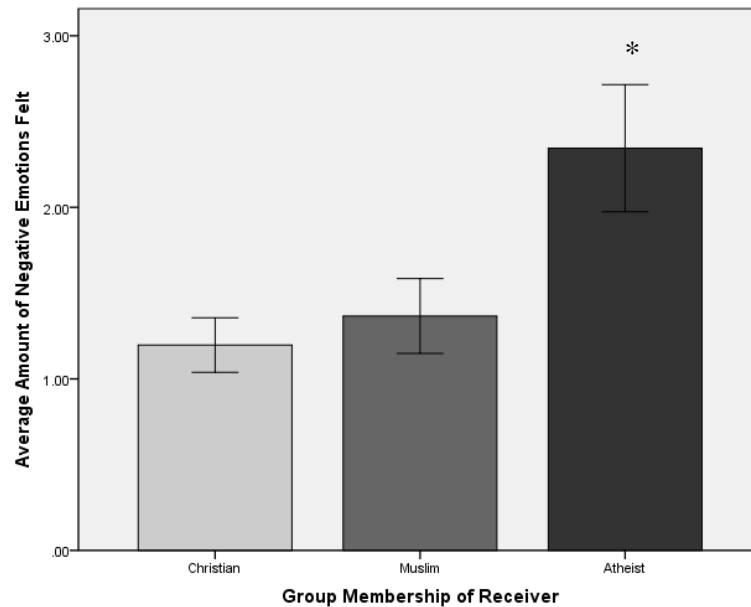
Figure 2. Average level of negative emotions felt toward Christians, Muslims, and atheists. Note: *$p < .05$.

Group had a significant main effect on positive emotions felt toward the participant, $F(2, 173) = 12.93$, $p < .001$, partial $\eta^2 = .13$ (see Figure 3). Tukey post-hoc tests were run to examine which groups differed from one another. Results indicated individuals felt significantly more positive emotions toward Christians ($M = 5.00$, $SD = 2.04$) and Muslims ($M = 4.26$, $SD = 1.95$) than toward atheists ($M = 3.23$, $SD = 1.54$). Results also trended in the direction of individuals feeling significantly more positive emotions toward Christians than Muslims ($p = .086$).
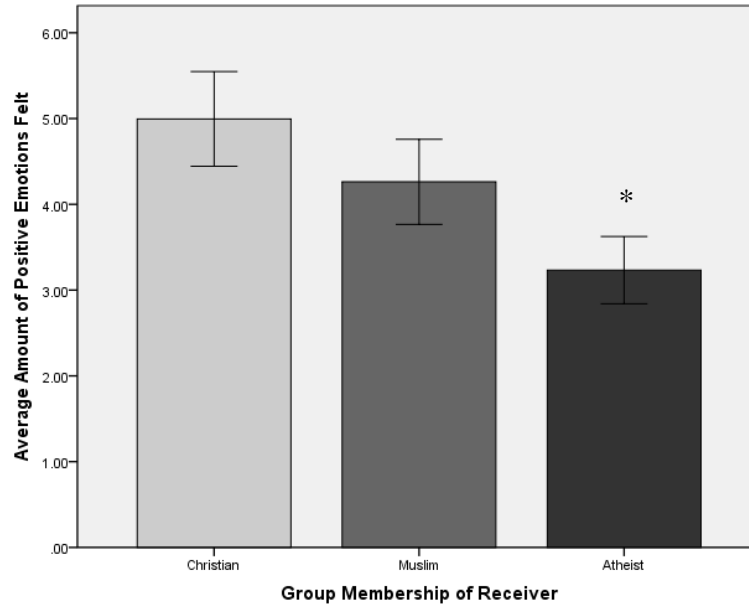
Figure 3. Average level of positive emotions felt toward Christians, Muslims, and atheists. Note: *p < .05.

Multivariate Analyses of Variance (MANOVAs) were also run to examine the effects of group membership, priming, and the priming X group membership interaction on specific emotions. Please see Table 2 for breakdown of these results.

Religious Fundamentalism and Right Wing Authoritarianism

In order to examine if RF or RWA interacted with the primes, regression analyses were run. In the first regression, RF was examined by entering the following variables into the regression equation as predictors of number of raffle tickets given to the receiver: RF, the effect of primes, the effect of group, all two-way interactions (prime X group, prime X RF, group X RF), and the three-way interaction (prime X group X RF). The overall model was non-significant [$F(7, 147) = .633$, n.s.], indicating RF did not interact with the primes.

In the second regression, RWA aggression was examined. RWA aggression was examined instead of the total composite of RWA due to the three-factor nature of RWA

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Table 2
Means, Standard Deviations and MANOVAs for Emotion Items

Group Variable	Christian		Muslim		Atheist		
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*
Pleased	5.35	2.64	4.38	2.37	2.97	2.12	14.91**
Softhearted	5.64	2.80	4.77	2.42	4.06	2.34	5.31**
Tender	5.02	2.68	3.98	2.11	3.37	2.16	7.22**
Happy	5.45	2.69	4.26	2.46	3.18	2.17	12.36**
Resentful	1.53	1.45	1.69	1.52	2.89	2.14	11.88**
Mad	1.20	.68	1.43	1.19	2.40	2.08	11.35**
Annoyed	1.38	1.25	1.51	1.26	2.94	2.53	13.62**
Warm	4.53	2.67	4.46	2.44	3.03	2.16	7.17**
Hurt	1.18	.77	1.27	.87	2.33	2.01	12.81**
Moved	4.16	2.86	3.77	2.74	2.31	1.91	8.92**
Obligated	4.73	2.79	3.98	2.42	3.55	2.50	3.15*
Empathetic	4.49	2.53	3.82	2.24	3.34	2.09	3.66*
Compassionate	5.33	2.50	4.65	2.57	3.91	2.32	4.53*
Upset	1.15	.59	1.39	1.21	2.75	2.26	18.26**
Sympathetic	4.05	2.64	4.02	2.36	3.23	2.19	2.16

Group Variable	Christian		Muslim		Atheist		
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*
Angry	1.15	.59	1.40	1.08	2.08	1.85	7.94*
Morally Disgusted	1.15	.62	1.60	1.45	3.16	2.66	19.94**
Frightened	1.18	.72	1.26	.81	1.68	1.37	4.20*
Physically disgusted	1.09	.55	1.15	.62	1.40	1.20	2.15
Negative	1.27	.76	1.76	1.60	3.63	2.81	24.07**
Grossed out	1.11	.57	1.13	.59	1.59	1.52	4.16*
Positive	6.20	2.50	4.86	2.69	3.22	2.32	21.11**
Morally sickened	1.11	.57	1.44	1.15	2.90	2.52	19.53**
Afraid	1.18	.72	1.29	.89	1.53	1.22	1.91
Physically sickened	1.09	.55	1.13	.53	1.44	1.19	3.16

Note: Mean differences collapsed across priming conditions because no significant effect of prime. Only significant main effects for groups existed. * = $p < .05$, ** = $p < .01$. Reported *F* values are for effect of group.

(cf. Mavor et al., 2009). Because RWA conventionalism is theoretically and statistically very similar to RF ($r = .71$ in present sample), this subcomponent was not examined. RWA submission has the weakest relationship of all the RWA subcomponents with both racial and value-violating prejudices (Johnson et al., 2011; Mavor et al., 2009); thus, the effects of RWA submission were not examined. RWA aggression, however, has been linked with prejudice (Johnson et al., 2011; Mavor et al., 2009) and was thus examined. In this second regression model, RWA aggression's potential interaction with the primes was examined by entering RWA aggression, the effect of primes, the effect of group, all two-way interactions (prime X group, prime X RWA, group X RWA), and the three-way interaction (prime X group X RWA) as predictors of the number of raffle tickets given to the receiver. The overall model was non-significant [$F(7, 150) = 1.337$, $p = .24$], indicating RWA aggression did not interact with the primes.

Discussion

In the present study, Christians were consistently given the most raffle tickets, regardless of the prime condition. Atheists were given significantly fewer raffle tickets when individuals were primed with religious words in comparison to control words whereas individuals gave Muslims significantly more raffle tickets when primed with religious words than control words. These results are consistent with past research demonstrating priming with religion increases negative attitudes toward atheists (Johnson et al., in press). The present study provides partial support for an intergroup bias (Hewstone et al., 2002) explanation of the relationship between religiosity and prejudice. As noted earlier, intergroup bias occurs through two forms: 1) *in-group favoritism* (Jackson & Hunsberger, 1999) and 2) *out-group derogation* (Harper, 2007). Religious

in-group favoritism occurs when religious individuals express more favorable attitudes and/or display favored behaviors (such as giving more raffle tickets) toward their own in-group. Religious out-group derogation occurs when religious individuals express more negative attitudes and/or display less generous behaviors (such as giving fewer raffle tickets) toward out-group members.

Because the religious words primed were words associated with Christianity, the resulting effects should be consistent with intergroup bias. Although this result may occur only for those individuals who self-identify as members of the in-group (Christians), previous priming studies have demonstrated priming effects can occur more broadly with members outside of the in-group displaying in-group behaviors. For instance, young people walked more slowly down a hall when primed with elderly concepts (Bargh et al., 1996). Thus, priming religiosity might lead to increases in attitudes and behaviors consistent with Christian in-group members, even if individuals lie outside of this religious group. The present experiment demonstrated the effects of priming religiosity occurred both when examining only Christians as well as when analyzing Christians and individuals of other religious affiliation combined. These results lend credence to the claim that priming effects occur more generally among individuals.

The results of the present study can be further illuminated by Preston, Ritter, and Hernandez's (2010) theory claiming that which outcomes priming religion promotes depends on the component of religion made salient – the *religious group component* or the *supernatural component*. Activating the *religious group component* should lead to increases in attitudes promoting protection of the in-group, such as in-group favoritism

(Jackson & Hunsberger, 1999) and out-group derogation (Johnson et al., 2010; Johnson et al., in press). Conversely, activating the *supernatural component* of religion should increase prosociality. Given that most of the prime words in the present experiment primed Christianity (bible, church, Christ, Jesus), it is likely the *group* component of religiosity was primed. This would explain the results seen, which are somewhat consistent with intergroup bias theory.

This theoretical framework and the present results fit in line with the broader literature on priming religiosity and helps explain the sometimes competing effects of priming religiosity. In some cases, priming religion has led to increases in positive attitudes and behaviors, such as prosociality (Pichon et al., 2007), generosity (Shariff & Norenzayan, 2007), cooperation (Preston & Ritter, 2012), honesty (Randolph-Seng & Nielsen, 2007), problem-solving effort (Uhlmann et al., 2008), decreased moral hypocrisy (Carpenter & Marshall, 2009), and decreased accessibility of sin-related words (Fishbach, Friedman, & Kruglanski, 2003). These links between religion and prosociality are likely due to the *supernatural component* of religion being activated (i.e., God is watching; cf. Shariff & Norenzayan, 2007). However, priming religious concepts has also increased negative attitudes and behaviors such as aggression when sanctioned by God (Bushman et al., 2007), submission to suggestions of revenge (Saroglou et al., 2009), support for terrorism (Ginges et al., 2009), racial bias against African Americans (Johnson et al., 2010), and negative attitudes toward value-violating out-group members such as atheists, Muslims, and gay men (Johnson et al., in press). The links between religiosity and negative behaviors toward others are likely due to the *group component* of religion being activated (Preston et al., 2010). When activating the group component of

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religion, individuals ought to act in accordance with intergroup bias such that they favor

or protect their in-group and derogate their out-groups (Preston et al., 2010). For

instance, individuals from an international European sample reported more negative

attitudes toward a multitude of out-groups but showed no difference in attitudes toward

Christians when primed with a religious context (in front of a church) than when primed

with a neutral context (a civic building; LaBouff et al., in press). Furthermore, priming

the word "religion" has led to increases in cooperation among in-group but not out-group

members in a prisoner's dilemma game (Preston & Ritter, 2012).

