



Divine restraint: An experimental analysis of religious preference and intertemporal discounting



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ABSTRACT

The propensity to delay gratification, measured by the discount rate, is associated with a variety of positive outcomes including higher rates of education and savings, as well as lower rates of poverty or addiction. There is a significant literature which supports a linkage between religion and self-regulation. We use an online experimental approach to test the influence of religious salience on intertemporal discount rates. The experiment used both real and hypothetical rewards in its design. Using a large sample, we are able to test the impact of religious primes across a variety of religious traditions as well as the non-religious. Contrary to previous studies, we do not find evidence that increased religious salience increases observed discount rates. Furthermore, we find no significant difference in the impact of religious salience across religious groups.

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1. Introduction

A series of experiments dating back to the late 1960s, known collectively as the “marshmallow tests,” demonstrate that the propensity to delay future rewards is a cognitive trait that can be linked to an important set of positive life outcomes (Mischel & Ebbese, 1970; Mischel, Ebbesen, & Zeiss, 1972; Mischel, 2014). Researchers of human behavior consider religion a potential moderator of delayed gratification. Specifically, religious individuals should express lower discount rates when religious belief is stronger (McCullough & Carter, 2013; Carter, McCullough, Kim-Spoon, Corrales, & Blake, 2012). However, progress on this topic has been slow, largely because the formation of religious belief is highly endogenous. Religious beliefs are not randomly distributed across the population, but arise from a myriad of hereditary and environmental forces. For example, it is likely that childhood experiences are correlated with both religious preference and an individual's propensity to delay gratification. Identifying exogenous sources of variation in religious belief is essential to identifying its distinct impact on discount rates. Using an experimental approach, we esti-

mate a link between religious preference and intertemporal choice, as measured by a discount rate.

This paper extends the literature by constructing an experiment where religious identity is randomly applied to a broad sample of individuals. To do this, we use a technique, originally developed in the psychology literature, where individuals' religious belief is primed by recalling explicitly religious topics. By taking an action that heightens religious salience in an individual, his latent religious identity should be activated (Turner, 1985). This technique has been broadly applied in the social sciences (Benjamin, Choi, & Fisher, 2013). We then estimate the subject's discount rate using a set of questions developed in the Monetary Choice Questionnaire (MCQ). From this we are able to identify the differential impact of religious belief on the individual's willingness to delay gratification.

Contrary to current theory, we find no relationship between heightened religious salience and reduced discounting of future rewards. Further, this lack of impact appears consistent across a wide variety of religious groups and religious intensities. We are also able to apply a mixed method approach to test whether the form of the experiment (hypothetical versus monetary payoffs) influences our estimates. We find no difference in our results across experimental method. Contrary to our own expectations, we are unable to support the proposition that religious belief reduces intertemporal discount rates.

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2. Motivation & literature review

Social scientists have investigated a wide array of linkages between religion and economic behaviors. Following [Weber \(1958\)](#), many studies examine how differences among religious groups impact material well-being. There is also a growing literature demonstrating that highly religious people, regardless of their specific affiliation, exhibit pro-social and wealth-building behaviors ([McCullough & Carter, 2013](#)). Other recent work, however, claims that religious fervor is not as prosocial ([Galen, 2012](#)) or economically advantageous as previously thought ([Benabou, Ticchi, & Vindigni, 2013](#)). In this paper, we examine the particular relationship between religious preference and the propensity to discount (or devalue) future rewards. This is an area of inquiry where recent studies have come to different conclusions about the influence of religion.

One key way in which religion could influence economic behavior is that many religious institutions engender beliefs and behaviors that encourage delayed gratification. Religions as different from one another as Hinduism and Christianity teach that prudent behaviors in this life can result in large payoffs in the next. Zealous followers are also often taught (and trained) to deny themselves an immediate good (food, for instance, in the case of fasting) in the hope of obtaining spiritual benefit in this life or the next. Of course, major world religions exhibit internal diversity and not every version of every religion facilitates patience. Still, there is good reason to expect that, on average, highly religious people will choose delayed gratification more often than their less or non-religious counterparts ([McCullough & Carter, 2013](#)).

It is surprising, then, that two recent studies come to different conclusions about the influence of religion on delayed gratification. Both studies use experiments with college students, and both evaluate the influence of religiosity on discount rates. [McCullough and Carter \(2013\)](#) use a survey to measure religious commitment, and find that highly religious individuals have lower discount rates, and that this relationship is partially mediated by their future time orientation. For the highly religious, the future is more salient for economic decisions. In contrast, Benjamin and colleagues ([Benjamin, Choi, & Fisher, 2013](#)) use a religious prime to induce religious identity salience, yet find no effect of religion on discount rates.

