

## ACADEMIC PAPER

# Affective and cognitive religiosity: Influences on consumer reactance and self-control

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**Abstract**

Self-control is regularly studied in the marketing literature in relation to spending and food consumption; however, little research has assessed trait characteristics that influence consumers' self-control. Although prior research in other fields has shown a generally positive relationship between religiosity and self-control, such research has often used poor measures of religiosity and has inadequately examined marketplace outcomes or factors underlying consumers' self-controlled responses. Thus, the studies herein build on self-regulation theory to address and extend from these limitations by examining the influence of religiosity, as a multidimensional construct (particularly affective and cognitive religiosity), on self-control and resulting influences on marketplace behaviors. Findings reveal that priming affectively (cognitively) religious consumers leads to greater (lower) consumer self-control with a religious message prime (Study 1) and religious writing task (Study 2). Additionally, findings show that psychological reactance is at the root of these responses (Study 3). Implications build on self-regulation theory and the strength model of self-control to show the importance of religiosity (particularly affective and cognitive religiosity), interactions with religious primes, and psychological reactance in understanding consumers' self-control.

## 1 | INTRODUCTION

Research in psychology has identified religiosity as a key trait that influences self-control (Carter, McCullough, & Carver, 2012; Geyer & Baumeister, 2005; McCullough & Willoughby, 2009). Religiosity here is referring to “the degree to which one holds religious beliefs and values both through an internal spiritual connection and external religious practices and behaviors” (Minton & Kahle, 2014, p. 12–13). These specific religious beliefs stem from one's religious affiliation, which can be defined as “a commonly held set of beliefs and values that guide external behavior and internal search for meaning” (Minton & Kahle, 2014, p. 14). Prior research in psychology that has assessed this relationship has mostly examined religiosity as a unidimensional construct, oftentimes composed of only a handful of items (cf. Friese & Wänke, 2014), with calls for more research examining a more comprehensive measure of religiosity (McCullough & Willoughby, 2009).

Recent research in consumer behavior has shown the importance of measuring religiosity as a three-dimensional construct (affective, behavioral, and cognitive religiosity), showing that religiosity dimensions interact with religious primes to differentially influence consumption (Minton, 2015). The focus here is only on affective and cognitive religiosity given that behavioral religiosity has been shown to have

little connection to consumer behavior (McCullough & Willoughby, 2009; Minton & Kahle, 2017; Watterson & Giesler, 2012). Specifically, affective religiosity (which is associated with more of a spiritual connection to a god or divine being) leads to positive responses to religious primes, whereas cognitive religiosity (which is associated more with specific beliefs about god) leads to negative responses to religious primes. Stated another way, Minton (2015) showed that affectively religious consumers report higher product evaluations when exposed to a religious prime, whereas cognitively religious consumers report lower product evaluations when exposed to the same religious prime. Minton (2015) reasons that cognitively religious consumers' seemingly reactant response to religious primes are likely due to their focus on beliefs that religious primes in secular advertising are just a means of manipulation. In contrast, affectively religious consumers rely more on feelings and connection to a divine being that is not based on facts and figures, thereby not producing reactance to religious facts or figures in advertising. This reasoning fits with Brehm's (1966) psychological reactance measure and Donnell, Thomas, and Buboltz's (2001) corresponding factor analysis showing that one of the core dimensions of psychological reactance is “response to advice and recommendations”—what consumers could perceive religious primes as. Despite this interesting reasoning, the relationship between religious

consumers' response to religious primes and psychological reactance has not previously been explored. Thus, there is great need to understand why (using experimental evidence) the interesting interaction effects found by Minton (2015) are occurring.

Although this prior research by Minton (2015) explored consumption in the context of advertising trust, the research herein seeks to understand how religiosity dimensions (particularly affective and cognitive religiosity) may differentially influence consumer self-control and actually test the influence of psychological reactance as a mediator to this relationship. This is an important distinguishing factor given that advertising, by its nature, is often perceived as persuasive or manipulative (Obermiller & Spangenberg, 1998), which could contribute to the negative product evaluations found among cognitively religious consumers exposed to religious primes in ads. When religious primes are presented outside the context of advertising, expectations of persuasion or manipulation are likely to be less. Additionally, Minton (2015) explored subtle primes (e.g., a Christian fish symbol or evolution fish symbol with legs on the back of a car in a car dealership ad). Given reasoning rooted in reactance for the negative relationship between cognitive religiosity (as opposed to affective religiosity) and product evaluations after exposure to a religious prime, it is possible that more overt primes could produce even more reactant responses, including reactant responses from consumers dominant in other dimensions of religiosity (e.g., affective religiosity). This reasoning further shows the importance of testing psychological reactance as mediator to the relationship between religious consumers' response to religious primes and consumption outcomes.

Thus, this paper builds on self-regulation theory to accomplish three purposes: (a) explore how priming religion influences self-controlled marketplace behaviors; (b) identify how religiosity dimensions moderate the relationship between religious primes and consumer self-control; and, most interestingly, (c) test psychological reactance as a mediator in the relationship between religious consumers' reaction to religious primes and consumer self-control. Stated simply, this research examines the influence of religious primes (independent variable) on consumer self-control (dependent variable), as moderated by religiosity dimensions and mediated by psychological reactance.

## 2 | SELF-REGULATION THEORY AND RELIGION

McCullough and Willoughby (2009) state that self-control is "the process by which a system uses information about its present state to change that state" (p. 71). Self-control is a central component of self-regulation theory (Carver & Scheier, 2001) that involves inputs relative to the current situation, comparators looking at how the current situation differs from the ideal situation, and outputs that are representative of adjustment behaviors based on findings from the comparators.

Although features of self-regulation theory are important (e.g., inputs, comparators, and outputs), it is also necessary to understand influencers to self-control to develop a comprehensive understanding of what influences consumer self-control. A good place to start in exploring influencers to consumer behavior, inclusive of self-

control, is with a consumer's core values. Not only do core values act as a trait-based influencer on self-control, but they can also function as a comparator that assists the consumer in knowing whether they are acting in accordance with their ideal situation (i.e., in accordance with their core values). Although it is beyond the scope of this paper, it is worth noting that there are many other influencers to self-control beyond just core values (e.g., parental upbringing, social networks, expectations of reinforcement, or punishment; Carver & Scheier, 2001).