Generalizability of Effects

As noted, many of these priming effects have occurred regardless of whether

individuals were a part of the social category (theists) or not (atheists) (cf. Shariff &

Norenzayan, 2007). These priming effects also often occurred regardless of individuals'

pre-existing beliefs associated with the prime (i.e., pre-existing level of religiosity; cf.

Randolph-Seng & Nielsen, 2007). This finding is not unique to priming religious group

components. Priming social categories has been shown to lead to increases in behaviors

and attitudes associated with a number of categories, even if individuals did not belong to

the social category (cf. Bargh et al., 1996; Cesario, Plaks, & Higgins, 2006; Kawakami,

Dovidio, & Dijksterhuis, 2003). For instance, when primed with concepts related to

"professor," individuals performed better on general knowledge questions than when

primed with control words (Dijksterhuis & van Knippenberg, 1998). When subliminally

primed with African American faces (vs. Caucasian faces), individuals responded with

more hostility (a stereotypic behavior of African Americans) toward the provocation of

an experimenter (Bargh et al., 1996). The change in hostility seen in response to the

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African American prime occurred regardless of pre-existing racist attitudes, indicating the priming of social categories is effective on any individual, as long as the individual is aware of the goals, attitudes, and behaviors associated with the primed category (Cesario et al., 2006). These findings extend to the effects of social category primes on attitudes. For instance, priming individuals with concepts associated with "elderly" and "skinhead" increased attitudes associated with these social categories (Kawakami et al., 2003). Specifically, people primed with elderly concepts expressed more conservative attitudes and people primed with skinhead concepts expressed more prejudiced attitudes.

In the present study, the priming and group interaction effects occurred when examining Christians as well as individuals from various religious backgrounds. However, the effects seen were stronger when examining only Protestants and Catholics. These effects were no longer significant when controlling for pre-existing religiosity/spirituality. These results indicate when examining the effect of religious primes on *behaviors* toward in-group and out-group members, it is important that one self-identify as an in-group member. This is somewhat inconsistent with findings that attitudes toward in-group and out-group members are affected by religious primes, regardless of pre-existing levels of religiosity and spirituality (Johnson et al., 2010; Johnson et al., in press). Thus, religious primes may only affect behavioral outcomes if one identifies with that in-group.

Muslims as a Less Threatening Out-Group

The effects of the religious primes on behaviors toward Muslims were different than those toward a typical religious out-group. Previous research has demonstrated individuals primed with religion reported more negative attitudes toward Muslims

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relative to Christians than those primed with control words (Johnson et al., in press).

However, the present study is not consistent with these previously found attitudinal

changes. Rather, individuals gave Muslims more resources (i.e., people were more

generous toward Muslims) when primed with religious words than those primed with

control words.

Although it is uncertain why priming religiosity increased sharing resources with

Muslims but decreased sharing resources with atheists, certain theoretical arguments

could be made. First, Muslims rated religion as "extremely important" in this study,

which may have caused individuals to help them more when primed with religiosity

because they were viewed as a religious group. Second, Muslims were also presented as

white Baylor freshman, which may make them a less threatening type of Muslim. Third,

atheists may simply be a stronger out-group than Muslims. Atheists have been shown to

be the least likely group to be socially accepted among a variety of other religious and

ethnic minority group (Edgell, Gerteis, & Hartmann, 2006). Fourth, atheists may pose a

greater threat to the in-group than Muslims because they share no religious similarities to

Christians whereas Muslims share similar foundational belief systems with Christians,

such as monotheism and belief in a higher power who governs behaviors. Consistent

with this idea, atheists have been viewed as one of the least trusted out-groups (Gervais et

al., in press). Because atheists may pose a greater threat to the stability of Christian

groups, more negative behaviors may be required to achieve the goal of protecting the in-

group. Thus, in the present study we may have unintentionally created theist in-groups

(Christians and Muslims) and an atheist out-group. This would explain why priming

religiosity increased prosociality toward Muslims.

Another possible explanation is that activation of religious concepts may only affect *implicit* and not *explicit* prejudices toward Muslims. Previous research demonstrates that religiosity may "trigger implicit processes that promote the enactment of religious norms and goals" (Koole, McCullough, Kuhl, & Roelofsma, 2010, p. 99). If protection of the in-group is a religious norm, intergroup bias may be a resulting automatic process, but only implicitly. Supporting this theory, Christians have shown *implicit* intergroup bias toward Muslims (Rowatt et al., 2005) and Jews (Rudman, Greenwald, Mellott, & Schwartz, 1999).

Rigid Ideologies and Primes

The present study provided no support for the prediction that rigid ideologies, RF and RWA, interacted with religious primes such that those higher in rigid ideologies would show larger effects of religious primes than those lower in rigid ideologies. As such, it appears the effects of priming religiosity on behaviors toward out-group members is unaffected by pre-existing rigid ideologies. Rather, these effects occur more generally among Christians.

Emotions toward Out-Group Members

Although results for the effects of prime and group membership on behaviors toward out-group members are still somewhat unclear, the effects of the primes and group membership on emotions toward resource distribution partners are very clear. Priming did not have an effect on emotions felt toward one's resource distribution partner; however, group membership of one's partner did strongly effect the emotions felt toward that individual. Namely, participants reported more positive attitudes (e.g., warm, happy, pleased) toward Christians and Muslims than toward atheists. Alternatively,

individuals reported more negative attitudes (e.g., mad, annoyed, morally disgusted) toward atheists than toward Christians or Muslims. These results are fully in line with past research demonstrating religious individuals demonstrate intergroup bias (Jackson & Hunsberger, 1999).

Strengths, Limitations, and Conclusions

The biggest strength of the present experiment is that it builds on past research demonstrating individuals primed with religious concepts gave more resources than those primed with neutral concepts (Shariff & Norenzayan, 2007). What was previously missing from these studies was identification of the group membership of the individual receiving the resources. Past research has demonstrated priming religiosity increases negative attitudes toward racial out-group members (Johnson et al., 2010) as well as value-violating out-groups (Johnson et al., in press); thus, indicating group membership ought to play an important role in the effects of primes on behaviors toward individuals. As expected, the prime did interact with group membership such that atheists were helped less when individuals were primed with religious concepts. Unexpectedly, however, Muslims were helped more when individuals were primed with religious concepts. Future research needs to be done in order to examine why Muslims were not derogated like atheists. The present experiment provides partial support for an intergroup bias theory of the relationship between religiosity and prejudice.

Although the present experiment tests the in-group favoritism component of intergroup bias theory implied by examining the effects of priming religion on generosity, it only indirectly tests the out-group derogation component of intergroup bias theory by examining the effects of priming religion on lack of generosity. In order to test

more directly the out-group derogation component of intergroup bias theory, a negative or more aggressive behavioral measure needs to be examined. In order to test this, a second experiment was run which examined the effects of priming and group membership on aggression toward individuals.

CHAPTER THREE

Experiment Two

Introduction

The primary goal of the second experiment was to test the out-group derogation component of intergroup bias theory. In order to do this, the effects were examined of priming and group membership of a partner on aggression toward that individual. Experiment 2 had the same experimental design as Experiment 1: a 2 (prime: control, religious) X 3 (group: Christian, Muslim, atheist) between-subjects design. Like Experiment 1, participants in Experiment 2 were also asked to complete testing in two sessions. The first session consisted of the same online pre-experimental survey completed through Qualtrics in Experiment 1 with the addition of an aggression measure to control statistically for pre-existing levels of aggression. This survey was completed at least 24 hours prior to arriving in the lab. The second session was completed in the lab. The first part of this in-lab session consisted of a bogus impression formation task in order to introduce the group manipulation. Following this bogus task, individuals were given the same experimental priming manipulation as in Experiment 1 using a LDT to prime religion or control words. Following the prime, individuals engaged in a hot sauce allocation task (Lieberman, Solomon, Greenberg, & McGregor, 1999 ; McGregor et al., 1998). This measure served as a measure of aggression toward an individual belonging to a specific religious group (i.e., Christian, Muslim, atheist). The group the confederate belonged to was the group experimental manipulation. The combined testing sessions took approximately one hour.

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The following predictions were examined in Experiment 2 to test the overarching hypothesis that priming religion would increase intergroup bias. Specifically, one component of this intergroup bias theory was examined, namely priming religion would increase out-group derogation:

- A main effect of group membership was predicted, such that Muslims or atheists (out-group members) would be aggressed toward more (more hot sauce given) than Christians (in-group members).

- A priming (religion vs. control) by group membership (Christian, Muslim, atheist) interaction effect was predicted, such that priming religion would decrease the amount of aggression (hot sauce given) toward in-group members (Christians) and increase the amount of aggression toward out-group members (Muslims, atheists).

Methods

Participants and Recruitment

Participants were recruited through Baylor University's online recruitment tool, SONA Systems.[1] Participants received one hour's worth of course credit in exchange for their participation. Individiuals were instructed to first complete an online survey through the Qualtrics survey administration tool. This online survey contained a battery of personality and religiosity tests. Upon completing the survey, individuals were then scheduled for an in-lab testing session in which they were assigned to one of the six possible condition combinations (priming X group). During the online survey, individuals were asked to give the last five digits of their Baylor ID numbers. Individuals were asked for these same five digits at the in-person session. These unique codes were

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[1] See http://www.sona-systems.com for software details.

utilized to merge the online data with participants' in-lab data. All individuals were filtered from analyses who indicated awareness of the prime words, suspicion about the fictional participant, or who were an outlier ($M \pm 2.5$ SD cf. Kirk, 2008 for exclusion criteria) on the dependent variable (amount of hot sauce given).[2] In total, one hundred fifty-eight participants were included in final analyses (112 females; M age = 18.81 yrs., SD = 1.02). Participants' ethnicity was composed of the following: 53.2% White, 13.3% African-American/Black, 8.2% Hispanic, 7.6% Asian/Pacific Islander, 1.9% "other" race, and 15.8% unspecified. The sample was predominantly Protestant (41.8%) and Catholic (17.1%), with a minority of participants reporting other religious affiliations (19.0% "other" religion, 5.1% no religion, 0.6% Muslim, and 16.5% unspecified).

