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Essays on Moral Decision Making

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Essays on Moral Decision Making

A dissertation submitted in partial satisfaction

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Doctor of Philosophy in Management

by

Malena Isabel de la Fuente

2024

ABSTRACT OF THE DISSERTATION

Essays on Moral Decision Making

by

Malena Isabel de la Fuente

Doctor of Philosophy in Management

University of California, Los Angeles, 2024

Professor Melvin Keith Chen, Chair

People often use their sense of right and wrong to influence their decision making processes. Most people consider values like fairness, loyalty, care, and honesty to be important and make these a part of their moral identity. This identity can be shifted, however, by situational factors. This dissertation explores how challenging or stressful situations cause people to prioritize different values or reconsider their moral frameworks. In Chapter 1, we study how experiencing a natural disaster (an event that makes mortality more salient) affects moral behavior. We find that after experiencing an earthquake, people become more rigid in their worldview, attending church more often and becoming more racially and politically segregated, as well as more isolated. In Chapter 2, we study how moral identity can influence a challenging financial decision. In particular, we consider why people repay debts that are no longer legally or financially enforceable, and find that as enforceability of a debt goes down, moral considerations become more important in making the decision to repay the debt. We suggest that this is because

the decision becomes more self-diagnostic of identity when the debt is unenforceable, as compared to enforceable debt. Taken together, these essays consider how challenging, real-world situations can play a role in shaping moral identity and moral behavior.

The dissertation of Malena Isabel de la Fuente is approved.

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For those who have supported me throughout this endeavor: Mami, Papi, Agus, and Lucas

and most of all for my love and joy, Julian

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This dissertation has my name at the beginning, but it's not just mine. This work represents not only what I've been working on for the past 6 years, but also the work of my advisers and mentors, my fellow students, and my family and friends.

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Chapter 1 is a working paper. The empirical work, theorizing, and writing was joint with Yilin Zhuo and Keith Chen.

Chapter 2 is a paper under second round revision at the *Journal of Marketing.* The empirical work, theorizing, and writing was joint with Franklin Shaddy.

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De La Fuente, M., Zhuo, Y., & Chen, M.K. "Real-world evidence of mortality salience: How earthquakes affect church attendance and intergroup interaction." *Working paper.*

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INTRODUCTION

In 1985, 161 students in an undergraduate class were asked to play a game. They were told to split $20 between themselves and another anonymous student. The other student had no decision to make, they were just there to receive the money at the end of the game. The student deciding how to split the money had two choices: either give themselves $18 and the other student $2, or split the money evenly, with $10 for each of them. A perfectly rational decider would give only $2 to the receiver, since the receiver cannot influence the game in any way, cannot retaliate, and is anonymous. This is not what happened in practice. Over ¾ of the students in the class decided to split the money evenly, giving $10 to themselves and $10 to the receiver, forgoing $8 for themselves in order to ensure a fair outcome for both students (Kahneman, Knetsch, and Thaler, 1986). This game, now called the "dictator game," has been played out many times and in many variations since 1985. It is a classic demonstration that humans value fairness when making economic decisions that affect others.

Fairness is simply one of the morals or values that have been found to influence decision making (Schweitzer and Gibson, 2008; van Dijk and Vermunt, 2000). Other examples of values include loyalty, liberty, purity, authority, the avoidance of harm (Graham et al., 2013), honesty, and self-discipline (Hofmann et al., 2014). How much do these values matter when making decisions? Quite a lot, it turns out. Most people have a sense of their own moral identity (Aquino and Reed, 2002; Lapsley and Lasky, 2001) and avoid the cognitive dissonance that comes with making decisions that do not match that identity (Blasi, 1980). Additionally, the stronger a moral identity is for someone, the more likely they will consider their moral values when making decisions. For example, teens who indicated that moral values were more central to their identity were rated as acting more morally in the classroom by their teachers (Hardy and Carlo, 2005).

And while each person's moral identity can be slightly different than others', most people have a core moral identity based on common moral traits, which also tend to be correlated with moral actions like acceptance of out-group members or refusing to lie in negotiations (Reed and Aquino, 2003; Shao, Aquino, and Freeman, 2008).