One of the most prominent sources of core values is a consumer's religious affiliation (Minton & Kahle, 2014; Pargament, 2001; Roccas, 2005), with recent research suggesting a need for more research examining religiosity's influence on consumer self-control (Mathras, Cohen, Mandel, & Mick, 2016). As previously mentioned, prior research has shown a positive correlation between religiosity and self-control (Carter et al., 2012; McCullough & Willoughby, 2009; Welch, Tittle, & Grasmick, 2006); however, such research has yet to adequately examine outcomes of marketplace behaviors, nor has it explored how a comprehensive, three-dimensional measure of religiosity (and particularly affective and cognitive dimensions) influences self-control. Additionally, although substantial research has examined antecedents to consumer self-control (cf. George, 2002, Haws, Davis, & Dholakia, 2016, Janssen, Franssen, Wulff, & Reijmersdal, 2016, Kemp & Kopp, 2011), this research has yet to sufficiently explore the role of deeply held religious beliefs in influencing such self-control.

There are several theories as to why religiosity is positively correlated with self-control. Geyer and Baumeister (2005) suggest that religiosity may influence self-control because of religious prescriptions that provide clear standards of attitudinal and behavioral conduct. Saroglou (2011) posits that self-control is a means by which to behave morally in accordance with scriptural prescriptions. McCullough and Willoughby (2009) explain the positive relationship between religiosity and self-control by the many social sanctions within religious congregations that address one's failure to control their actions. Baumeister, Vohs, and Tice (2007) posit a self-control strength model where religious scripture dictates behaviors that need to be self-controlled by religious followers that are not otherwise communicated to the general public through social norms, thereby building self-control strength. Similarly, Rounding, Lee, Jacobson, and Ji (2012) discuss that religion may lead to self-control because of beliefs in an ever-watching divine being, leading religious consumers to exercise self-control to avoid punishment by such an omniscient being. Additionally, religion's link to self-control dates back to evolutionary theories of religion, such as those by Durkheim (1912) and Malinowski (1935) or, more recently, by Baumeister and Exline (2000), where religion is hypothesized as a tool to control and bring order to human behavior.

## 3 | DIMENSIONS OF RELIGIOSITY AND SELF-CONTROL

Prior research has mostly examined religiosity's influence on self-control using religiosity as a unidimensional construct. Some research has further examined religiosity as a two-dimensional construct consisting of intrinsic religiosity (i.e., more spiritual aspects of

religiosity) and extrinsic religiosity (i.e., more behavioral aspects of religiosity), such that intrinsic religiosity is positively and significantly correlated with self-control, whereas extrinsic religiosity is negatively or nonsignificantly correlated with self-control (Watterson & Giesler, 2012). However, McCullough and Willoughby (2009) specifically mention a need to better examine dimensions of religiosity that lead to higher self-control and other dimensions that lead to lower self-control. Additionally, this prior research on self-control and religiosity as a one- or two-dimensional construct did not explore interactions with religious primes, which, as Minton (2015) showed, such primes differentially interact with religious primes to influence consumer evaluations.

No prior research has examined a comprehensive three-dimensional representation of religiosity on self-control, such as the three-dimensional model first suggested by Stark and Glock (1968). These authors as well as others (cf. Cornwall, Albrecht, Cunningham, & Pitcher, 1986) suggest that religiosity is composed of three dimensions: affective, behavioral, and cognitive religiosity. Affective religiosity represents an internal, spiritual connection with a god or divine being; behavioral religiosity corresponds to external behaviors (e.g., religious service attendance); and cognitive religiosity corresponds to beliefs about a religion and religious scripture. As mentioned earlier, the focus here is on affective and cognitive religiosity given prior research showing a relationship between these dimensions are consumption behavior (cf. Minton, 2015), as well as little significance between behavioral religiosity and consumption behavior (McCullough & Willoughby, 2009; Watterson & Giesler, 2012).

Although affective religiosity “is the feeling dimension and encompasses feelings toward religious beings, objects, or institutions,” cognitive religiosity “is the religious belief or orthodoxy component” (Cornwall et al., 1986, p. 227). At true extremes, a consumer that is only affectively religious would be spiritual and nothing more (i.e., no beliefs or behaviors, just feelings), whereas a consumer that is only cognitively religious would have beliefs and viewpoints but no spirituality (i.e., they would hold beliefs but not follow through on these with feelings or actions). In reality, most people are a combination of the three religiosity dimensions (Cornwall et al., 1986; Minton, 2015; Stark & Glock, 1968), which are “knowing (cognition), feeling (affect), and doing (behavior)” (Cornwall et al., 1986, p. 227).

In terms of cognitive religiosity, one of the theories as to why religiosity positively correlates with self-control is because of religious prescriptions related to regulation of behaviors (Carter et al., 2012; Geyer & Baumeister, 2005). Therefore, a dimension of religiosity based on beliefs (i.e., cognitive religiosity) should inform what behaviors need to be regulated. A consumer with high cognitive religiosity should believe that their religious scripture is true (Cornwall et al., 1986; Stark & Glock, 1968), and this belief should lead to understanding the need for self-control (Carter et al., 2012; Geyer & Baumeister, 2005). Stated simply, there should be a positive relationship between cognitive religiosity and trait self-control. Additionally, these effects should carry across religious affiliations given religious passages on self-control in most all religious scripture. For example, in Christianity, Titus 2:11–12 states that “for the grace of God has appeared that offers salvation to all people. It teaches us to say ‘No’ to ungodliness and worldly passions, and to live self-controlled, upright and godly lives in this present age.” In

Islam, the Quran 79:40–41 states that “But as for him who feared standing before his Lord, and restrained himself from impure evil desires and lusts. Verily, Paradise will be his abode.” In Hinduism, the concept of Ahimsa (i.e., nonviolence) is frequently mentioned in scriptures (e.g., the Sruti and Smriti) and regarded as a behavior requiring a high level of self-control (Schmidt et al., 2014). Additionally, in Buddhism in the Surangama Sutras, self-control is described as important to resist sexual passions (Schmidt et al., 2014). Thus, self-control is mentioned across the scriptures of religious affiliations.

Affective religiosity is also expected to be positively correlated with trait self-control because this dimension of religiosity is focused on personal closeness to a God or divine being (Stark & Glock, 1968), thereby likely increasing desire to fulfill commandments from a God or divine being related to trait self-control. Specifically, affective religiosity should influence desire to follow commandments because this type of religiosity shapes a consumer's choices throughout each day as the consumer makes choices to closely connect with their god or divine being (Pearce, Michael Foster, & Hardie, 2013). Scripture across religious affiliations emphasizes broadly that a personal connection to one's god or divine being should influence daily life. For example, in Christianity, Romans 12:2 states, “do not be conformed to this world, but be transformed by the renewing of your mind, so that you may prove what the will of God is, that which is good and acceptable and perfect.” Similarly, in Islam in the Quran 49:13, it states “Verily, the most honored of you in the sight of God is the most righteous of you.” Hinduism and Buddhism both encourage meditative practices that similarly allow faith principles to influence daily life (Schmidt et al., 2014). Again, this general devotion to a god or divine being is expected to transfer to specific self-control as well given self-control prescriptions across religious affiliations.