Measures and Procedures

   Online survey. The same survey administered pre-experimentally in Experiment 1 was administered in Experiment 2 using Qualtrics, the online survey tool. The pre-experimental survey was completed by participants a minimum of 24 hours before participation in the lab portion of the experiment to prevent any priming effects from filling out the survey. Because this experiment's dependent variable is a behavioral measure of aggression, the following aggression questionnaire was added to assess and control for trait levels of aggression (see Appendix for copy of questionnaire):

   • *Buss-Perry Aggression Questionnaire.* (BPAQ; Buss & Perry, 1992). This questionnaire is a self-report questionnaire containing 29 items assessing levels of aggression across four factors: 1) physical aggression (e.g., "Given enough

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[2] Participants were filtered as follows: suspicious ($n = 31$), aware ($n = 12$), and outliers ($n = 15$, giving more than 24.091 grams of hot sauce).

provocation, I may hit another person"), 2) verbal aggression (e.g., "I tell my friends openly when I disagree with them"), 3) anger (e.g., "Sometimes I fly off the handle for no good reason"), and 4) hostility (e.g, "Other people always seem to get the break"). Individuals are told to indicate to what degree each of the statements are characteristic of them on a 5-point scale (1 = extremely uncharacteristic of me, 5 = extremely characteristic of me). Published reliability coefficients (Cronbach's α) of the BPAQ range from .72 to .85 for each of the subscales and was .89 for the overall scale (Buss & Perry, 1992).

Group membership manipulations. After a minimum of 24 hours after completing the online survey, participants arrived for their scheduled experiment in the lab in order to complete Experiment 2. Prior to arrival in the lab, participants were randomly assigned to a group within the 2 (priming: religious vs. control) X 3 (group: Christian, Muslim, atheist) between-subjects design. Upon arrival at the lab, participants were told they would be participating in three short studies: 1) a personality and impression formation experiment, 2) a brief computerized word task, and 3) a taste preference experiment. The first experiment allowed experimenters to introduce the group treatment (Christian, Muslim, atheist), the second experiment primed individuals with either religious or control words, and the third experiment allowed aggression to be measured. Methods for the personality and impression formation experiment and the taste preference experiment were adapted from Leiberman et al. (1999) and McGregor et al. (1998, *Study 1*).

Participants were seated in a private room behind closed doors with a chair, desk, and computer to ensure participant confidentiality. Participants were told they would

first complete an experiment examining the relationship between personality traits and how people form impressions of others. Individuals were informed their personality measures taken online would be used to examine these differences. Next, participants were informed they were being partnered with someone else and one of them would be assigned the role of filling out a brief biographical sketch about him or herself (taken from Experiment 1; see Appendix) whereas the other would be assigned the role of making an impression formation based on the biographical sketch. Although participants believed the roles were randomly assigned, all participants were assigned the role of making an impression formation.

After being assigned their role as the one making an impression of another individual, participants were given a handwritten biographical sketch by a same-sex person. The same biographical sketches used in Experiment 1 were also used in Experiment 2 for control and comparison purposes. Depending on the condition participants were assigned to, they were given a biographical sketch filled out by an individual who self-identified as either Christian, Muslim, or atheist. Experimenters left participants in the room for approximately 5 minutes while they read the biographical sketch.

Next, all participants were asked to evaluate the paragraph using an "impression formation" form (McGregor et al., 1998, *Study 1*; see Appendix for copy of questions). This form was originally designed by McGregor et al. (1998) to allow individuals to form evaluative impressions that are nonjudgmental. This is done to prevent individuals from defending their worldview by negatively evaluating the paragraph (Greenberg et al., 1990). Defending one's worldview could decrease or negate the need to aggress towards

another by providing another outlet of aggression; thus, preventative measures were taken to reduce this risk. The form consisted of five questions which asked participants "to guess the college major, sex, and age of the author, what part of the country the author was from, and whether the author was reserved or outgoing" (McGregor et al., 1998).

Priming procedure. As noted, participants were primed with either religious or control words after they read the biographical sketch from the individual but before they allocated hot sauce to that individual. Participants (run individually) were primed with the same priming methods used in Experiment 1. Individuals were told the LDT was a word game task in which experimenters were interested in how personality relates to word processing.

The placement of the prime was to ensure priming occurred before measuring aggression. Previous studies indicate temporal proximity between an experimental manipulation (i.e., rejection) and measures of aggression are important, and delays up to half an hour or more may wash the effects of experimental manipulations (Arnold, Homrock, Ortiz, & Stow, 1999; Baumeister, Masicampo, & DeWall, 2009). In other words, behavioral responses may occur in close proximity to experimental manipulations, of which priming could be one.

Hot sauce allocation (aggression measure). The hot sauce paradigm utilized was adapted from McGregor et al. (1998) and Lieberman et al. (1999). Participants were told they were next going to participate in a third study examining the relationship between personality and food preferences. Participants were told the personality questionnaires they took online would be used to assess if there are differences in food preferences based on personality differences. They were informed that in this experiment, they

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would tasting and rating a food sample, that various types of food were being rated, and that today they were rating dry and spicy foods. Participants were also informed the experimenter must be blind to specifics about the food samples, so they and their previous partner in the last task (impression formation) would be administering the food samples to each other.

Before beginning the taste test, participants were instructed to fill out a taste preference inventory. This contained six rating scales of preferences for certain tastes and textures: sweet, sour, creamy, salty, spicy, and dry (McGregor et al., 1998; see Appendix for copy of questions). These items were evaluated on a 21-point rating scale (1 = no liking at all, 21 = liking). This scale was presented so participants could later be presented with a taste preference inventory filled out by their bogus partner. By doing so, experimenters could ensure the participant was aware their partner finds spicy food aversive.

Although participants were led to believe they and their partners were randomly assigned to the dry or spicy food group, all participants sampled the dry food and allocated the spicy food. This allowed all participants to show aggressive behavior toward the fake participant. Upon completion of the taste preference inventory, participants were informed they had been randomly assigned to the dry food group and the other participant chose a cracker sample for them to taste. The experimenter then handed an envelope to the participant, which contained a saltine cracker, and they told them to evaluate it using a 9-point rating scale (1 = no liking at all, 9 = extreme liking). The experimenter left the room to allow the participant to taste and rate the cracker.

After the participant tasted and rated the cracker, the experimenter returned with a tray containing the hot sauce[3], a Styrofoam cup with lid, a plastic spoon for tasting, a separate plastic spoon for allocating the hot sauce, and a cup of water. Participants were told because they were randomly assigned to the dry tasting group, their partner, whose biographical sketch they had read earlier, was assigned to the spicy tasting group. Participants were then told they would be administering a sample of the hot sauce for their partner. Additionally, they were told because individuals might be curious about the taste preferences of other individuals, they would be given the taste preference inventory of the other participant. As noted earlier, this taste preference inventory was rigged so the bogus participant's taste preference indicated he or she disliked spicy foods. For the item "spicy – like hot salsa," the bogus participant had a rating of "3" on the 21-item response scale (1 = no liking at all, 21 = extreme liking).

Participants were instructed to use the plastic spoon given to them to put as little or as much salsa as they wanted into a 4-oz. Styrofoam cup and to then seal it with the lid. It was made clear to participants the person who was receiving the salsa would have to consume the entire quantity of it. In order to ensure participants were aware of the spicyness level of the hot sauce, they were instructed to taste a sample of it with the plastic spoon provided. Participants were told because the cup was covered, the experimenter would not know how much hot sauce they chose to give to the other individual. It was then again stressed they were giving this hot sauce to the person who wrote the biographical sketch earlier. Once these instructions were given, the experimenter left the participant alone in the room to complete the hot sauce allocation.

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[3] Prepared as instructed by Lieberman et al. (1999) – 5 parts Heinz chili sauce, 3 parts Tapatio salsa picante hot sauce, produced by the Empacadora Company (Vernon, CA). This hot sauce has been reported as being quite hot across multiple studies (cf. Lieberman et al., 1999; Meier & Hinsz, 2004).

A list of instructions was left with the participant reminding them of the steps involved in allocating the hot sauce (see Appendix).

Manipulation check. After participants allocated the hot sauce into the Styrofoam cup, they were given a series of manipulation check questions. All manipulation check questions were taken from Lieberman et al. (1999) (see Appendix). First, they were asked to rate how hot the hot sauce was (1 = not at all hot, 9 = extremely hot) and how disgusting the hot sauce was (1 = not at all disgusting, 9 = extremely disgusting). They were also asked to rate the dryness (1 = not at all dry, 9 = extremely dry) of the cracker as well as the how disgusting the cracker was (1 = not at all disgusting, 9 = extremely disgusting). Next, they were asked three questions using 21-point rating scales: 1) "To what extent did you use the Taste Preference Inventory when giving out the food sample to the other person?" (1 = not at all, 21 = completely), 2) "How useful do you think the Taste Preference Inventory was when giving out the food sample?" (1 = not at all useful, 21 = extremely useful), and 3) "Using the scale below, indicate the extent to which the person you gave the food sample to liked that kind of food" (1 = no liking at all; 21 = extreme liking).

Emotion ratings and group manipulation check. The same emotion ratings and manipulation check questions asked in Experiment 1 were also asked at the end of Experiment 2 (see Appendix). This was to determine which emotions felt toward the target were affected by the group manipulation or priming manipulation. Additionally, a manipulation check was given for the group manipulation (Christian, Muslim, atheist).

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Awareness check and debriefing. The same funneled debriefing questionnaire used in Experiment 1 and taken from Chartrand and Bargh (1996) was used to check for awareness of prime words in Experiment 2. During debriefing, participants were asked what they thought of the three tasks, if they thought the tasks were related, and if they remembered any of the words in the computer task (LDT).

To debrief participants for the hot sauce allocation task, individuals were given a funneled debriefing to check for suspicion. Extra care was taken to ensure participants did not leave the experiment with any negative feelings or damage to self-esteem. All participants were informed that no one had actually tasted the hot sauce administered and that they did not cause anyone pain. Furthermore, individuals were told they were all randomly assigned to a variety of conditions and that they were simply responding to the situation they were placed in. Individuals were informed they should not consider themselves an aggressive or bad individual.

Results

A Scout®Pro digital balance was used to weigh the hot sauce. This scale can weigh up to 200 g and has readability down to the .01 g. With the largest amount of hot sauce allocated being 87.71 grams, this scale provided ample ability to weigh all amounts of hot sauce allocated. On average, participants rated the hot sauce as being quite "hot" ($M = 6.5$, $SD = 1.80$) but not "disgusting" ($M = 4.12$, $SD = 2.64$).