Despite the fact that most people tend to share some common moral beliefs or values, the values can be differentially important to different groups of individuals. For example, Haidt and Joseph (2004) find that conservatives and liberals value different moral traits, with conservatives valuing loyalty and authority more than liberals, and liberals valuing care and fairness more than conservatives (Haidt and Graham, 2007; Haidt, Graham, and Joseph, 2009). These differences in values change the types of decisions that each group condones (Graham, Haidt, and Nosek, 2009). Additionally, it matters how strongly a moral belief or value is held. For example, the strength of a moral conviction can predict whether someone will engage in political activism, hold more intolerant beliefs, have a greater distrust of authorities, or endorse vigiliantism and violence as a way to solve problems (Skitka and Morgan, 2014).

Not only can moral beliefs change from person to person, they can also change within each person depending on the situation. Because people have so many differing identities, it matters which identities are salient or available in the moment of a decision (Markus and Kunda, 1986; Skitka, 2003). Tradeoffs between two moral convictions can also cause people to act in inconsistent and morally flexible ways (Bartels et al., 2015). While most people do not condone tradeoffs between secular and sacred values (Sondak and Tyler, 2001; Tetlock et al., 2000; Tetlock, 2002), tradeoffs between two sacred values are permissible (Tetlock et al., 2000), as are tradeoffs that are reframed from taboo to allowable (McGraw and Tetlock, 2005; McGraw, Schwartz, and Tetlock, 2012).

People can also use moral licensing to justify immoral actions or transgressions (Merritt, Effron, and Monin, 2010). Contrary to the idea that acting morally might motivate actors to behave more morally in the future, most people tend to keep a balance between moral and self-interested actions, where performing a moral action then allows the actor to engage in self-interested behavior (Monin and Jordan, 2009; Mullen and Monin, 2016).

Lastly, although much of the research on moral judgments and behavior has been conducted in the lab (Skitka and Conway, 2019), people do not engage in moral behavior in a vacuum. Moral situations in the real world can highly charged and stressful. This dissertation contains two essays which both explore how real-world stress, crises, or challenging situations can alter moral priorities, values, and decision-making processes.

In Chapter 1, we begin by tackling a topic in psychology that has also suffered from a lack of experimentation in the field—mortality salience. The work on this topic theorizes that awareness of human mortality causes people to engage in worldview defense, becoming more rigid in their morals and values, showing more bias against out-groups, and punishing moral transgressions more harshly (Arndt et al., 1997). Both ethical and practical constraints have limited previous research to mostly laboratory studies, and as a consequence, previous results have been mixed on whether mortality salience exists and how big the effect might be. We are able to examine mortality salience in the wild by combining data on earthquake exposure (a type of natural disaster that naturally evokes thoughts of death) and smartphone location data to observe the effects of mortality salience on everyday real-world moral behavior. In doing so, we find evidence that people do seem to engage in worldview defense as part of their everyday behavior, including attending church more often and engaging in social segregation by spending less time with out-groups. This work bolsters previous findings in the mortality salience

literature and confirms that mortality salience can cause individuals to cling more tightly to their beliefs and values as a way of coping with life-or-death situations.

In Chapter 2, currently under peer review, we examine how morality can influence decisions in a challenging and stressful financial context. Every year, millions of Americans have to deal with debt collectors who contact them about legally and financially unenforceable debt (CFPB 2017). We study how moral considerations affect the decision to repay these debts. We propose that moralization plays an outsized role in the repayment of unenforceable debts, as compared to enforceable debts. Furthermore, we find that the reason why moralization plays such an important role in the repayment of these debts is because it makes the repayment decision self-diagnostic of identity. In other words, consumers' moral identities matter to them when making financial decisions, and removing external motivations for repayment actually increases the importance of these moral motivations. This chapter also highlights how moral values and moral identity influence decisions outside of what we might traditionally consider moral questions.

The theme of this dissertation is the study of moral decision making in real world contexts. I present two cases where financial (Chapter 2) and existential challenges (Chapter 1) are altered or affected by moral priorities and values. I start with Chapter 1, where I examine mortality salience in the real world and study its impact on moral behavior.