#### 4 | RELIGION PRIMES AND RELIGIOSITY DIMENSIONS

Although there has been a decent amount of research showing a positive correlation between self-control and religiosity, much less research has explored this relationship experimentally (McCullough & Willoughby, 2009; Watterson & Giesler, 2012). In one of the few experimental studies, priming religion has been shown to produce less stress and subsequently greater resources to exercise self-control, likely due in part to the prime reminding consumers of the capability to relieve stress and burdens through prayer (Inzlicht & Tullett, 2010). Priming religion has also been shown to increase self-control by increasing temptation resistance capabilities (Laurin, Kay, & Fitzsimons, 2012; Rounding et al., 2012). Together, these experimental and correlational findings provide strong support that religiosity positively influences self-control. What is left unanswered in this relationship is how religiosity dimensions may differentially influence self-control.

Prior research using a three-dimensional measure of religiosity has shown that affective and cognitive religiosity produce divergent influences on consumption behaviors (Minton, 2015). Specifically, Minton (2015) finds that cognitively religious consumers react more negatively to belief cues in advertising in comparison to affectively religious consumers, which is likely a result of a more scrutinized evaluation of

statements related to beliefs. In other words, “cognitive religiosity relies more on mental agreement and understanding of religious scripture and could lead to greater reaction and disagreement with religious cues” (p. 7). Although Minton (2015) explored subtle belief cues in advertising (e.g., a Christian fish symbol) and effects on consumer trust and product evaluations, this research lacks exploration of other types of more explicit religious primes (e.g., specific references to God, prayer, or religion) and also does not explore how such primes interact with religiosity dimensions to influence consumer self-control. Thus, the research herein fills this gap by exploring interactions among more explicit forms of religious primes and religiosity dimensions on self-controlled consumer behaviors.

As mentioned earlier, cognitive religiosity is rooted in beliefs (Stark & Glock, 1968), which could cause consumers to react more to belief-based references (e.g., a religious prime in a marketplace context) in comparison to nonbelief based religiosity dimensions (e.g., affective religiosity). This idea of reactance is worthy of elaboration. Brehm (1966) describes reactance as occurring when consumers feel restricted causing an individual to enter into a state of aroused motivation, leading to reactive behavior to try to reduce restrictions. Restrictions in the context of this paper would include advertising telling a consumer what or what not to do as well as an internal fight with one's self over whether or not to follow scriptural restrictions.

In an examination of the construct of reactance, Donnell et al. (2001) found three dimensions: (a) response to advice and recommendations; (b) restriction of freedom; and (c) preference for confrontation. Each of these dimensions could be seen in religious primes. For example, the prime could be perceived as advice from a marketer, as restricting one's religious beliefs, or the prime could evoke a sense of need to confront information perceived as manipulative or false. Most likely though, consumers' reaction to religious primes is represented mostly by the first dimension of reactance identified by Donnell et al. (2001)—response to advice and recommendations. In the construct of reactance, this dimension is represented by such questions as “suggestions and advice often make me do the opposite,” “I get very irritated when somebody tells me what I must or must not do,” or “when I get advice, I take it more as a demand.” A religious prime (e.g., God's word says you should eat healthy) could be seen as such advice or suggestions, leading to reactance.

Related to this idea of reactance, the persuasion knowledge model describes that consumers' response to persuasion episodes is dependent on experience with the marketer as well as episode-relevant knowledge (Friestad & Wright, 1994). Cognitively religious consumers would likely have more episode-relevant knowledge (i.e., religious knowledge for a potential persuasion episode involving religious cues) leading to greater awareness of religious beliefs and preparedness to react against inappropriate religious belief claims (e.g., as a religious prime in a consumption context may be perceived). In contrast, affectively religious consumers are more relationship driven (in terms of a relationship with a divine being), emotive, and open (Saroglou, 2002), likely lowering the desire for reactance. This understanding fits with Minton's (2015) findings that affectively religious consumers are more trusting of marketers and like products more that feature belief cues because these cues facilitate emotive relationships. This reasoning also fits with prior research showing that reactant responses to primes

are often rooted in skepticism (Laran, Dalton, & Andrade, 2011). As such, cognitively religious consumers may react to religious primes because they are skeptical of the accuracy and appropriateness of the religious prime.

Regardless of the specific processes, it is expected that, consistent with Minton's (2015) findings, cognitively religious consumers will react in prime inconsistent ways when religion is primed, whereas affectively religious consumers will act in prime consistent ways. Also, given weak or nonexistent relationships between behavioral religiosity and marketplace outcomes in prior research (cf. McCullough & Willoughby, 2009, Watterson & Giesler, 2012), no relationship is proposed between behavioral religiosity and religious priming. Thus,

**H1** *The influence of religious primes (IV) on consumer self-control (DV) is moderated by religiosity, such that religiosity primed consumers that are high in affective (cognitive) religiosity act in prime consistent (inconsistent) ways, thereby exhibiting more (less) self-controlled marketplace behaviors in comparison to consumers not religiously primed.*

**H2** *Psychological reactance mediates the relationship between exposure to religious primes (IV) and consumer self-control (DV), which is moderated by religiosity, such that religious primes increase psychological reactance and lower consumer self-control for cognitively religious consumers but not for affectively religious consumers.*

To test these hypotheses, three studies are conducted. After a pretest showing correlations between religiosity dimensions and consumer self-control, Studies 1 and 2 test how priming religion (independent variable) interacts with religiosity dimensions (moderator) to influence self-controlled marketplace behaviors (dependent variable), thereby testing H1. Then, Study 3 examines the process behind these effects by testing the mediating role of psychological reactance, thereby testing H2.

## 5 | STUDY 1: RELIGIOUS MESSAGE PRIME AND SELF-CONTROL WITH HEALTH GOALS

### 5.1 | Pretest

One hundred and one adults ( $M_{\text{age}} = 33.75$ ,  $SD = 11.12$ ; 47.5% female) from Amazon's Mechanical Turk participated in this pretest in exchange for a small cash incentive. All participants answered all questions. Participants responded to self-control, religiosity, and demographic questions, in that order. Self-control was measured using Tangney, Baumeister, and Boone's (2004) 13-item brief scale ( $\alpha = .915$ ), with each item measured on a 9-point scale ranging from *not at all* to *very much*. Religiosity was measured using Minton's (2015) religiosity scale, which was adapted from the scale of Cornwall et al. (1986) to have more applicability to consumers of all worldviews. Minton's (2015) scale has three dimensions to measure affective ( $\alpha = .981$ ), behavioral ( $\alpha = .878$ ), and cognitive religiosity ( $\alpha = .963$ ), which were all normally distributed. Sample items from Minton's (2015) scale included affective questions that assessed a personal

connection with a god (e.g., "God is an important influence in my life"), behavioral questions that assessed religious behaviors (e.g., "How often do you attend religious services?"), and cognitive questions that assessed views of religious scripture and god (e.g., "The scripture of my religious affiliation is the word of God"). These dimensions match the original dimensions of religiosity conceptualized by Stark and Glock (1968).