Consistent with previous research (Johnson et al., 2011), self-reported religiosity/spirituality and rigid ideologies (RF, RWA) were positively correlated with

Table 3

Zero-Order Correlations between Religiosity/Spirituality, RF, RWA, and Attitudes towards Social Groups

Variable	1	2	3	4	5	6	7	8	9	10	11	*M*	*SD*	α
1. Religiosity†	--											4.78	1.70	--
2. Spirituality†	.56**	--										5.44	1.40	--
3. RF	.54**	.59**	--									5.78	1.59	.88
4. RWA aggression	.25**	.21*	.37**	--								4.04	1.20	.73
5. RWA submission	.27**	.03	.24**	.39**	--							3.62	1.13	.54
6. RWA conventionalism	.35**	.53**	.70**	.29**	.12	--						4.07	1.49	.82
7. Inclusion	.55**	.60**	.79**	.27**	.11	.65**	--					2.85	2.82	--
8. Symbolic	-.01	.10	-.26**	-.35**	-.35**	-.15	-.07	--				2.87	1.75	--
9. Christians†	.42**	.29**	.55**	.21*	.29**	.36**	.52**	.01	--			8.77	1.87	--
10. Muslims†	.04	.18*	.08	.02	.15	.08	.13	.00	.35**	--		6.44	2.47	--
11. Atheists†	-.16	-.01	-.10	-.15	-.02	-.07	-.08	.04	.07	.69**	--	5.38	2.87	--

Note: All measures are from pre-experimental scores. RF = Religious Fundamentalism; RWA = Right Wing Authoritarianism; Christians/Muslims/Atheists = thermometer items. Inclusion and Symbolic scales do not have reliabilities because they are dimensions created from sub-scales. Sub-scale reliabilities for post-critical belief scale range from .53 to .80. †Single-item measure. $* p < .05$, $** p < .01$

attitudes toward in-groups (Christians). However, inconsistent with previous research

(cf. Johnson et al., 2011), self-reported religiosity/spirituality and rigid ideologies were

not significantly correlated with attitudes toward value-violating out-groups (Muslims,

atheists). See Table 3 for descriptives and correlations between self-reported

religiosity/spirituality, RF, RWA, and attitudes toward various social groups.

Hot Sauce Allocation (Aggression)

To examine the effects of priming religiosity and group membership on hot sauce

allocation, a two-way Analysis of Covariance (ANCOVA) was run on the amount of hot

sauce (in grams) given to the fake participant, statistically controlling for pre-existing

levels of aggression. There was a significant main effect of group membership [$F(2, 103)$

$= 3.098$, $p = .049$, partial $\eta^2 = .057$] on amount of hot sauce allocated (see Figure 4). To

examine group differences for this main effect, planned contrasts were executed with

Dunn-Sidak corrections for familywise error rates. These analyses demonstrated

individuals gave atheists (*Adj. M* = 6.90, *SE* =.89) significantly more hot sauce than they

gave Muslims (*Adj. M* = 3.97, *SE* =.78*).* There were no significant main effects of

priming [$F(1, 103) = .56$, $p = .46$] or significant prime X group membership interaction

effects [$F(2, 103) = .46$, $p = .63$] on amount of hot sauce allocated.

Follow-up analyses were run in order to examine these effects among Protestants

and Catholics, for whom Christians are an in-group and Muslims and atheists are value-

violating out-groups. When examining only Protestants and Catholics, there was still a

main effect of group which was stronger than the effect among individuals of all religious

affiliations [$F(2, 73) = 3.150$, $p = .049$, partial $\eta^2 = .079$]. Planned contrasts were

executed with Dunn-Sidak corrections for familywise error rates. These analyses
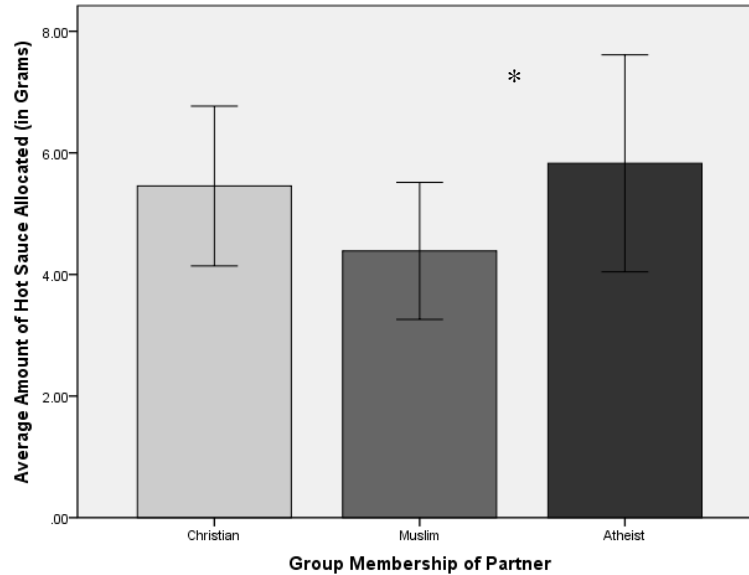
Figure 4. Mean amount of hot sauce allocated to individuals by group membership. Note: *p* < .05.

demonstrated individuals gave atheists (*Adj. M* = 6.88, *SE* =1.04) significantly more hot

sauce than they gave Muslims (*Adj. M* = 3.46, *SE* =.91*).*

　　　To examine if this effect was influenced by self-reported religiosity and

spirituality, an Analysis of Covariance (ANCOVA) was run examining the effects of

priming and group membership on hot sauce allocated to one's partner, statistically

controlling for the single-item measures of religiosity and spirituality in addition to pre-

existing levels of aggression. When controlling for religiosity/spirituality and aggression,

the main effect of group was significant and showed a stronger effect than when only

aggression was controlled [*F*(2, 100) = 3.97, *p* = .02, partial η² = .074]. Planned contrasts

were executed with Dunn-Sidak corrections for familywise error rates. Consistent with

previous results, these analyses demonstrated individuals gave atheists (*Adj. M* = 7.00,

SE =.88) significantly more hot sauce than they gave Muslims (*Adj. M* = 3.68, *SE* =.79).

To examine if these effects were influenced by individuals' desirable responding, an Analysis of Covariance (ANCOVA) was run examining the effects of priming and group membership on hot sauce allocated to one's partner, statistically controlling for pre-experimental measures of impression management (as measured by the *Balanced Inventory of Desirable Responding;* Paulhus & Reid, 1991) in addition to aggression. When statistically controlling for aggression and impression management, the group membership main effect remained significant, $F(2, 98) = 3.19$, $p = .045$, partial $\eta^2 = .061$. Planned contrasts were executed with Dunn-Sidak corrections for familywise error rates. Individuals gave atheists (*Adj. M = 6.99, SE =.90*) significantly more hot sauce than they gave Muslims (*Adj. M = 3.92, SE =.82*).

Finally, an Analysis of Covariance (ANCOVA) was run examining the effects of priming and group membership on hot sauce allocation, statistically controlling for pre-existing attitudes toward Christians, Muslims, and atheists as well as aggression. When controlling for attitudes toward these various out-groups, the group membership main effect trended toward significance, $F(2, 98) = 3.09$, $p = .05$, partial $\eta^2 = .059$.

Emotion Items

As in Experiment 1, individuals in Experiment 2 were asked about a variety of emotions they felt toward the other participant with whom they made an impression about and to whom they allocated hot sauce. The same negative and positive emotion composites as in Experiment 1 were created in Experiment 2 from individual emotion items. To verify that the same emotion items as in Experiment 1 loaded onto the two factors in Experiment 2 (negative and positive emotions), an exploratory factor analysis

was run. Two factors were found, with eigenvalues of 8.629 (negative emotions factor)[1] and 5.565 (positive emotions factor).[2] The same emotion items loaded onto the negative and positive emotion factors as in Experiment 1. Thus, the same emotion items were used to make the negative and positive emotion composites. The Cronbach's α for the negative emotion composite was .93, indicating excellent internal consistency. The Cronbach's α for positive emotion composite was .91, indicating excellent internal consistency.

To determine the experimental effects of priming, group, and priming X group on these two emotion composites, Analyses of Variance (ANOVAs) were run. Group had a significant main effect on negative emotions felt toward the participant, $F(2, 151) = 8.00$, $p < .001$, partial $\eta^2 = .10$ (see Figure 5). Tukey post-hoc tests were run to examine which groups differed from one another. Results indicated individuals felt significantly more negative emotions toward atheists ($M = 1.74$, $SD = 1.36$) than toward Christians ($M = 1.09$, $SD = .25$) or Muslims ($M = 1.28$, $SD = .65$).

Group also had a significant main effect on positive emotions felt toward the participant, $F(2, 150) = 7.82$, $p < .01$, partial $\eta^2 = .09$ (see Figure 6). Tukey post-hoc tests were run to examine which groups differed from one another. Results indicated individuals felt significantly more positive emotions toward Christians ($M = 4.47$, $SD = 1.90$) and Muslims ($M = 4.51$, $SD = 1.77$) than toward atheists ($M = 3.26$, $SD = 1.54$). The prime also had a significant main effect on positive emotions felt toward the participant, [$F(1, 150) = 5.22$, $p < .05$, partial $\eta^2 = .03$], such that individuals primed with

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[1] Note that rotated factor loadings ranged from .471 (physically sick) to .859 (resentful).

[2] Note that rotated factor loadings ranged from .483 (obligated) to .811 (compassion).

religious concepts reported less positive attitudes ($M = 3.81$, $SD = 1.95$) than those primed with neutral words ($M = 4.42$, $SD = 1.67$) (see Figure 7).
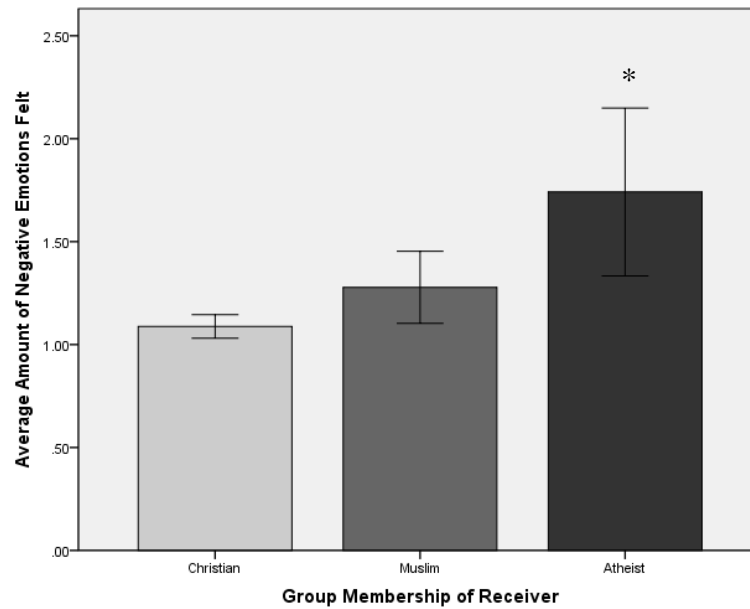
Figure 5. Average level of negative emotions felt toward Christians, Muslims, and atheists. Note: *$p < .05$.
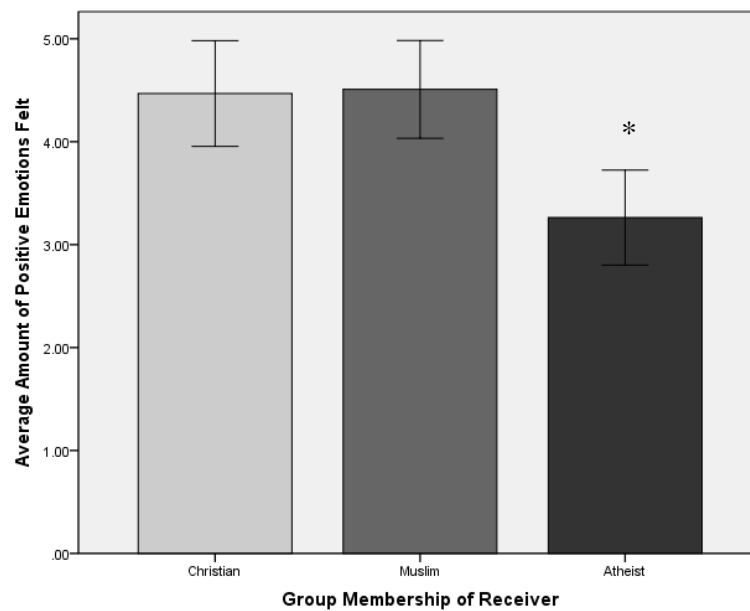
Figure 6. Average level of positive emotions felt toward Christians, Muslims, and atheists. Note: *$p < .05$.
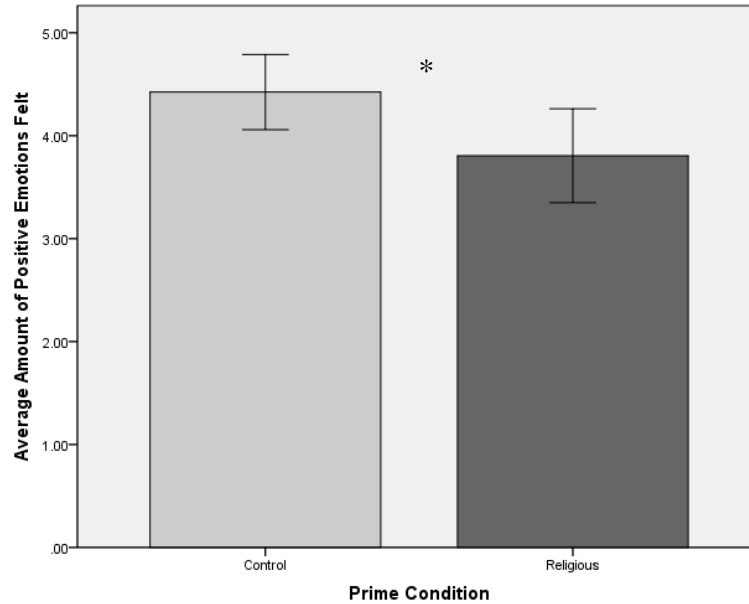
Figure 7. Average level of positive emotions felt in the religious and neutral priming conditions. Note: *p < .05.