More work is needed to clarify the relationship between religion and discount rates. Many nonprofit organizations, both in the US domestically and internationally, incorporate explicitly religious teaching to promote savings and reduce current consumption. Organizations such as the Lampo Group (more popularly known by its founder, Dave Ramsey) and Food for the Hungry apply religious themes to promote thrift and savings behavior. Below, we review the theoretical connections between religion and intertemporal decision making before explaining how our study contributes to the growing literature on religion and economic behavior.

How might religion influence intertemporal choice? The most straightforward explanation postulates that religious beliefs—which include various admonitions toward delayed gratification, non-economic investments, altruistic actions, and the promise of future rewards—create mental habits that promote patience. Additionally, many religious traditions include beliefs which significantly reframe costs, such that suffering, charitable giving, and hard work become their own rewards or guarantors of future reward ([Stark & Finke, 2000](#)). Thus, religious persons' representations of intertemporal choices should be different from those of non-religious persons.

Religions also provide behavioral templates through various ritual practices. Adherents who consistently practice their religion may experience better self-control and be more easily inclined toward delayed gratification ([McCullough & Willoughby, 2009](#)). Religious practice may help adherents develop a set of transferable

skills which reduce the costs of investment in human capital (e.g. listening attentively in a pew is like listening attentively in a classroom) ([Regnerus, 2003](#)).

Recent work suggests a much more complex set of factors involved in intertemporal choices. Psychologists and neuroscientists have recently proposed several cognitive mechanisms related to, and perhaps underlying, the processes by which people make intertemporal decisions. Anticipation, self-control, and representation all appear to influence how individuals decide whether a particular reward is worth the wait ([Berns, Laibson, & Loewenstein, 2007](#)). As a result of the cognitive complexity, individuals may apply different discount rates for different domains of choices and discount rates may vary across contexts ([Berns, Laibson, & Loewenstein, 2007](#)).

While both [McCullough & Carter \(2013\)](#) and [Benjamin et al. \(2013\)](#) measure individuals' discount rates in very similar ways, they take different approaches to identify the link between religion and discounting. Both studies expect discount rates to vary by an individual's level of religiosity. [McCullough & Carter \(2013\)](#) use a survey-based instrument that measures religious commitment. In contrast, [Benjamin et al. \(2013\)](#) utilize a religious prime to activate religious salience. The two methods capture different aspects of religious identity. The survey inventory measures the level of religious commitment respondents wish to project, regardless of how they might actually behave. This is a self-aware, or "edited" religious identity. The priming mechanism should instead tap a more visceral religious identity. For example, the "lapsed" Catholic who rarely, if ever, attends church services may still be influenced at some deep level by her religious upbringing. On the survey, this individual would appear to be less religious but, if the religious prime successfully activated her latent Catholic identity, she may make slightly different choices regarding future rewards, at least for a short time, while the religious "activation" is still salient. Indeed, some previous studies by psychologists, e.g. ([Carpenter & Marshall, 2009](#)), offer evidence that priming works to make religious identities salient in the way we are describing above.

Thus, it may be that these papers come to different conclusions about religion and discounting because they are measuring different aspects of religiosity. Given the cognitive complexity involved in time preference and the multiple pathways by which religion and discount rates may be related, some diversity in findings is not surprising and, perhaps, expected. The reconciliation of these two studies awaits further empirical evidence. This study is designed to offer such findings.

We expand on the [McCullough and Carter \(2013\)](#) and [Benjamin et al. \(2013\)](#) studies in three important ways. First, by utilizing an online labor market (Amazon's Mechanical Turk) we are able to curate a much larger sample, which allows greater precision in our estimates. Second, our sampling method also allows for more religious and age variation than previous college student samples. Third, we use both priming and survey-based measures of religiosity so that we can compare the two methodologies within the same sample; here the larger sample size should be especially helpful in permitting statistically relevant comparisons among groups.

3. Experimental design

We conducted our experiment within the Mechanical Turk (MTurk) platform operated by the Amazon.com, Inc.¹ MTurk allows independent users to create HITs, or "Human Intelligence Tasks," which are posted to the online community and completed by other

¹ See <https://www.mturk.com/mturk/welcome> for a complete description of this service.

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