Correlation analysis revealed that affective religiosity ( $r = .27$ ,  $p = .006$ ), behavioral religiosity ( $r = .16$ ,  $p = .112$ ), and cognitive religiosity ( $r = .26$ ,  $p = .009$ ) positively influenced self-control. As seen by these results, affective and cognitive religiosity were the only religiosity dimensions to significantly influence self-control, whereas the relationship from behavioral religiosity to self-control was not significant. To confirm the effect of religiosity on self-controlled marketplace behaviors, Studies 1–3 examine how priming religion influences such behaviors (specifically in the context of healthy eating), thereby testing H1. Rather than examining trait self-control as was examined in the pretest, Studies 1–3 examine situational self-control, given the expectation that religious priming should influence situational self-control. These studies examine religious primes as an independent variable, as moderated by religiosity dimensions, with the primes being presented as a religious message (Study 1) and a religious writing task (Study 2). Lastly, Study 3 examines situational self-control alongside the potential process mechanism of psychological reactance (i.e., the mediator) to explain the effects in Studies 1 and 2.

## 5.2 | Method

One hundred and twenty-eight adults ( $M_{\text{age}} = 34.70$ ,  $SD = 12.18$ ; 54.3% female) from Amazon's Mechanical Turk participated in this study in exchange for a small cash incentive. Participants were randomly assigned to one of two conditions (message: religious prime, control). After exposure to the condition, participants answered questions regarding healthy eating before responding to an instructional check, religiosity (moderator), and basic demographic questions.

The message was manipulated with a phrase for healthy eating. The phrase for the (religious prime) control condition read, "(God's word says) you should eat healthy." An instructional check assessed awareness of the condition with one question asking participants which phrase they saw at the beginning of the study, offering the religious prime and control phrases as choice options.

Dependent variables of commitment to healthy eating and importance of healthy eating were used to assess effectiveness of the religious prime. Commitment to healthy eating was measured using three items, each on a 9-point bipolar scale ("How committed are you to fulfilling the goal of eating healthy?": *not at all/greatly, a small amount/a great amount, a little/a lot*,  $\alpha = .964$ ). Importance of healthy eating was measured with one item on a 7-point Likert scale ranging from *strongly disagree* to *strongly agree*: "Eating healthy is something that is important." Additionally, a consumer's preexisting struggle with eating healthy was used as a control variable to account for individual differences in healthy eating behavior. Healthy eating struggle was measured on a 9-point scale ranging from *not at all* to *a great amount*: "How much do you struggle to eat healthy on a regular basis?" Affective ( $\alpha = .971$ ), behavioral ( $\alpha = .812$ ), and cognitive ( $\alpha = .914$ ) religiosity

were measured using the same scales from the pretest, all of which were again normally distributed.

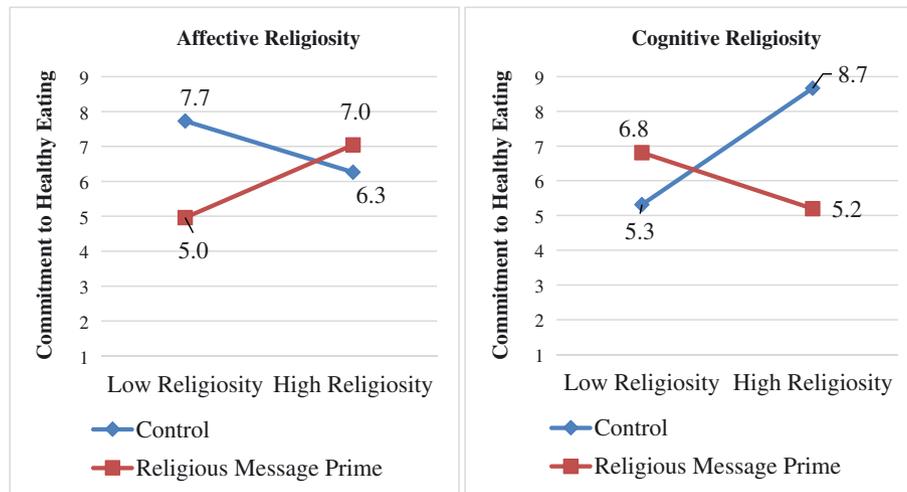
## 5.3 | Results

One participant did not answer the instructional check correctly and was removed from the dataset, leaving the data from 127 participants for further analysis.

Hierarchical linear regression was used to test the effect of religious prime condition (dichotomous variable where 1 = religious message prime and 0 = control) and religiosity dimensions (moderator), after controlling for one's personal struggle with healthy eating, in Step 1. In Step 2, the interactions between religious prime condition and each of the religiosity dimensions on healthy eating outcomes were added. Hierarchical rather than regular linear regression was used to examine the difference between main effects of religious prime in Step 1 and moderating effects of religiosity dimensions in Step 2. Also, it is worthy of noting that there were no significant correlations between either religious prime condition or religiosity dimensions and the control variable (one's personal struggle with healthy eating), and the main effects of religious prime condition on dependent variables (not considering moderating effects of religiosity) were also nonsignificant. These nonsignificant effects show the important moderating influence of religiosity dimensions on religious prime response.

For commitment to eating healthy, the full model with interaction effects was significant,  $F(8, 119) = 3.32$ ,  $p = .002$ , with the interaction effects significantly adding to the main effects model,  $F\Delta(3, 119) = 3.52$ ,  $p = .017$ . Specifically, the interaction between religious prime condition and cognitive religiosity was significant,  $t(119) = -2.75$ ,  $p = .007$ , and the interaction between religious prime condition and affective religiosity was marginally significant,  $t(119) = 1.88$ ,  $p = .063$ . The interaction with behavioral religiosity was not significant ( $p > .10$ ). Result significance only slightly changed when not including the control variable (interaction with affective religiosity,  $p = .109$ ; interaction with cognitive religiosity,  $p = .011$ ; overall model significance,  $p = .009$ ). Spotlight analysis at one standard deviation above and below the mean for affective religiosity ( $M = 3.95$ ,  $SD = 2.13$ ) and cognitive religiosity ( $M = 4.37$ ,  $SD = 1.90$ ) was used to further examine interaction effects. Consumers high (low) in affective religiosity reported the highest commitment to healthy eating in the religious prime (control) condition. In contrast, consumers high (low) in cognitive religiosity reported the highest commitment to healthy eating in the control (religious prime) condition; see Figure 1. Simple slopes tests were conducted, revealing that differences between prime conditions were significant for low affective religiosity ( $p = .027$ ), low cognitive religiosity ( $p = .037$ ), and high cognitive religiosity ( $p = .003$ ), but not for high affective religiosity ( $p = .195$ ).