Multivariate Analyses of Variance (MANOVAs) were also run to examine the effects of group membership, priming, and the priming X group membership interaction on specific emotions. Please see Table 4 for breakdown of these results.

Religious Fundamentalism and Right Wing Authoritarianism

In order to examine if RF or RWA interacted with the primes, regression analyses were run. In the first regression, RF was examined by entering RF, the effect of primes, the effect of group, all two-way interactions (prime X group, prime X RF, group X RF), and the three-way interaction (prime X group X RF) as predictors of amount of hot sauce given to one's partner. The overall model was non-significant [$F(7, 129) = 1.762$, $p = .10$], indicating RF did not interact with the primes. The model was also non-significant when including the measure of pre-existing aggression.

In the second regression, RWA aggression was examined instead of the entire RWA scale due to the three-factor nature of RWA and RWA aggression's strong

Table 4
Means, Standard Deviations and MANOVAs for Emotion Items

Priming Manipulation	Religious						Control						
Group Variable	Christian		Muslim		Atheist		Christian		Muslim		Atheist		
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*
Pleased	4.65	2.69	4.62	2.90	3.00	1.76	5.28	2.47	5.00	2.69	4.00	2.42	Prime, 2.678, n.s. Group, 4.862**
Softhearted	4.30	2.89	4.83	3.02	3.57	2.29	5.69	2.24	5.15	2.66	3.88	2.47	Prime, 2.678, n.s. Group, 3.796*
Tender	3.48	2.81	4.21	2.86	2.86	1.93	4.50	2.70	4.22	2.75	3.48	2.28	Prime, 1.737, n.s. Group, 2.182, n.s.
Happy	4.43	2.83	4.86	2.72	2.90	1.48	5.25	2.54	5.00	2.17	3.68	2.06	Prime, 2.268, n.s. Group, 7.299**
Resentful	1.13	.46	1.28	.65	2.10	2.07	1.16	.45	1.37	1.04	1.96	1.77	Prime, .001, n.s. Group, 7.530**
Mad	1.00	.00	1.07	.26	1.81	1.91	1.09	.39	1.22	.70	1.64	1.50	Prime, .027, n.s. Group, 6.685**
Annoyed	1.57	1.88	1.10	.31	1.86	2.08	1.41	1.29	1.56	1.74	1.84	1.68	Prime, .135, n.s. Group, 1.445, n.s.
Warm	3.52	2.57	4.24	2.61	2.24	1.55	4.69	2.56	3.96	2.23	3.40	2.10	Prime, 3.296, n.s. Group, 4.877**
Hurt	1.43	2.09	1.17	.60	1.95	2.01	1.13	.34	1.04	.19	1.52	1.58	Prime, 1.977, n.s. Group, 3.134*
Moved	2.83	2.62	2.38	2.56	1.76	1.61	2.38	1.74	2.56	2.15	2.52	1.96	Prime, .218, n.s. Group, .592, n.s.
Obligated	2.83	2.52	3.76	2.71	2.00	1.73	4.13	2.59	3.78	2.69	2.92	2.02	Prime, 3.599, n.s. Group, 3.871*
Empathetic	3.17	2.71	4.45	2.73	2.67	2.01	4.66	2.34	4.89	2.59	4.00	2.66	Prime, 7.094** Group, 3.571*

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Priming Manipulation	Religious						Control						
Group Variable	Christian		Muslim		Atheist		Christian		Muslim		Atheist		
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	F
Compassionate	3.74	3.06	4.72	2.96	3.62	2.11	5.28	2.59	5.15	2.46	4.04	2.89	Prime, 3.32, n.s. Group, 2.110, n.s.
Upset	1.00	.00	1.31	1.14	2.67	2.46	1.06	.25	1.48	1.63	1.88	1.92	Prime, .625, n.s. Group, 9.444**
Sympathetic	3.65	2.92	5.48	2.75	3.67	2.08	5.41	2.43	4.44	2.74	3.96	2.30	Prime, .664, n.s. Group, 2.553, n.s.
Angry	1.00	.00	1.31	1.00	1.67	1.96	1.06	.35	1.19	.62	1.44	1.12	Prime, .363, n.s. Group, 3.414*
Morally Disgusted	1.00	.00	1.31	.71	3.00	2.90	1.00	.00	1.37	1.39	2.17	2.18	Prime, 1.126, n.s. Group, 14.698**
Frightened	1.00	.00	1.24	.83	1.71	1.71	1.00	.00	1.19	.62	1.25	.68	Prime, 1.776, n.s. Group, 4.386*
Physically disgusted	1.00	.00	1.14	.58	1.10	.44	1.00	.00	1.22	.85	1.08	.28	Prime, .100, n.s. Group, 1.997, n.s.
Negative	1.17	.65	1.59	1.21	2.71	2.59	1.18	.88	1.59	1.58	1.79	1.77	Prime, 1.535, n.s. Group, 6.230**
Grossed out	1.00	.00	1.07	.26	1.33	1.32	1.03	.17	1.26	1.16	1.38	1.06	Prime, .450, n.s. Group, 2.166, n.s.
Positive	5.78	2.50	5.34	2.78	3.29	2.15	6.79	1.95	6.19	1.94	4.75	2.45	Prime, 8.762** Group, 12.867**
Morally sickened	1.00	.00	1.38	.86	2.38	2.41	1.03	.17	1.41	1.47	2.00	2.06	Prime, .228, n.s. Group, 8.941**
Afraid	1.00	.00	1.21	.62	1.43	1.36	1.03	.17	1.37	1.21	1.25	.74	Prime, .001, n.s. Group, 2.388, n.s.
Physically sickened	1.00	.00	1.03	.19	1.05	.22	1.03	.17	1.37	1.39	1.04	.20	Prime, 1.543, n.s. Group, 1.537, n.s.

*Note: * = p < .05, ** = p < .01. Reported F values are for effect of group, prime, or primeXgroup interaction as indicated.*

association with prejudice (cf. Mavor et al., 2009). In this second regression model, RWA aggression's potential interaction with the primes was examined by entering RWA aggression, the effect of primes, the effect of group, all two-way interactions (prime X group, prime X RWA, group X RWA), and the three-way interaction (prime X group X RWA) as predictors of amount of hot sauce given to one's partner. The overall model was non-significant [$F(7, 128) = .772$, $p = .612$], indicating RWA aggression did not interact with the primes. The model was also non-significant when including the measure of pre-existing aggression.

Discussion

The present study demonstrated group membership of an individual influenced how much hot sauce was given to that individual. Namely, atheists were given the largest amount of hot sauce whereas Muslims were given the least amount of hot sauce. These results could have occurred due to atheists being one of the most socially hated and mistrusted out-groups (Gervais et al., in press). As noted earlier, atheists are the least likely group to be socially accepted among a variety of religious and ethnic minority groups (Edgell et al., 2006). Moreover, atheists may pose a greater "threat" to the Christian in-group, resulting in more aggressive behaviors toward them. What is surprising, however, is that Muslims were given the least amount of hot sauce among the three religious groups. This effect remained even when statistically controlling for pre-existing self-reported religiosity/spirituality, desirable responding/impression management, and pre-existing attitudes toward the various groups (Christians, Muslims, and atheists). Given prior research has demonstrated merely seeing Muslims in headgears has led to increases in aggression in the shooter bias game (Unkelbach, Forgas,

& Denson, 2008), these results seem surprising. However, these results could have occurred because the imagined other participant was never seen. In other words, individuals' aggression toward Muslims might be influenced by *seeing* Muslim individuals whereas atheists are an "invisible" out-group that cannot be readily detected among others. Individuals might more readily express aggression toward a partner they have not seen when that individual belongs to a group with a less visually activated prejudice (attitudes toward atheists) than a group with a more visually activated prejudice (attitudes toward Muslims). Future studies need to be run examining the effect of *seeing* an atheist or Muslim on aggression toward those individuals to see if the results differ from the present experiment.

An alternative explanation, as suggested in the discussion of Experiment 1, is that Muslims may have actually been a theist in-group rather than a value-violating out-group. Thus, future studies should examine if individuals view individuals as members of their own groups in order to more clearly examine this possible explanation to the results seen in the present experiment.

Priming and priming X group interaction effects did not significantly influence the amount of hot sauce given to one's partner. Thus, priming religion did not influence aggression toward out-group members. These results might have occurred due to the subtle nature of the primes. Most previous research examining influences on aggression have dealt with strong manipulations including threatening one's worldview (McGregor et al., 1998), mortality salience (Lieberman et al., 1999), and provoking individuals (Lieberman et al., 1999). The priming manipulation may have been too subtle to influence a strong dependent measure like physical aggression. Future studies ought to

examine more subtle measures of aggression or out-group derogation, such as social exclusion or ostracism which has been shown to have similar brain bases as physical pain (Eisenberger, Lieberman, & Williams, 2003).

The correlational data from this study support previous research indicating self-reported measures of religiosity are associated with in-group favoritism toward Christians (cf. Johnson et al., in press). However, unlike previous research, religiosity was not associated with out-group derogation, or negative attitudes toward out-group members. In this particular sample, there were no associations among self-reported religiosity/spirituality and attitudes toward Muslims or atheists. Future research should investigate these relationships using reliable and valid scales of prejudice rather than relying on thermometer items toward these various social groups.