CHAPTER 1

Real-World Evidence of Mortality Salience:

How Earthquakes Affect Church Attendance and Intergroup Interaction

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Abstract

Mortality salience theorizes that everyone's death is inevitable and that individuals typically react when this fact is made salient to them by adhering more strongly to their own worldviews and boosting their self-esteem. Tests of this theory have traditionally been confined to laboratory settings due to ethical and logistical constraints, resulting in mixed findings. Our study utilizes randomly occurring natural disasters (N = 2,421) as random shocks to mortality salience to investigate its effects on real-world behavior. We examine the behavioral consequences of these seismic events on social dynamics, specifically in terms of increased social isolation and segregation, measured with device-level smartphone geolocation data. The results indicate that following an earthquake, there is a noticeable rise in these behaviors, which intensifies with prior earthquake exposure. This underscores the significant, measurable impact of mortality salience outside of controlled experimental conditions, and suggests the importance of confirming psychological constructs outside of laboratory settings.

1. Introduction

One of the most quintessential human experiences is the awareness that at some point, we will all die. This unavoidable reality is a common theme across all cultures and is often represented in books, beliefs, philosophies, and traditions. Because everyone faces the fear of death, it plays a significant role in shaping our thoughts, feelings, goals, and life perspectives.

Numerous psychological studies have looked into how people respond to thoughts of death. Terror Management Theory (TMT) proposes that we deal with the fear of death and its impacts by strongly adhering to our cultural beliefs (Greenberg, Pyszczynski, and Solomon, 1986; Greenberg et al., 1990; Harmon-Jones et al., 1996; Pyszczynski et al. 1996). Central to the terror management theory is the mortality salience hypothesis, which suggests that reminders of mortality lead people to reduce anxiety by building up self-esteem, engaging in worldview defense, holding more firmly to cultural beliefs, or strengthening personal relationships (Greenberg, Solomon, and Pyszczynski, 1997). Simply put, to counter fears of death, people tend to concentrate on beliefs and actions that boost their self-esteem and firmly adhere to their own perspectives of the world.

The mortality salience hypothesis is the central subject of the majority (83%) of terror management studies (Burke et al., 2010; Pyszczynski et al., 2015), most of which are conducted in lab settings. Given the ethical and practical constraints of putting people in real life-threatening situations, researchers usually use indirect methods to make study participants contemplate death. Techniques include performing writing exercises about death (e.g. Kashima et al., 2004), showing films with death scenes or violence (e.g. Greenberg et al., 1992), assigning word tasks with death-related words (e.g. Greenberg et al., 1994; Greenberg et al., 2000), or even thinking about possible threats to mortality (e.g. Arndt et al., 2007). After this, participants

typically complete surveys or questionnaires that gauge biases, worldview beliefs, or self-esteem levels (Burke et al., 2010). Results have shown a variety of effects, such as increased in-group bias (Rosenblatt et al., 1989), amplified self-serving biases (Mikulincer and Florian, 2002), more positive opinions about in-group culture and negative views of out-group cultures (Greenberg et al., 1994), and a stronger aversion to ambiguous information (Maxfield et al., 2017).

However, these lab studies are not without limitations. First, it is unclear whether or not the lab procedures can be applied to real-world scenarios. Written exercises about death differ from experiencing situations that provoke genuine fear of death (Arndt, Allen, & Greenberg, 2001; Simon et al., 1997), and most study outcomes measure attitudes, not actual behavior (Sætrevik & Sjåstad, 2022). Additionally, recent attempts to replicate these studies have not supported the mortality salience hypothesis (Sætrevik & Sjåstad, 2022; Schindler, Reinhardt, & Reinhard, 2021; Klein et al., 2022). Specifically, these studies have all failed to replicate the prototypical paradigm of Greenberg et al (1994) that shows that mortality salience increases worldview defense, and Sætrevik and Sjåstad (2022) also do not find evidence of increasing in-group identification after mortality salience manipulation.

These replication failures underscore the need for real-world testing of this hypothesis, and yet field studies on mortality salience are infrequent. When field studies are done, they typically use a single significant event, like 9/11 (Pyszczynski, Solomon, and Greenberg, 2003), the 2011 Japan earthquake (Suzuki et al., 2022), urban flooding in Toronto (Mann and Wolfe, 2016), or the start of the COVID-19 outbreak (Hu et al., 2022) as a trigger for mortality salience. But in addition to measuring the effect of only a single event, these studies still rely on surveys as the primary means of measuring outcomes, similar to lab experiments. The lack of

measurement of actual behavior may be due to the challenges associated with measuring such behaviors in the real world.