For importance of healthy eating, the full model with interaction effects was significant,  $F(8, 119) = 2.10$ ,  $p = .041$ , with the interaction effects significantly adding to the main effects model,  $F\Delta(3, 119) = 5.07$ ,  $p = .002$ . Specifically, the interactions between religious prime condition and cognitive religiosity,  $t(119) = -3.75$ ,  $p < .001$ , as well as affective religiosity,  $t(119) = 3.08$ ,  $p = .003$ , were significant. The interaction with behavioral religiosity was not significant ( $p > .10$ ). Similar to commitment to healthy eating, result significance



**FIGURE 1** Spotlight analysis of commitment to healthy eating by religiosity dimension and religious prime condition (Study 1) [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

only slightly changed when not including the control variable (interaction with affective religiosity,  $p = .002$ ; interaction with cognitive religiosity,  $p < .001$ ; overall model significance,  $p = .027$ ). To better understand interaction effects, a spotlight analysis was conducted at one standard deviation above and below the mean for affective and cognitive religiosity. The same pattern of effects emerged, such that consumers high (low) in affective religiosity reported the highest importance of healthy eating in the religious prime (control) condition, whereas consumers high (low) in cognitive religiosity reported the highest importance of healthy eating in the control (religious prime) condition. Simple slopes tests were again conducted, revealing that differences between prime conditions were significant for low affective religiosity ( $p = .006$ ), high affective religiosity ( $p = .004$ ), low cognitive religiosity ( $p = .005$ ), and high cognitive religiosity ( $p = .007$ ).

## 5.4 | Discussion

The findings from this study show that a religious message prime interacts with a consumer's religiosity level to influence healthy eating outcomes (namely, commitment to and importance of healthy eating). Most interesting though is the finding that these effects are moderated by religiosity dimensions, such that consumers high in cognitive religiosity in the religious prime condition were less likely to be committed to healthy eating or think that healthy eating is important in comparison to those in the control condition. In contrast, consumers high in affective religiosity generally showed an opposite pattern of effects, thereby supporting H1. Interestingly though, consumers low in affective religiosity also experienced negative effects from the religious prime leading to a lower commitment to healthy eating.

This diverging pattern of effects for affectively and cognitively religious consumers fits with prior research in showing that cognitively religious consumers are more likely to react negatively to religious cues in a marketing context (Minton, 2015). This reasoning builds off cognitive religiosity's roots in beliefs (Stark & Glock, 1968) and the literature on psychological reactance where consumers react negatively to information when their freedom (e.g., freedom of religious beliefs) is perceived to be restricted (Brehm, 1966). Given the additional finding

that consumers low in affective religiosity also experienced negative effects from the religious prime, perhaps it is the absence of the affective/spiritual religiosity connection that fuels desire to react negatively toward religious cues. Although the pretest results showed that affectively or cognitively religious consumers had higher self-control, the self-control measure was measuring general trait self-control rather than specific situational self-control. Additionally, consumers were not exposed to a religious prime in the pretest that likely produced reactance among cognitively religious consumers. The nonsignificant influence of behavioral religiosity in this study fits with the nonsignificant findings from the pretest as well as a large body of prior research showing that behavioral-based measures of religiosity have little connection to marketplace behaviors in comparison to deeper, more internalized measures of religiosity, such as affective and cognitive religiosity (Minton, 2015; Swinyard, Kau, & Phua, 2001).

To confirm that these interaction effects between a religious prime (independent variable) and religiosity dimensions (moderator) are not just a one-time occurrence, Study 2 replicates Study 1 with a different type of religious prime (writing task) and a specific eating behavior (indulgence in cookies).

## 6 | STUDY 2: RELIGIOUS WRITING PRIME AND FOOD INDULGENCE

### 6.1 | Method

Ninety-five adults ( $M_{\text{age}} = 34.77$ ,  $SD = 12.21$ ; 55.8% female) from Amazon's Mechanical Turk participated in this study in exchange for a small cash incentive. Participants were randomly assigned to one of two conditions (writing task: religious prime, control). After exposure to the condition, participants saw a bowl of cookies and answered questions regarding cookie indulgence before responding to an instructional check, religiosity (moderator), and basic demographic questions.

The religious prime condition asked participants to "Take a minute to write about your religious (or non-religious) beliefs." In contrast, the

control condition participants were asked to “Take a minute to write about your day so far.” Both conditions involved writing to maintain similarities in cognitive effort. An instructional check assessed awareness of the condition with one question asking participants if the writing task at the beginning of the study asked them to write about their religious beliefs.

The dependent variable of indulgence resistance was used to assess successful priming and was measured with three items, each on 9-point scales ranging from *not acceptable* to *definitely acceptable* (“How much do you feel it is acceptable to ... (1) Indulge on the cookies, (2) Eat the whole bowl of cookies in one sitting, and (3) Disregard your diet to eat the cookies;”  $\alpha = .843$ ). Items were reverse coded, such that higher values indicated higher resistance to indulgence. Additionally, a consumer's frequency of eating cookies was used as a control variable to account for individual differences in desire to indulge in cookies. Frequency of eating cookies was measured on a 5-point scale ranging from *never* to *all the time*. Affective ( $\alpha = .979$ ), behavioral ( $\alpha = .873$ ), and cognitive ( $\alpha = .927$ ) religiosity were measured using the same scales from the pretest and Study 1, all of which again were normally distributed.

## 6.2 | Results

Three participants did not answer the instructional check correctly and were removed from the dataset, leaving the data from 92 participants for further analysis.

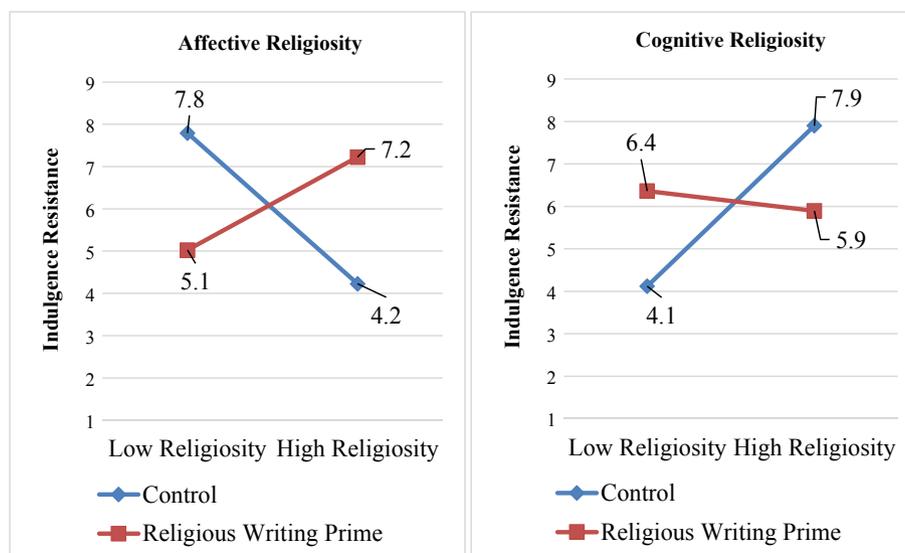
Hierarchical linear regression was used to test the effect of the religious writing prime (dichotomous variable where 1 = religious writing prime and 0 = control condition) and religiosity dimensions (moderator), after controlling for one's frequency of eating cookies, in Step 1. In Step 2, the interactions between the religious writing prime and each of the religiosity dimensions on indulgence resistance were added. Hierarchical rather than regular linear regression was used to examine the difference between main effects of religious prime in Step 1 and moderating effects of religiosity dimensions in Step 2. It is