Rigid Ideologies and Primes

As in Experiment 1, the present experiment provided no support for the prediction that rigid ideologies, RF and RWA, would interact with religious. Rather, these effects occurred more generally among individuals.

Emotions toward Out-Group Members

Consistent with previous research demonstrating religious individuals demonstrate intergroup bias (Jackson & Hunsberger, 1999), group membership influenced the emotions felt toward the targets. Namely, individuals felt the most negative emotions (e.g., angry, morally disgusted, negative) toward atheists and the most positive emotions (e.g., pleased, positive, softhearted) toward Christians and Muslims. Interestingly, as in Experiment 1, individuals expressed similar emotions toward Christians and Muslims. These results may have occurred due to the strong overlap in

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ideologies of Christians and Muslims. Because both religions are monotheistic and often possess fundamentalist beliefs, individuals may feel less threatened by Muslims than atheists.

Taken together with the results for the hot sauce allocation, it does appear atheists were the most aggressed toward and least liked group in the present experiments. This is consistent with Gervais et al.'s (in press) work demonstrating that atheists are one of the most disliked and least trusted groups. Future studies should examine the underlying reasons for higher levels of aggression toward atheists in comparison to Muslims. Specifically, experimenters could ask individuals if they distrust atheists and this distrust could be examined as a possible mediator of aggression toward atheists.

Strengths, Limitations, and Conclusions

As noted, the main limit of this study was the measure of aggression utilized. Because the priming manipulation is a fairly subtle manipulation, more subtle measures of aggression, such as social exclusion, should be examined in future studies. Another limitation of this study was the limited interaction individuals had with their fictional partner. Because previous research demonstrates individuals are more aggressive toward Muslims in a shooter bias paradigm (Unkelbach et al., 2008), it may be important for individuals to see the targets toward whom they are expected to show aggression. Thus, in future studies, the paradigms utilized in the present experiments should be examined after having individuals view photos or videos of the partner to whom they are allocating hot sauce. Another area for future research could be to examine the effects of priming religiosity on aggression when individuals are being threatened by out-group versus in-group members.

Despite these limitations, this study illuminates the characteristics of intergroup bias among three religious groups: Christians, Muslims, and atheists. This study demonstrates among Muslims and atheists, atheists are the most aggressed toward out-group and individuals feel the highest levels of negative emotions as well as the lowest levels of positive emotions toward atheists. These results support previous research demonstrating atheists are one of the least liked social groups (Gervais et al., in press) as well as the least likely groups to be socially accepted among religious and ethnic minority groups (Edgell et al., 2006). Experiment 2 also demonstrates priming religiosity does not appear to have an effect on physical aggression expressed toward individuals. This indicates priming religiosity may only influence more subtle measures such as attitudes toward out-group members (Johnson et al., 2010; Johnson et al., in press) and more subtle behaviors such as resource distributions (Experiment 1).

CHAPTER FOUR

General Discussion

Across two experiments, the paradox of religiosity and prejudice was examined

through priming studies with behavioral measures. Although most religions teach and

promote tolerance, previous research has demonstrated religious individuals self-report

intergroup bias (Jackson & Hunsberger, 1999). This intergroup bias is composed of two

components: 1) *in-group favoritism* and 2) *out-group derogation*. Additional research

has attempted to examine this paradox through two methods: 1) examining the effects of

priming religious concepts on behaviors and attitudes toward others, and 2) analyses

examining potential mediators of the religiosity-prejudice relationship.

The present studies expanded research on religious primes by seeing how these

primes might interact group membership of a fictional partner. This allows one to

understand better how religious primes influence behaviors toward in- and out-group

members. Across both experiments, individuals gave fewer resources to (Experiment 1),

aggressed more toward (Experiment 2), and expressed more negative and less positive

emotions (Experiments 1 and 2) toward atheists relative to two other religious groups –

Christians and Muslims. These results are consistent with findings demonstrating that

atheists are one of the most distrusted (Gervais et al., in press) and socially excluded

(Edgell et al., 2006) social groups. Given these results, future research should examine

what reduces prejudice toward atheists. Current research demonstrates having

individuals think about secular authorities can help reduce the amount of mistrust felt

toward atheists (Gervais & Norenzayan, in press). Future research could examine if this also reduces behavioral expressions of intergroup bias toward atheists.

The results of these experiments were partially consistent with intergroup bias theory (Hewstone et al., 2002). Namely, individuals demonstrated out-group derogation toward atheists but not Muslims. Because Muslims were not treated significantly more negatively than Christians, intergroup bias did not exist among Christians and Muslims. One theoretical explanation for these differences in intergroup bias could be that atheists pose a stronger threat than Muslims toward a Christian in-group because they hold no religious values. As such, they may be less trustworthy as moral beings (cf. Gervais et al., in press). Because they are viewed as less trustworthy, it may be more necessary for Christians to deal with these group members by: 1) giving fewer resources to them (Experiment 1), and 2) aggressing toward them (Experiment 2).

Data from these studies help illuminate previously paradoxical findings from priming religious studies. Previous studies demonstrate priming religiosity can increase both positive and negative behaviors toward others. These differential effects of religiosity could be due to the type of religiosity being primed. Preston et al. (2010) theorize priming two different aspects of religion could lead to different outcomes. One component is the *supernatural component* of religion, which is associated with God concepts and the idea of a supernatural watcher. Activating the *supernatural* component of religion, Preston et al. (2010) argue, leads to increases in prosociality. However, the second component of religion is the *religious group component*, which is concerned with religious group membership and protecting one's in-group. Activating the *religious group* component leads to increases in attitudes and behaviors which protect the in-group,

such as in-group favoritism and out-group derogation. Given these two distinct types of

religious primes, the links between religiosity and more prosocial behaviors ought to be

due to activation of the *supernatural component* of religion whereas the links between

religiosity and more negative behaviors toward others are likely due to activation of the

religious group component of religion (Preston et al., 2010). Missing from many of these

previous studies, however, was identification of the religious group to which individuals'

partners belonged. The present studies indicate religious group identification interacts

with primes.

In the present studies, we simultaneously activated both the *religious group*

component by priming words related to the religious group of Christians (e.g., Bible,

church) and the *supernatural component* by priming religious agent words (e.g., Christ,

Jesus, Messiah). These simultaneous primes could account for the differing effects of

priming religion on behaviors toward Muslims and atheists. For instance, when primed

with religion, individuals gave significantly less raffle tickets to atheists and significantly

more to Muslims. Christians were consistently given higher amounts of raffle tickets. In

the second experiment, although priming did not have an effect on aggression, group

membership did. Individuals aggressed more toward atheists than Muslims. Combined,

these two studies indicate both in-group favoritism and out-group derogation are

expressed toward atheists relative to both Christians and Muslims. To illuminate these

findings and clarify why Muslims were treated similarly to Christians, future studies

should more stringently test Preston et al.'s (2010) theory that the *supernatural* and

religious group components of religion differentially affect attitudes and behaviors

toward others. Specifically, future studies could examine the difference between priming

supernatural agent (e.g., God), *religious group* (e.g., religion), and neutral priming words on prosocial and aggressive behaviors toward various religious group members. One could examine if activations of *supernatural* concepts decreases in-group favoritism and out-group derogation and if activations of *group* concepts increases these in-group protective behaviors.

As previously mentioned, future studies should also examine how seeing images of the out-group member differentially affects behaviors toward those individuals. It is possible seeing out-group members, especially visually identifiable group members such as Muslims with headgears, influences aggression more strongly than merely being informed that an individual belongs to an out-group. Future studies should examine these affects by having participants view photos, videos, or actually interact with an out-group member. Given that most instances of prejudicial actions occur face-to-face, these would also be more ecologically valid manipulations and thus important to the study of social attitudes and interactions amongst religious groups. Moreover, one could examine if social proximity (seeing versus interacting with a person) plays a factor in how strong of a role group membership plays in influencing behaviors toward out-group members.

Although these studies help illuminate the paradoxical relationship between religiosity and prejudice, there is still much work to be done. Future work needs to examine the underlying causes of the different behaviors displayed toward Muslims vs. atheists. Despite the need for future work, the present studies do help illuminate intergroup bias theory as it pertains to religious group members. Namely, the effect of religious primes on resource distributions does depend on the religious group membership of the person with whom one is sharing resources (Experiment 1).

Moreover, atheists appear to be the most highly derogated religious out-group (compared to Muslims) in that less resources are shared with them (Experiment 1) and individuals aggress toward them more (Experiment 2). By uncovering the relationship between priming religiosity, identification of religious group membership, and behaviors toward members of various religious groups, the present studies provide steps toward continuing to understand religious intergroup bias theory more clearly.

APPENDIX

APPENDIX

Online Surveys and In-Lab Materials for Experiments 1 and 2
Scales for online pre-experimental surveys for Experiment 1 and 2

The Revised 12-Item Religious Fundamentalism Scale
(Altemeyer & Hunsberger, 1992)

-4 very strongly disagree
-3 strongly disagree
-2 moderately disagree
-1 slightly disagree
0 neutral
+1 slightly agree
+2 moderately agree
+3 strongly agree
+4 very strongly agree

Instructions: Use the scale above to indicate to what extent you agree, disagree, or are neutral to the following twelve statements.

1. God has given humanity a complete, unfailing guide to happiness and salvation, which must be totally followed.
2. No single book of religious teachings contains all the intrinsic, fundamental truths about life.
3. The basic cause of evil in this world is Satan, who is constantly and ferociously fighting against God.
4. It is more important to be a good person than to believe in God and the right religion.
5. There is a particular set of religious teachings in this world that are so true, you can't go any "deeper" because they are the basic, bedrock message that God has given humanity.
6. When you get right down to it, there are basically only two kinds of people in the world: the Righteous, who will be rewarded by God; and the rest, who will not.
7. Scriptures may contain general truths, but they should NOT be considered completely, literally true from beginning to end.
8. To lead the best, most meaningful life, one must belong to the one, fundamentally true religion.
9. "Satan" is just the name people give to their own bad impulses. There really is *no such thing* as a diabolical "Prince of Darkness" who tempts us.
10. Whenever science and sacred scripture conflict, *science* is probably right.
11. The fundamentals of God's religion should never be tampered with, or compromised with others' beliefs.

12. *All* of the religions in the world have flaws and wrong teachings. There is *no* perfectly true, right religion.