In our research, we tackle these limitations and contribute to the literature by presenting evidence on how real-life events that evoke thoughts of death can influence intergroup behavior. We use smartphone geolocation data to see who people spend time with after experiencing earthquakes, a type of natural disaster previously used in mortality salience studies (Abdollahi et al. 2011; Suzuki et al., 2022). We first verify that earthquakes increase church attendance, demonstrating an increase in religiosity (a typical response to reminders of mortality; Jong, Halberstadt, and Bluemke, 2012; Norenzayan and Hansen, 2006; Osarchuk and Tatz, 1973). Having confirmed that earthquakes raise mortality salience, we examine its effects on in-group bias by studying how people's time outside the home changes and how often they interact with people of different political beliefs and racial backgrounds, as indicated by smartphone GPS tracking. The randomness of the timing and location of earthquakes (Britt, 2009) offers a direct, real-world examination of the mortality salience hypothesis.

2. Method

2.1. Data

We construct our measure of earthquake intensity using data from the US geological survey, which records an earthquake's time, latitude and longitude, magnitude, and depth, among other characteristics. Our sample includes all earthquakes (N = 2,421) with a magnitude of at least 2.5 between February and November 2017 in six states in which frequent earthquakes are observed (California, Idaho, Kansas, Montana, Oklahoma, and Wyoming). The mean earthquake magnitude in our sample is 2.9 (SD = 0.4) and the largest magnitude is 5.8.

We measure church attendance and patterns of social interaction based on the GPS traces left by anonymous smartphone devices. This smartphone location data is provided by Veraset, a company that collects location information for over 50 million smartphones in the US from a set of smartphone applications. The data consists of smartphone pings indicating the latitude-longitude location of smartphone devices at various points in time, logged whenever a smartphone application requests location information on a device. The modal time interval between two consecutive pings is 10 minutes. For each ping, we observe a device identifier, timestamp, location, location accuracy, and geohash-7 (a 152 X 152 m grid).

We are able to impute a smartphone user's "home" based on where a smartphone "pings" most during the nighttime hours (10 pm to 6 am), and probabilistically impute the race of a smartphone user using the phone's home census block group's racial composition from the 2013-2017 American Community Survey.[1] We also infer the political leaning of the smartphone user using the two-party vote share in the 2016 presidential election in the device's home precinct. Finally, we obtain data on the location of houses of worship across the U.S. (Rohla, 2020) that contains information on name, location, and denomination for more than 300,000 houses of worship. 96% of the places in this data are churches, with the remaining being places of worship of other religions including Buddhism and Judaism.

2.2. Measurement

Earthquake Intensity. To conceptualize the idea that the intensity of an earthquake felt at a location is positively related to the energy released and negatively associated with the distance to the earthquake center, we approximate the intensity of an earthquake at location *j* as the ratio of earthquake energy over distance to the earthquake hypocenter:

[1] A census block group is a geographic unit ("neighborhood") containing roughly 1000 residents.

$$Intensity = \frac{Energy}{Distance} = \frac{10^{5.24+1.44 * Magnitude}}{\sqrt{Distance\ to\ EQ\ Epicenter^2 + EQ\ Depth^2}}$$

where the energy released by an earthquake is exponential to its magnitude, and distance to the earthquake hypocenter is calculated by taking the hypotenuse of the distance to the earthquake epicenter and the earthquake depth. We define our treatment intensity as the sum of intensities across all earthquakes that have taken place within a 250 km radius of a location (either a church or a smartphone user's "home") in the past 7 days. This allows us to evaluate the impact of not only single event of an earthquake, but also its aftershocks. A caveat is that it does not take into account other factors that might also affect earthquake intensity, like the local geology. However, as long as this measurement error is not correlated with people's patterns of interaction and frequency of church attendance, our regression estimate will provide a lower bound of the earthquake effect due to attenuation bias.

Church Attendance. We measure church attendance by assigning smartphone pings to the church buildings in which they fall. Specifically, we match a church's latitude-longitude location with Microsoft's building boundaries shapefile to generate convex polygons for all church buildings. We define our church attendance measure as the number of smartphones that ping within the church building's polygon on Sunday (Mean = 6.29, SD = 28.2).

Segregation. We use smartphone ping data to construct three measures that examine the extent to which the smartphone users engage in in-group bias—how often people isolate themselves at home, and how often they are exposed to in-groups outside the home.