worthy to note here that there were no significant correlations between religious prime condition or religiosity dimensions and the control variable (frequency of eating cookies). Additionally, main effects of religious prime condition on dependent variables (not considering moderating effects of religiosity) were also nonsignificant. Similar to Study 1, these nonsignificant effects show the important moderating influence of religiosity dimensions on religious prime response.

The full model with interaction effects for indulgence resistance was significant,  $F(8, 83) = 2.84, p = .008$ , with the interaction effects directionally adding to the main effects model,  $F_{\Delta}(3, 83) = 2.42, p = .072$ . Specifically, there were significant interactions between the religious writing prime and affective religiosity,  $t(83) = 2.59, p = .011$ , and between the religious writing prime and cognitive religiosity,  $t(83) = -2.15, p = .034$ . The interaction with behavioral religiosity was not significant ( $p > .10$ ). Result significance only slightly changed when not including the control variable (interaction with affective religiosity,  $p = .010$ ; interaction with cognitive religiosity,  $p = .079$ ; overall model significance,  $p = .109$ ). Spotlight analysis at one standard deviation above and below the mean for affective religiosity ( $M = 3.73, SD = 2.22$ ) and cognitive religiosity ( $M = 4.23, SD = 2.04$ ) was used to further examine interaction effects. Consumers high (low) in affective religiosity reported the highest indulgence resistance in the religious writing prime (control) condition. In contrast, consumers high (low) in cognitive religiosity reported the highest indulgence resistance in the control (religious writing prime) condition; see Figure 2. Simple slopes tests were conducted, revealing that differences between prime conditions were significant for low affective religiosity ( $p = .021$ ), high affective religiosity ( $p = .014$ ), low cognitive religiosity ( $p = .040$ ), and directionally for high cognitive religiosity ( $p = .062$ ).

## 6.3 | Discussion

Similar to Study 1, the religious prime interacted with affective and cognitive religiosity to influence self-controlled marketplace behaviors,



**FIGURE 2** Spotlight analysis of indulgence resistance by religiosity dimension and religious prime condition (Study 2) [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

thereby supporting H1. In other words, religiosity moderated the effect of religious primes on consumer self-control. Again following suit with Study 1, consumers higher in cognitive religiosity and lower in affective religiosity responded in a less self-controlled manner after exposure to a religious prime. Thus, regardless of whether the religious prime is integrated within a message (Study 1) or is a separate writing activity (Study 2), religious primes can be an effective way of increasing self-controlled eating behaviors, although implementation of such primes must take into account the differential effects by religiosity dimension. These findings also support prior literature that suggests that cognitively religious consumers are more likely to react to claims given cognitive religiosity's roots in beliefs (Cornwall et al., 1986; Minton, 2015; Stark & Glock, 1968). It is also possible that consumers low in affective religiosity may be spurred to think more about cognitive reactance when presented with a religious prime, generating the same negative pattern of effects from the religious prime. Given conjectures that reactance is at the root of cognitively religious consumer's response to religious primes and corresponding response to self-control behaviors (and possibly intermingling with consumers low in affective religiosity as well), Study 3 proceeds to test this reasoning through a mediation model with psychological reactance.

## 7 | STUDY 3: PROCESS UNDERLYING PRIMES AND AFFECTIVE VERSUS COGNITIVE RESPONSE

### 7.1 | Method

One hundred adults ( $M_{\text{age}} = 35.55$ ,  $SD = 11.85$ ; 45.5% female) from Amazon's Mechanical Turk participated in this study in exchange for a small cash incentive. Participants were randomly assigned to one of two conditions (writing task: religious prime, control). After exposure to the condition, participants responded to questions assessing consumption desires, general self-control, psychological reactance (mediator; these last two measures presented in randomized order), religiosity (moderator), an instructional check, and basic demographics.

The same writing task wording for the religious prime and control conditions as used in Study 2 was again used in Study 3. To assess self-controlled consumption desires, participants were asked five questions with bipolar scales, "What you be more likely to do right now ... (1) snack on candy/snack on veggies, (2) eat fast food/prepare a meal at home, (3) overeat/eat a small meal, (4) drink soda/drink water or juice, (5) eat junk food in an office/resist and not eat junk food in an office;"  $\alpha = .799$ . Additionally, participants were shown three foods (french fries, mozzarella sticks, and doughnut holes) and asked how much of each food they would like right now.

General self-control was measured using the 13-item brief self-control scale of Tangney et al. (2004), with each item measured on a scale from 1 (*not at all*) to 9 (*very much*),  $\alpha = .910$ . Psychological reactance was measured using Hong and Page's 13-item reactance scale, with each item measured on a 7-point Likert scale,  $\alpha = .904$ . Although research generally assesses general self-control and psychological reactance as trait characteristics, research shows that these can also be used as state characteristics (cf. Mazis, 1975, Baumeister et al.,

2007), which is how these construct measures are used in this study by examining the influence of religious primes on these characteristics. Affective ( $\alpha = .983$ ), behavioral ( $\alpha = .889$ ), and cognitive ( $\alpha = .953$ ) religiosity were measured using the same scales from Studies 1 and 2, all of which again were normally distributed.