**Instruction: Please rate how warm or cold you feel toward the following groups
(0 = Very cold feelings, 5 = neutral, 10 = Very warm feelings).**

	cold	neutral	warm
White, non-Hispanic	0 1 2 3 4 5 6 7 8 9 10		
Black or African-American	0 1 2 3 4 5 6 7 8 9 10		
Hispanic or Latino	0 1 2 3 4 5 6 7 8 9 10		
Young people	0 1 2 3 4 5 6 7 8 9 10		
Old people	0 1 2 3 4 5 6 7 8 9 10		
Rich people	0 1 2 3 4 5 6 7 8 9 10		
Poor people	0 1 2 3 4 5 6 7 8 9 10		
Asian-Americans	0 1 2 3 4 5 6 7 8 9 10		
European-Americans	0 1 2 3 4 5 6 7 8 9 10		
Arab-Americans	0 1 2 3 4 5 6 7 8 9 10		
Foreigners	0 1 2 3 4 5 6 7 8 9 10		
Canadians	0 1 2 3 4 5 6 7 8 9 10		
Americans	0 1 2 3 4 5 6 7 8 9 10		
Christians	0 1 2 3 4 5 6 7 8 9 10		
Muslims	0 1 2 3 4 5 6 7 8 9 10		
Atheists	0 1 2 3 4 5 6 7 8 9 10		
Agnostics	0 1 2 3 4 5 6 7 8 9 10		
Jews	0 1 2 3 4 5 6 7 8 9 10		

Gay men	0 1 2 3 4 5 6 7 8 9 10
Lesbian women	0 1 2 3 4 5 6 7 8 9 10
Heterosexual men	0 1 2 3 4 5 6 7 8 9 10
Heterosexual women	0 1 2 3 4 5 6 7 8 9 10

Right-Wing Authoritarianism (Smith & Winter, 2002)

<u>**Instructions:**</u> **Please answer the following questions according to how much you agree or disagree with each statement. You will probably find that you agree with some of the statements and disagree with others, to varying extents.**

1	**2**	**3**	**4**	**5**	**6**	**7**
Strongly						**Strongly**
Disagree						**Agree**

RWA Aggression
1. What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.
2. There are many radical, immoral people in our country today, who are trying to ruin it for their godless purposes, whom the authorities should put out of action.
3. Once our government leaders give us the "go-ahead," it will be the duty of every patriotic citizen to help stomp out the rot that is poisoning our country from within.

RWA Submission
4. It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubts in people's minds.
5. It's better to have trashy magazines and radical pamphlets in our communities than to let the government have the power to censor them. (reverse-scored)
6. What our country needs most is discipline, with everyone following our leader in unity.

RWA Conventionalism
7. Gays and lesbians are just as healthy and moral as anybody else. (reversescored)
8. Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else. (reverse-scored)
9. People should pay less attention to the Bible and other old traditional forms of religious guidance, and instead develop their own personal standards of what is moral and immoral. (reverse-scored)

10. There is nothing wrong with premarital sexual intercourse. reversed

Smith, A. G., & Winter, D. G. (2002). Right-wing authoritarianism, party identification, and attitudes toward feminism in student evaluations of the Clinton-Lewinsky story. Political Psychology, 23, 355–383.

10th item from Mavor (2009, p. 594-595) "To be able to maintain at least three items in each scale we added a fourth conventionalism item, taken from the full RWA scale: ''There is nothing wrong with premarital sexual intercourse''.

Social Dominance Orientation - (Prato, Sidanius, Sttallworth, & Malle, 1994)

Instructions: Which of the following objects or statements do you have a positive or negative feeling towards? Beside each object or statement, place a number from "1" to "7" which represents the degree of your positive or negative feeling.

1	2	3	4	5	6	7
Very negative	Negative	Slightly negative	Neither positive nor negative	Slightly positive	Positive	Very positive

_____ 1. Some groups of people are simply not the equals of others.

_____ 2. Equality.

_____ 3. It is important that we treat other countries as equals.

_____ 4. This country would be better off if we cared less about how equal all people were.

_____ 5. To get ahead in life, it is sometimes necessary to step on others.

_____ 6. In an ideal world, all nations would be equal.

_____ 7. Increased social equality.

_____ 8. If people were treated more equally we would have fewer problems in this country.

_____ 9. Some people are just more deserving than others.

_____ 10. It is not a problem if some people have more of a chance in life than others.

_____ 11. We should try to treat one another as equals as much as possible. (All humans should be treated equally.)

_____ 12. Some people are just more worthy than others.

_____ 13. Increased economic equality.

_____ 14. Some people are just inferior to others.

Impression management subscale of the BIDR (Paulhus & Reid, 1991)

Instructions: Using the scale below, indicate whether the following statements are true/not true about you.

Not True   1   2   3   4   5   6   7   Very True

_____158. I sometimes tell lies if I have to.

_____159. I never cover up my mistakes.

_____160. There have been occasions when I have taken advantage of someone.

_____161. I never swear.

_____162. I sometimes try to get even rather than to forgive and forget.

_____163. I always obey the laws, even if I'm unlikely to get caught.

_____164. I have said something bad about a friend behind his or her back.

_____165. When I hear people talking privately, I avoid listening.

_____166. I have received too much change from a salesperson without telling him or her.

_____167. I always declare everything at customs.

_____168. When I was young I sometimes stole things.

_____169. I have never dropped litter on the street.

_____170. I sometimes drive faster than the speed limit.

_____171. I never read sexy books or magazines.

_____172. I have done things that I don't tell other's about.

_____173. I never take things that don't belong to me.

_____174. I have taken sick leave from work or school even though I was not really sick.

_____175. I have never damaged a library book or store merchandise without reporting it.

_____176. I have some pretty awful habits.

_____177. I don't gossip about other people's business.

44-Item Personality Inventory- BFI

John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-138). New York: Guilford.

Scoring instructions

Reverse key items: 2, 6, 8, 9, 12, 18, 21, 23, 24, 27, 31, 34, 35, 37, 41, 43

Extraversion: 1+6r+11+16+21r+26+31r+36

Agreeableness: 2r+7+12r+17+22+27r+32+37r+42

Conscientiousness: 3+8r+13+18r+23r+28+33+38+43r

Neuroticism: 4+9r+14+19+24r+29+34r+39

Openness: 5+10+15+20+25+30+35r+40+41r+44

Instructions: Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who *likes to spend time with others*? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

1	2	3	4	5	6	7
Disagree Strongly	*Disagree Moderately*	*Disagree a little*	*Neither Agree or Disagree*	*Agree a Little*	*Agree Moderately*	*Agree Strongly*

I See Myself as Someone Who…
1. Is talkative

2. Tends to find fault with others

3. Does a thorough job

4. Is depressed, blue

5. Is original, comes up with new ideas

6. Is reserved

7. Is helpful and unselfish with others

8. Can be somewhat careless

9. Is relaxed, handles stress well

10. Is curious about many different things

11. Is full of energy

12. Starts quarrels with others

13. Is a reliable worker

14. Can be tense

15. Is ingenious, a deep thinker

16. Generates a lot of enthusiasm

17. Has a forgiving nature

18. Tends to be disorganized

19. Worries a lot

20. Has an active imagination

21. Tends to be quiet

22. IS generally trusting

23. Tends to be lazy

24. Is emotionally stable, not easily upset

25. Is inventive

26. Has an assertive personality

27. Can be cold and aloof

28. Perseveres until the task is finished

29. Can be moody

30. Values artistic, aesthetic experiences

31. Is sometimes shy, inhibited

32. Is considerate and kind to almost everyone

33. Does things efficiently

34. Remains calm in tense situations

35. Prefers work that is routine

36. Is outgoing, sociable

37. Is sometimes rude to others

38. Makes plans and follows through with them

39. Gets nervous easily

40. Likes to reflect, play with ideas

41. Has few artistic interests

42. Likes to cooperate with others

43. Is easily distracted

44. Is sophisticated in art, music, or literature

Post-critical belief scale
(Duriez, Soenens, & Hutsebaut.'s 18-item version adapted from Fontaine et al.'s (2003) 33-item version)

Note: **Which item from the 33-item PCBS each of the following was taken from is indicated in parenthesis. O = Orthodoxy, E = External Critique, R = Relativism, S = Second Naivete (the four subscales of the PCBS).**

Instructions: **Please indicate the degree to which you agree with or oppose the following statements according to the scale given. Answer as honestly and quickly as you can.**

1	2	3	4	5	6	7
Completely Opposed			**Neutral**			**Completely in Agreement**

1. The Bible holds a deeper truth which can only be revealed by personal reflection. (S1)

2. God has been defined for once and for all and therefore is immutable. (O1)

3. Faith turns out to be an illusion when one is confronted with the harshness of life. (E1)

4. The Bible is a rough guide in the search for God, and not a historical account. (S2)

5. Even though this goes against modern rationality, Mary truly remained a virgin. (O2)

6. Each statement about God is a result of the time in which it was made. (R1)

7. Even though the Bible was written a long time ago, it retains a basic message. (S3)

8. Only the major religious traditions guarantee admittance to God. (O3)

9. The manner in which humans experience God will always be colored by society. (R4)

10. Ultimately, there is only one correct answer to each religious question. (O8)

11. The world of Bible stories is so far removed from us, that it has little relevance. (E7)

12. Science has made a religious understanding of life superfluous. (E4)

13. God grows together with the history of humanity and therefore is changeable. (R3)

14. My ideology is only one possibility among so many others. (R5)

15. I think that Bible stories should be taken literally, as they are written. (O6)

16. Despite the injustices caused by Christianity, Christ's message remains valuable. (S7)

17. In the end, faith is nothing more than a safety net for human fears. (E8)

18. Faith is an expression of a weak personality. (E10)

19.

Short Form of the Need for Cognition Scale (Cacioppo, Petty, & Kao, 1984)

Instructions: For each of the statements below, please indicate to what extent the statement is characteristic of you. If the statement is extremely uncharacteristic of you (not at all like you) please write a "1" to the left of the question; if the statement is extremely characteristic of you (very much like you) please write a "5" next to the question. Of course, a statement may be neither extremely uncharacteristic nor extremely characteristic of you; if so, please use the number in the middle of the scale that describes the best fit. Please keep the following scale in mind as you rate each of the statements below: 1 = extremely uncharacteristic; 2 = somewhat uncharacteristic; 3 = uncertain; 4 = somewhat characteristic; 5 = extremely characteristic.

1. I would prefer complex to simple problems.

2. I like to have the responsibility of handling a situation that requires a lot of thinking.

3. Thinking is not my idea of fun.*

4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.*

5. I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something.*

6. I find satisfaction in deliberating hard and for long hours.

7. I only think as hard as I have to.*

8. I prefer to think about small, daily projects to long-term ones.*

9. I like tasks that require little thought once I've learned them.*

10. The idea of relying on thought to make my way to the top appeals to me.

11. I really enjoy a task that involves coming up with new solutions to problems.

12. Learning new ways to think doesn't excite me very much.*

13. I prefer my life to be filled with puzzles that I must solve.

14. The notion of thinking abstractly is appealing to me.

15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.

16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort.*

17. It's enough for me that something gets the job done; I don't care how or why it works.*

18. I usually end up deliberating about issues even when they do not affect me personally.

Buss-Perry Aggression Questionnaire (1992)

Instructions: Please rate the degree to which the following questions are characteristic of you according to the scale given below. Be as honest as you can when answering and answer as quickly as you can.