The first measure we construct for each device is the *Percent Time at Home* during a day, defined as the percentage of hours that a device pings at its home geohash-7 on days with pings

logged. The second and third measures calculate the political and racial differences between a device and other devices that visit the same location (defined as a 150 m X 150 m grid called geohash-7) for at least 10 minutes during the same half-hour time period when the device is not at home. We calculate the average probability of political mismatch between a smartphone user i and other devices across all meetings on day d as:

$$Prob_{id}(Political\ Mismatch) = \frac{1}{N_d}\sum_{g,h} P_{ic} * (1 - P_{-ic,ghd}) + (1 - P_{ic}) * P_{-ic,ghd}$$

where P_{ic} indicates the probability of smartphone *i* being a Clinton voter in 2016 (proxied using the Clinton two-party vote share), $P_{-ic,ghd}$ is the average probability that other devices in the same geohash-7 g half hour h are Clinton voters. Hence, the first term, $P_{ic} * (1 - P_{-ic,ghd})$, computes the probability that a device is a Clinton voter but encounters non-Clinton voters, and correspondingly, $(1 - P_i) * P_{-ic,ghd}$ computes the probability of a device being a Trump voter, but meets other non-Trump voters at a geohash-7-half-hour. N_d represents the total number of geohash-7-half-hours in which device i has at least one contact outside the home on day d.
The racial mismatch of a smartphone user in a geohash-7-half-hour is similarly defined as:

$$Prob_{id}(Racial\ Mismatch) = \frac{1}{N_d}\sum_{g,h}\sum_{r} P_{ir} * (1 - P_{-ir,ghd}) \quad (r = Asian, Black, Hispanic, Other, White)$$

where P_{ir} indicates the probability that a smartphone user *i* identifies with race *r*, and $P_{-ir,ghd}$ indicates the average probability that other devices in the same geohash-7-half-hour identify with race *r*. This third measure computes the likelihood that a smartphone belongs to a specific race among the five race/ethnicity categories and other devices at the same geohash-7 half hour are from different races/ethnicities.

Patterns of segregation and isolation vary significantly both across persons and days. Across devices, the standard deviation of each device's mean *political mismatch* (*racial mismatch*) is 0.10 (0.16); and within device, the mean of the standard deviation of the *political mismatch* (*racial mismatch*) across different days is 0.04 (0.07). Variations in mean *Percent Time atHome* is significantly larger across devices (SD = 0.29), and even within device, the variation in *Percent Time at Home* across different days is considerably larger (Mean = 0.95).

3. Results

3.1. Earthquakes and Church Attendance

We perform our manipulation check by examining whether individuals who have experienced earthquakes are more likely to attend church in the days following the event, as increases in religious belief and participation are common practices that many people employ to deal with mortality salience (Jonas & Fischer, 2006; Jong, Halberstadt, and Bluemke, 2012):

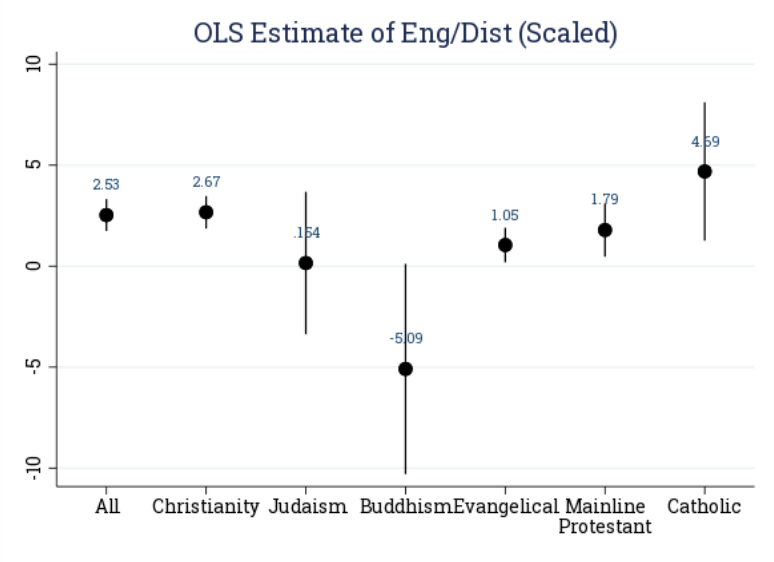
$$Church\ Attendance_{tc} = \beta * Earthquake\ Intensity_{tc} + \mu_c + \delta_t + \varepsilon_{ct}$$