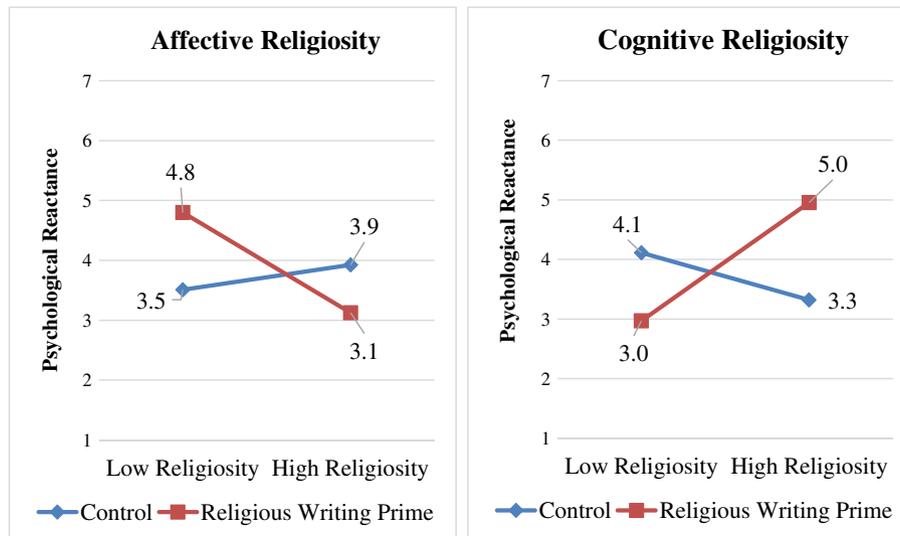
### 7.2 | Results

One participant did not answer the instructional check correctly and was removed from the dataset, leaving the data from 99 participants for further analysis.

To examine psychological reactance as a process mechanism (i.e., mediator) explaining the reaction between religiosity dimensions (moderator), religious primes (independent variable), and consumer self-control (dependent variable), mediation analyses were conducted using Hayes' (2013) PROCESS macro (model 10) with 10,000 bootstrapped samples and bias-corrected confidence intervals (CIs). All religiosity dimensions as well as interactions between religiosity dimensions and religious prime condition were included in every model. CIs not containing zero represent significance at a 95% confidence level.

Psychological reactance significantly mediated the relationship between the interaction of cognitive religiosity  $\times$  religious prime condition and general self-control (CI:  $-1.0711$  to  $-.0354$ ), self-controlled consumption (CI:  $-.8665$  to  $-.0204$ ), as well as how many french fries (CI:  $.2055$  to  $5.8288$ ), mozzarella sticks (CI:  $.0080$  to  $1.0821$ ), and doughnut holes (CI:  $.0167$  to  $.7042$ ) currently desired. Specifically, the cognitive religiosity  $\times$  religious prime condition positively influenced reactance ( $b = .62$ ,  $p = .045$ ), and reactance negatively influenced general self-control ( $b = -.82$ ,  $p < .001$ ) and self-controlled consumption ( $b = -.53$ ,  $p = .008$ ). Additionally, reactance positively influenced nonself-controlled consumption items including how many french fries ( $b = 3.76$ ,  $p = .002$ ), mozzarella sticks ( $b = .58$ ,  $p = .035$ ), and doughnut holes ( $b = .44$ ,  $p = .009$ ) were currently desired. An opposite pattern of effects occurred for affective religiosity, although not significantly (affective religiosity  $\times$  religious prime condition  $\rightarrow$  reactance,  $b = -.44$ ,  $p = .176$ ). All interactions with behavioral religiosity were also nonsignificant ( $p$ 's  $> .10$ ), and thus, behavioral religiosity was included in the model only as a control variable. Direct effects from religious prime condition (as moderated by religiosity dimensions) to dependent variables were also nonsignificant, further supporting psychological reactance as an important mediating factor between religious prime response and consumer self-control.

Spotlight analyses at one standard deviation above and below the mean for cognitive religiosity ( $M = 3.90$ ,  $SD = 2.25$ ) and affective religiosity ( $M = 3.60$ ,  $SD = 2.35$ ) were conducted to examine the interaction effects on psychological reactance; see Figure 3. Note that a spotlight analysis was conducted on affective religiosity, despite nonsignificance, to show a similar pattern of effects as found in Studies 1 and 2. Consumers high (low) in cognitive religiosity had the greatest psychological reactance when exposed to the religious prime (control) condition. Simple slopes analysis revealed that the difference between religious prime conditions was significant for high cognitive religiosity ( $p < .001$ ) but not for low cognitive religiosity ( $p = .781$ ). An opposite pattern of effects was observed for those high in affective religiosity.



**FIGURE 3** Spotlight analysis of psychological reactance by religiosity dimension and religious prime condition (Study 3) [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

Across all conditions, consumer high in cognitive religiosity and exposed to the religious prime condition reported the highest psychological reactance.

### 7.3 | Discussion

Results from Study 3 reveal that psychological reactance explains, at least in part, the negative response to religious primes by cognitively religious consumers, thereby supporting H2. This is the first study to go beyond mere conjectures of the role of reactance in response to religious primes by cognitively religious consumers (cf. Minton, 2015, Stark & Glock, 1968; Cornwall et al., 1986). The positive relationship between cognitive religiosity and psychological reactance, particularly after exposure to religious primes, was expected because the cognitive dimension of religiosity (as opposed to the affective or behavioral dimensions) is based on beliefs of scripture and God (Cornwall et al., 1986; Stark & Glock, 1968). Therefore, a religious prime can activate reactance that then influences consumer self-control.

The actual object of the reactance is worthy of further research. Cognitively religious consumers could be reacting to advertising or marketing messages with a heightened sense of religious prescriptions or rather could be reacting to an internal struggle of whether or not to follow self-control related prescriptions in religious scripture. Interestingly, all direct effects of religiosity dimensions or prime condition were nonsignificant (when not including interaction effects in the model), suggesting that it is the religious prime condition that activates reactance for cognitively religious consumers, and this reactance may not always present in the marketplace if not previously activated.

### 7.4 | General discussion

Religious primes influence consumer self-control, such as healthy eating and controlled spending. More importantly and novel, religiosity dimensions act as moderators to differentially influence self-controlled

consumption behaviors in the presence of religious primes, partly as a result of heightened psychological reactance. In finding this relationship, this research fulfilled the three purposes set forth in the introduction. Specifically, religion was primed to show more definitively that religion influences self-controlled marketplace behaviors and to identify how religious primes differentially influence religiosity dimensions. Interestingly, and fitting with prior research (cf. Minton, 2015), consumers higher in cognitive religiosity or lower in affective religiosity were more reactant to religious primes than consumers lower in cognitive religiosity or higher in affective religiosity. These relationships then resulted in consumers higher in cognitive religiosity or lower in affective religiosity being less self-controlled after exposure to religious primes.

The interaction of religious primes and religiosity dimensions is particularly interesting because Minton's (2015) research was conducted in the context of advertising and with more subtle primes, whereas the research herein was mostly outside the context of advertising and with more overt primes, thereby providing evidence for the pervasiveness of the reactant effect of cognitively religious consumers upon exposure to religious primes. In contrast, and as expected, affectively religious consumers act in prime consistent ways after being exposed to a religious prime (Fishbach, Friedman, & Kruglanski, 2003; Inzlicht & Tullett, 2010; Laurin et al., 2012; Rounding et al., 2012). The positive relationship fits with theories that religiosity influences self-control because of prescriptions related to self-control in religious scripture (Geyer & Baumeister, 2005; Saroglou, 2011) as well as other evolutionary theories suggesting religiosity is a tool to assist in order and control of human behavior (Baumeister & Exline, 2000; Durkheim, 1912; Malinowski, 1935).