1	2	3	4	5
Extremely		Neutral		Extremely
uncharacteristic				*characteristic*
of me				of me

Physical Aggression

1. Once in a while I can't control the urge to strike another person.

2. Given enough provocation, I may hit another person.

3. If somebody hits me, I hit back.

4. I get into fights a little more than the average person.

5. If I have to resort to violence to protect my rights, I will.

6. There are people who pushed me so far that we came to blows.

7. I can think of no good reason for ever hitting a person.*

8. I have threatened people I know.

9. I have become so mad that I have broken things.

Verbal Aggression

1. I tell my friends openly when I disagree with them.

2. I often find myself disagreeing with people.

3. When people annoy me, I may tell them what I think of them.

110

4. I can't help getting into arguments when people disagree with me.

5. My friends say that I'm somewhat argumentative.

Anger

1. I flare up quickly but get over it quickly.

2. When frustrated, I let my irritation show.

3. I sometimes feel like a powder keg ready to explode.

4. I am an even-tempered person.*

5. Some of my friends think I'm a hothead.

6. Sometimes I fly off the handle for no good reason.

7. I have trouble controlling my temper.

Hostility

1. I am sometimes eaten up with jealousy.

2. At times I feel I have gotten a raw deal out of life.

3. Other people always seem to get the breaks.

4. I wonder why sometimes I feel so bitter about things.

5. I know that "friends" talk about me behind my back.

6. I am suspicious of overly friendly strangers.

7. I sometimes feel that people are laughing at me behind my back.

8. When people are especially nice, I wonder what they want.

Brief Biographical Sketch Paragraph

If you had to summarize yourself to someone in 100 words or less, what would you say?

Free response

Demographics

Sex: Male   Female

Age (in years): _____

With which racial/ethnic group do you most closely identify?

African American / Black   Asian / Pacific Islander

Hispanic   Native American

White   Another race/ethnicity (please specify) _____

What is your sexual orientation?
Heterosexual
Homosexual
Bisexual
Other (please specify): _____

What is your school classification?
Freshman
Sophomore
Junior
Senior
Other (please specify): _____

In what socio-economic bracket were you raised for most of your life?

 Upper Class   Upper-Middle Class   Middle Class   Lower-Middle Class   Lower Class

What is your parents' current socio-economic bracket?

 Upper Class   Upper-Middle Class   Middle Class   Lower-Middle Class   Lower Class

In what type of area were you raised for most of your life?

A large city

A suburb near a large city

A small city or town

A rural area

I don't know

Do you believe in God?   Yes   Uncertain   No

What is your primary religious affiliation?
          None   Protestant   Catholic   Jewish   Muslim Hindu
Buddhist
          Other religion: _____

How interested are you in religion?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Not at all   Moderately   Extremely

interested   interested   interested

To what extent do you consider yourself a RELIGIOUS person?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Not at all   Very much

To what extent do you consider yourself a SPIRITUAL person?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Not at all   Very much
much

 How would you describe yourself <u>politically</u>?
        Very Conservative
        Conservative
        Leaning Conservative
        Moderate
        Leaning Liberal
        Liberal
        Very Liberal

Where are you completing this survey?
1. Home
2. Friend's house
3. Library
4. Other on-campus building
5. In an on-campus research lab
6. Public place (e.g., coffee shop, restaurant)
7. Other

How many other people are in the same room where you are completing this survey?
1. 0
2. 1
3. 2
4. 3
5. 4
6. 5+

What other tasks are you doing while you complete this survey?
1. Watching TV
2. Listening to music
3. Talking with friends
4. Reading something else (besides this survey)
5. Eating
6. More than one of the above
7. Nothing – only completing this survey

Did you enjoy this survey?
1. Yes
2. No
3. Neutral

What course would you like to receive credit for in exchange for participating in this experiment? Please indicate both the course number and professor of your course (e.g., PSY 1305, Dr. Tamara Rowatt). This information is necessary to award credit.

Biographical Sketch – Experiments 1 and 2

Sex: Male   Female

Age (in years): _____

Classification:
Freshman   Sophomore   Junior   Senior   Graduate Student
Other:_____

With which racial/ethnic group do you most closely identify? (please circle one)
    African American / Black   Asian / Pacific Islander
    Hispanic   Native American
    White   Another race/ethnicity (please specify)
    _____

What are some of your favorite hobbies?
_____
_____
_____

What is something unique about you?
_____
_____
_____

What is your primary religious affiliation? (circle one)
Agnostic   Atheist   Christian   Buddhist   Hindu   Jewish

Muslim   None   Other religion: _____

How important is religion to you?

                        1   2   3   4   5   6   7
                  Extremely   Extremely
                  unimportant   important

.

End of Study Survey – Experiment 1

End of Study Survey

__Instructions:__ **Please rate the extent to which you felt certain emotions toward the receiver on a 9-point scale given below. Be as honest as possible when answering.**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

**Feel very little of
this emotion toward
the other**

**Feel an extreme
amount of this
emotion toward the
other**

____1. Pleased

____2. Softhearted

____3. Tender

____4. Happy

____5. Resentful

____6. Mad

____7. Annoyed

____8. Warm

____9. Hurt

____10. Moved

____11. Obligated

____12. Empathetic

____13. Compassionate

____14. Upset

____15. Sympathetic

____16. Angry

____17. Morally disgusted

____18. Frightened

____19. Physically disgusted

____20. Negative

____21. Grossed out

____22. Positive

____23. Morally sickened

____24. Afraid

____25. Physically sickened

Instructions: Please answer the following questions with the degree to which you agree with them according to the scale given below.

1	2	3	4	5	6	7
Not at all						**Extremely**

_____ 1. How likeable do you tihnk this person is?

____2. Under normal conditions, how enjoyable do you think it would be to work with this person?

____3. How similar to your own values do you think this person is?

____4. How similar are your own activities compared to this person?

____5. How likely is it that you have had the same feelings as this person?

Instructions: Please answer the following questions about your partner in the resource distribution task.

1. What is this person's gender?
   Male
   Female

2. What is this person's religious affiliation?
   Christian
   Jewish
   Muslim
   Buddhist
   Hindu
   No religion – atheist
   No religion – agnostic
   Other religion

3. What is this person's race?
   African American / Black
   Asian / Pacific Islander
   Arab / Middle Eastern
   Hispanic
   Native American
   White
   Other race / ethnicity: _____

4. Did this person discuss any aspects of personality about him/herself?
>   Yes
>   No
5. Did this person discuss any aspects of religiousness/spirituality?
>   Yes
>   No

Instructions: **Please rate the degree to which you based your distribution decision on the following items. Rate it according to the scale given below.**

1	2	3	4	5	6	7
Not at all						**Totally**

____1. Getting money

____2. Being fair

____3. Helping the other participant

____4. Establishing justice

____5. Acting morally

____6. Teaching a lesson

____7. Dislike of the other participant

____8. Liking of the other participant

____9. Conflicting values between you and the participant

Thank you for your participation. Please come get the experimenter when you are done

Impression Formation Form – Experiment 2

Impression Formation Form

Instructions: Please attempt to make an impression of your partner based on the biographical sketch he or she filled out. Do this by <u>guessing</u> an answer to each of the following pieces of information about your partner.

1. The participant's college major: _____

2. The participant's sex (gender): _____

3. The participant's age:_____

4. What part of the country the participant is from: _____

5. Would you describe the participant as reserved or outgoing? _____

Taste Preference Form – Experiment 2

Taste Preference Form

Instructions: Please rate the degree to which you like each of the following tastes and textures based off of the response scale given below.

1. Sweet:
1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17   18   19   20   21
No liking at all   Extreme Liking

2. Sour
1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17   18   19   20   21
No liking at all   Extreme Liking

3. Creamy
1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17   18   19   20   21
No liking at all   Extreme Liking

4. Salty
1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17   18   19   20   21
No liking at all   Extreme Liking

5. Spicy
1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17   18   19   20   21
No liking at all   Extreme Liking

6. Dry
1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17   18   19   20   21
No liking at all   Extreme Liking
.

Instructions for Allocating Hot Sauce/Food Distribution – Experiment 2

1. Taste test the hot sauce to determine how spicy and flavorful it is with one spoon.

2. Please refer to the other participant's (the one you formed an impression of earlier) taste preference form if you would like to help you make your decision.

3. With the other (clean) spoon, give as much or as little hot sauce to the other participant as you would like by placing it in the Styrofoam cup. The participant will be required to eat all of the hot sauce allocated and then rate it.

4. Seal the cup with a lid when you are finished. This is done to insure that the experimenter does not know how much hot sauce you allocate.

5. Knock on the door to get the experimenter when you are finished.

End of Study Survey – Experiment 2

End of Study Survey

Instructions: Please fill out each of the sections on this form as per the instructions given.

1. For the hot sauce you **gave** to the other participant, please answer the following questions:

    a. How **hot** would you rate the hot sauce that you gave to the other participant?

        1   2   3   4   5   6   7   8   9
   Not at all hot   Extremely hot

  b. How **disgusting** would you rate the hot sauce that you gave to the other participant?

        1   2   3   4   5   6   7   8   9
   Not at all disgusting   Extremely disgusting

2. For the cracker <u>you ate</u>, please answer the following questions:

        a. How **dry** would you rate the cracker that you ate?

        1   2   3   4   5   6   7   8   9
   Not at all dry   Extremely dry

        b. How **disgusting** would you rate the cracker that you ate?

        1   2   3   4   5   6   7   8   9
   Not at all disgusting   Extremely disgusting

3. To what extent did you use the Taste Preference Inventory when giving out the food sample to the other person?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
Not at all   Completely

4. How useful do you think the Taste Preference Inventory was when giving out the food sample?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
Not at   Extremely
all useful   useful

5. Using the scale below, indicate the extent to which the person you gave the food sample to liked that kind of food.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
No liking at all   Extreme
                                                                liking

Instructions: Please rate the extent to which you felt certain emotions toward the other participant on a 9-point scale given below. Be as honest as possible when answering.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

Feel very little of this emotion toward the other

Feel an extreme amount of this emotion toward the other

_____1. Pleased

_____2. Softhearted

_____3. Tender

_____4. Happy

_____5. Resentful

_____6. Mad

_____7. Annoyed

_____8. Warm

_____9. Hurt

_____10. Moved

_____11. Obligated

_____12. Empathetic

_____13. Compassionate

_____14. Upset

_____15. Sympathetic

_____16. Angry

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1	2	3	4	5	6	7	8	9

**Feel very little of
this emotion toward
the other**

**Feel an extreme
amount of this
emotion toward the
other**

____17. Morally disgusted

____18. Frightened

____19. Physically disgusted

____20. Negative

____21. Grossed out

____22. Positive

____23. Morally sickened

____24. Afraid

____25. Physically sickened

Instructions: Please answer the following questions about the other participant with the degree to which you agree with them according to the scale given below.

1	2	3	4	5	6	7

Not at all   **Extremely**

____ 1. How likeable do you think this person is?

____2. Under normal conditions, how enjoyable do you think it would be to work with this person?

____3. How similar to your own values do you think this person is?

____4. How similar are your own activities compared to this person?

____5. How likely is it that you have had the same feelings as this person?

Instructions: Please answer the following questions.

1. What was your partner's gender?
      Male
      Female
      I don't remember

2. What is your partner's religious affiliation?
      Christian
      Jewish
      Muslim

Buddhist
Hindu
No religion – atheist
No religion – agnostic
Other religion
I don't remember

3. What is your partner's race?
African American / Black
Asian / Pacific Islander
Arab / Middle Eastern
Hispanic
Native American
White
Other race / ethnicity: _____
I don't remember

4. Did your partner discuss any aspects of personality about him/herself in his/her biographical sketch?
Yes
No
I don't remember

5. Did your partner discuss any aspects of religiousness/spirituality about him/herself in his/her biographical sketch?
Yes
No
I don't remember

Thank you for your participation. Please come get the experimenter when you are done.

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