Religious shoppers spend less money*  
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**Abstract**  
Although religion is a central aspect of life for many people across the globe, there is scant research on how religion affects people's non-religious routines. In the present research, we identify a frequent consumption activity that is influenced by religiosity: grocery shopping. Using both field and laboratory data, we find that grocery spending decreases with religiosity. Specifically, we document that people who live in more religious U.S. counties spend less money on groceries and make fewer unplanned purchases. We also demonstrate this negative relationship by measuring religiosity at the individual level and employing a religious prime. That is, the more religious people are, the less willing they are to follow through on novel purchase opportunities that arise during their grocery shopping trips. This effect is consistent with the account that many religions emphasize the value of being prudent with money. Additional analysis supports our predicted indirect effect of religiosity on spending through frugality.

1. Introduction  
Three out of every four people in the United States are affiliated with a religion, according to a 2014 Pew Research Center study (http://www.pewforum.org/religious-landscape-study). Even for the non-religious, religion is a prevalent social force, influencing realms of life ranging from politics and economics to education and art (e.g., Iannaccone, 1998). Despite being a widespread part of American society, limited research has been conducted on how religion affects people's routine, non-religious activities. In the present research, we examine whether religiosity affects the amount of money people spend on their grocery purchases, a major and frequent consumption activity. For the purpose of our study, we define religion broadly as “a belief in God accompanied by a commitment to follow principles believed to be set forth by God” (McDaniel & Burnett, 1990: p. 103).

We are surrounded by religious symbols and cues that remind us of religious values, which can potentially guide our and others' actions. Research has shown that because people tend to anticipate protection from God, reminders of God increase risk taking in domains with no moral implications (Chan, Tong, & Tan, 2014; Kupor, Laurin, & Levav, 2015). Prior studies have also found a link between religiosity and virtuous behavior (e.g., Geyer & Baumeister, 2005; Vitell, 2009; Vitell, Paullilo, & Singh, 2005). For example, reminders of religion (e.g., recalling the Ten Commandments) have been shown to reduce unethical behavior (Mazar, Amir, & Ariely, 2008) and enhance social fairness (Shariff & Norenzayan, 2007). Others have found that when exposed to religious themes, people endure unpleasant or impossible tasks for a longer period of time (Rounding, Lee, Jacobson, & Ji, 2012).

More relevant to the current topic, research has found that people with stronger religious beliefs exhibit less brand reliance (Shachar, Erdem, Cutright, & Fitzsimons, 2011) and are less likely to engage in conspicuous consumption (Stiillman, Fincham, Vohs, Lambert, & Phillips, 2012) than those with weaker or no religious beliefs. In addition, being exposed to brands has been shown to reduce one's commitment to religion (Cutright, Erdem, Fitzsimons, & Shachar, 2014). There is also some evidence that religiosity hinders the diffusion of new products (Chandrasekaran & Tellis, 2008). These findings are consistent with the notion that religious thoughts lead to distancing oneself from materialism and unjustified spending. Many religions discourage overspending, which is believed to impede spiritual growth (Lastovicka, Bettencourt, Hughner, & Kuntze, 1999). Conversely, frugality is commonly viewed as virtuous across different religions (e.g., Westacott, 2016).

More generally, religious people have value systems that differ from
those of less or non-religious people (Minton & Kahle, 2013; Minton & Kahle, 2017), and they follow religious principles and values in their daily life. For example, highly religious people tend to impose greater discipline on their consumption (Mathras, Cohen, Mandel, & Mick, 2016; McCullough & Willoughby, 2009; Zell & Baumeister, 2013). They generally have more traditional views and tend to be more conservative than less religious people (Malka, Soto, Cohen, & Miller, 2011; Saroglou, Delpierre, & Dernelle, 2004). In fact, religiosity has been used as a proxy for conservatism in prior research examining whether consumers’ preferences for established, national brands versus generic, store brands depend on their conservative ideology (Khan, Misra, & Singh, 2013).

Building on this body of research, we argue that a higher degree of religiosity (either at the individual or community level) is associated with frugal shopping behavior, such that those high in religiosity spend less money on their purchases and make fewer unplanned purchases. We also suggest that, more generally, religiosity affects people's spending behavior such that even being reminded of God makes people less likely to spend money. We argue that this occurs due to the emphasis on frugality common to many religions. This belief, which can be made salient not only by a religion's tenets but more generally by religious priming, translates into real consumption behavior.