Lastly, and more novel, results from Study 3 show that psychological reactance mediates the relationship between cognitively religious consumer's response to religious primes and consumer self-control. These results fit with the earlier theorizing that cognitively religious consumers have more to react to given the roots of this dimension in beliefs and knowledge, thereby fitting with the literature of psychological reactance (Brehm, 1966), reactant responses to

primes (Laran et al., 2011), and the persuasion knowledge model (Friestad & Wright, 1994).

In addressing these purposes, the research herein builds on the literature on self-regulation theory, reactance, the persuasion knowledge model, and religion's influence on self-control. Specifically, the research herein adds to self-regulation theory (Carver & Scheier, 2001) to show that religiosity dimensions uniformly influence trait self-control but differentially influence state self-control after exposure to religious priming. As such, this research also contributes to the persuasion knowledge model (Friestad & Wright, 1994) to show that religiosity dimensions may be part of a consumer's persuasion knowledge toolbox that is used in evaluating potential persuasion episodes (e.g., when religious cues are integrated into marketing efforts). Additionally, this research builds on the marketing literature on religion (Mathras et al., 2016; Minton, 2015; Minton & Kahle, 2014; Taylor, Halstead, & Haynes, 2010) to show the importance of understanding religiosity in marketing, particularly with the role that affective and cognitive religiosity play in differentially influencing consumer behavior. This research also highlights the importance of psychological reactance (Hong & Page, 1989) as a mechanism in influencing how cognitively religious consumers respond to religious primes.

In addition to theoretical contributions, the findings from the studies herein provide insight for marketing managers. When trying to encourage self-controlled behaviors (e.g., healthy eating, savings plans, exercise products, and smoking cessation programs), understanding the consumer's religiosity, or lack thereof, may provide key insights into their engagement and purchase behavior. Affectively religious consumers are more responsive to religious primes, whereas cognitively religious consumers (as well as those low in affective religiosity) are more reactant to religious primes. Such religiosity dimensions could be assessed in routine surveys with a company's customers. Additionally, the research herein shows a variety of methods for priming religion that could be used by marketers—religious ad messages (Study 1) and religious writing activities (Studies 2 and 3). These primes could be integrated into advertising along with other brand communications (e.g., a company's website or on product packaging). Partnering these primes with words associated with affective religiosity (e.g., "spiritual" or "relationship with god") may increase receptiveness to the prime.

Along with traditional media, these primes can be implemented into online platforms that consumers self-select into (e.g., Pandora radio, social media sites) and provide easier identification of religious target segments. Additionally, these online platforms provide proxies for religiosity dimensions with such actions as songs that are given a thumbs up (e.g., Pandora) or pages that are liked (e.g., Facebook). Using these proxies, religious primes can be used in ads targeted at consumers that match a desired profile (e.g., targeting consumers that like pages on Facebook that are representative of affective religiosity). Search engine optimization platforms also provide the option to not include participants with certain search characteristics. For example, companies could create targeted messages with religious primes to consumers searching words associated with affective religiosity (e.g., search terms of "spirit" or "love for god") but exclude consumers searching words associated with cognitive religiosity (e.g., search terms of "beliefs" or "infallible"). Marketers should consider priming religion if their target market is

affectively religious, especially when trying to promote purchase of self-control-related products and services. Marketers with a target market of predominantly cognitively religious consumers (or low in affective religiosity) should identify ways to establish trust and reduce reactance before selling goods or services related to self-control. In addition to religious prime use by for-profits, these tactics could also be used by nonprofits and public policy makers in public service announcements to encourage more prosocial, self-controlled behaviors.

This research is limited by use of only participants from one culture and some single item measures (e.g., importance of healthy eating). Future research should address these limitations. Additionally, future research should build off the studies herein to explore other marketplace attitudes and behaviors, test religiosity's influence on self-control with field studies, and identify methods for strengthening and restoring self-control. In terms of restoring self-control, Cahn and Polich (2006) note that meditation serves a self-control role in mental activity and attentional behavior. Building off this prior research, it would be interesting to explore how different methods of restoring self-control (e.g., meditation, prompting consumers to think about their divine being, and reading religious scripture) would differentially influence consumers high in affective, behavioral, or cognitive religiosity.

Further research should explore whether or not psychological reactance mediates consumers' response to religious primes in other consumption settings (e.g., with risky goods, high involvement purchases, or conspicuous consumption) as well as with other measures of reactance that may be more state-based in nature. Additional research could also explore how other models of religiosity influence consumer self-control. For example, Saroglou (2011) developed a model with four religiosity dimensions (believing, bonding, behaving, and belonging), which may be more relevant for cross-cultural research. Less than 10 participants in each of the studies herein included participants that were Jewish, Muslim, Buddhist, or Hindu, and thus, future research needs to confirm that the findings from the research herein are consistent with other religious affiliations.

Additional research might also explore other mechanisms driving religion's effect on self-control other than psychological reactance. Perhaps there are more religiously driven explanatory factors influencing this relationship, such as differences in interpretation of scripture and the necessity to self-control behaviors (e.g., liberal vs. fundamental interpretations of scripture) or differing influences of one's parents and their religious background on views of self-control. Research is also warranted to understand why consumers low in affective religiosity, but not low in cognitive religiosity, react negatively to religious primes. Future research should also explore alternative mediating mechanisms to the relationship between religion and self-controlled consumption behaviors. Another interesting area for further examination would be to build off prior research on belief cues in marketing (cf. Minton, 2015, Taylor et al., 2010, Minton, 2016) to identify how religious versus nonreligious belief cues increase or decrease self-control.

## 8 | CONCLUSION

Marketplace behaviors such as healthy eating, saving for retirement, committing to an exercise regime, and limiting alcohol consumption

all require self-control. The studies herein provide one of the first investigations into how religiosity dimensions (particularly affective and cognitive religiosity) differentially influence self-controlled marketplace behaviors when religiosity is primed as well as the role of psychological reactance in response to religious primes. Specifically, affectively religious consumers act in more self-controlled ways when exposed to a religious prime, whereas cognitively religious consumers act in less self-controlled ways when exposed to the same religious prime. Thus, future research on self-control needs to incorporate religiosity, specifically in examining differential effects of affective and cognitive religiosity on response to religious primes in marketing. Understanding religiosity's influence on marketplace self-control has the potential to inform marketing activities that promote beneficial marketplace behaviors, thereby increasing consumers' participation in such beneficial behaviors.

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