While religiosity has been shown to be associated with consumers’ brand preferences (Khan et al., 2013; Shachar et al., 2011), the direct link between religiosity and consumer spending as well as the role of frugality in this relationship have not been explored in previous research. Focusing on selected supermarket items categories (e.g., soda, soup, diapers), Khan et al. (2013) document that the relative market share of national versus generic brands is higher in more religious U.S. counties. They attribute this finding to the notion that religious consumers, who are conservative, tend to prefer national brands, which are perceived to be less risky than generic brands. Unlike Khan et al. (2013), we build our theory around the concept of frugality and examine shoppers' total spending on all categories of grocery items including unplanned purchases, which account for 55% of total grocery purchases of the average shopper in the U.S. and thus have a significant impact on shoppers’ pocketbook (POPAI, 2012). Our focus on the amount of grocery spending complements and extends their brand preference analysis.

1.1. The present research

We test our main hypotheses in five studies using both field and lab data. Study 1 tests the association between religiosity and grocery spending by utilizing county-level data obtained from the U.S. Census Bureau. The use of county-level rather than state-level data increases the variation in both dependent and independent variables. It also increases the sample size and thus, the power of our tests. The county-level religiosity measure contains two pieces of information related to our research. First, it is a coarse proxy for individual-level religiosity (e.g., people who reside in Jefferson County, AL are, on average, more religious than those who reside in Pasco County, FL). Second, it captures the extent to which people living in a particular region are being exposed to religious cues and reminders (e.g., churches, temples, the Christian cross, Hanukkah candles, Christmas trees, religious banners and slogans, etc.). Hence, the county-level religiosity is a suitable measure for our tests using secondary datasets.

Study 2 combines county-level religiosity data with individual-level shopping data and examines whether people who live in more religious counties spend less money on their grocery purchases and make fewer unplanned purchases. Study 3 presents more direct and robust evidence for the link between religiosity and reduced spending by measuring religiosity at the individual level and employing an experimental shopping task. These correlational studies control for conservatism and demonstrate the role of religiosity in grocery shopping above and beyond shoppers’ conservative ideology, which is actually positively correlated with grocery spending. Study 4 provides evidence of the causal relation between religion and spending using a laboratory experiment in which participants are primed with religiosity or not, and their spending is then assessed in a subsequent task. Finally, Study 5 provides evidence of the underlying mechanism by documenting the indirect effect of religion on spending through frugality. We report all measures, manipulations, and exclusions in the main text. We did not extend the sample size in any of the studies after initial analysis.

2. Study 1: religiosity and spending on groceries at the county level

2.1. Method

2.1.1. Data

Every five years, the U.S. Census Bureau surveys businesses around the country as a part of the Economic Census and releases information on industry revenues and other relevant metrics, broken down to the county level. In its most recent Economic Census in 2012, the Bureau surveyed nearly four million business establishments, which were required by law to respond to the survey. We collected the aggregated survey data from the U.S. Census Bureau database. We also gathered data on each county’s population, median income, median age, gender distribution, race distribution, and education level from the U.S. Census Bureau database.

We obtained county-level data on religiosity from the Association of Religion Data Archives (ARDA), which conducted its most recent survey in 2010. Over 230 religious groups reporting more than 150 million adherents participated in the survey. Finally, to create a measure of conservatism based on Republican voting, we downloaded the county-level U.S. Presidential election results from the following link: https://github.com/helloworlddata/us-presidential-election-county-results. While our main tests use the election results for 2012, using the average of the election results in 2004, 2008, and 2012 yields similar results.

2.1.2. Measures

The data on grocery stores sales are available for 1638 counties. Our dependent variable is grocery store sales per store in a particular county. Our key independent variable is the number of religious adherents (per 1000 population) reported for a county. We apply log transformation to both variables to reduce skewness as well as to facilitate the interpretation of results (Wooldridge, 2006). We use the proportion of Republican votes in a county as a proxy for conservatism.

We control for several other county characteristics in the regression model: the log of population, the log of median income, the log of median age, the log of the proportion of female residents, the log of the proportion of white residents, and the log of the proportion of college graduate residents. Previous research has shown that grocery shopping patterns and spending change depending on shoppers’ demographic characteristics (e.g., Aguiar & Hurst, 2007; Chandon, Hutchinson, Bradlow, & Young, 2009; Kim & Park, 1997). We log-transformed the control variables as well to facilitate the interpretation of estimated coefficients.

For five counties in our sample, the number of religious adherents (per 1000 population) was reported to be greater than 1000. We set these values equal to 1000. Excluding these observations from the sample does not change the results.

Pre- and post-transformation histograms for the transformed dependent variables are presented in Online appendix A. We note that, throughout the paper, log transformation refers to taking the natural log of a particular variable. If the range of a variable includes 0, we add 1 to the variable before applying log transformation.