where *t* and *c* represent week and church respectively, and we include church fixed effects μ_c and week fixed effects δ_t to control for unobserved features of the church as well as time trends that might affect church-going behavior. Given that the location and the timing of earthquakes is random, β represents the causal estimate of the impact of earthquake exposure on church attendance. In all analyses, we rescale the coefficients to reflect the effect size of earthquake intensity when there is a 5.5 magnitude earthquake, and when the distance to the earthquake epicenter is 10 km, and the earthquake depth is at the sample average, which is 6.68 km. Column 1 in Table 1-1 shows that, on average, 2.5 more phones visit a place of worship in the following week after exposure to a 5.5 magnitude earthquake takes place 10 km away (β = 2.47, p < 0.001, 95% CI = [1.69, 3.25]; 39.27% of the mean and 8.76% of SD).

Of course, alternative factors other than mortality salience, such as the need for economic or social support, could also increase church attendance after an earthquake. We further examine how the effect of earthquake varies by different religions or denominations, to test the hypothesis that religions (denominations) for whom religious practice is a more critical part of the preparation for death show greater effects of church attendance than those that don't. Figure 1-1 shows that there is no significant effect of earthquake on the subsequent attendance at Jewish synagogues (β = 0.154, p = 0.932, 95% CI = [-3.38, 3.69]) and Buddhist temples (β = -5.090, p = 0.055, 95% CI = [-10.30, 0.12]). These results are likely due to the fact that we measure weekly church attendance on Sundays, a day that is not commonly a Jewish or Buddhist day of worship. Among Christian denominations, we find a similar effect size on attendance among Evangelical (β = 1.045, p = 0.017, 95% CI = [0.19, 1,90]) and Mainline Protestant churches (β = 1.787, p = 0.008, 95% CI = [0.47, 3.10]), and a larger point estimate on attendance in Catholic churches, albeit with a larger confidence interval (β = 4.689, p = 0.007, 95% CI = [1.26, 8.11]). Since the Catholic church places a larger emphasis on religious practice in response to mortality compared to other religions/denominations, the fact that the Catholic church has the largest estimated effect compared to houses of worship in other Christian denominations provides suggestive evidence in line with the idea that experiencing earthquake increases mortality salience.

FIGURE 1-1

DIFFERENCES IN CHURCH ATTENDANCE AFTER AN EARTHQUAKE BY RELIGION AND DENOMINATION



3.2. Earthquakes and Social Segregation

We formally test the mortality salience hypothesis by examining how patterns of social isolation and segregation on day *d*, measured by the smartphone ping data, change after smartphone user *i* is exposed to an earthquake:

$$Y_{id} = \beta * Earthquake\ Intensity_{id} + \mu_i + \delta_d + \varepsilon_{id}$$

where Y_{id} represents one of the three segregation or isolation measures. Similarly, we include individual fixed effects μ_i to account for individual differences in interaction tendencies and day fixed effects δ_d to control for common time trends (e.g. seasonality) that affect interactions.

Table 1-1 reports the estimates of the effect of earthquake exposure on segregation and isolation in the 7 days following. In column 2, we find that experiencing a 5.5 magnitude earthquake that is 10 km away decreases political mismatch by 0.21% (p = 0.003, 95% CI = [-

0.353%, -0.067%]). We observe a much larger effect for racial segregation in column 3: the probability of racial mismatch drops around 1.54% ($p < 0.001$, 95% CI = [-1.82%, -1.26%]) when a smartphone user was exposed to the same earthquake 7 days previously. Column 4 shows that people on average are more likely to self-isolate at home after an earthquake and increase their time at home by 1.41% ($p < 0.001$, 95% CI = [0.762%, 2.04%]). Thus, when examining individuals' interaction patterns as measured by smartphone GPS traces, our results provide support for the mortality salience hypothesis that people increase their attachment to in-groups by spending more time at home, and by segregating more along racial and political lines.

TABLE 1-1

EFFECTS OF EARTHQUAKES ON CHURCH ATTENDANCE AND SOCIAL SEGREGATION

	(1)	(2)	(3)	(4)
VARIABLES	Church Attendance	Political Mismatch	Racial Mismatch	% Time Home
Eng/Dist (Scaled)	2.469***	-0.210**	-1.537***	1.401***
	(0.400)	(0.0728)	(0.141)	(0.326)
Observations	1,287,807	344,790,356	344,842,565	474,257,050
R-squared	0.796	0.791	0.795	0.437
Date FE	Yes	Yes	Yes	Yes
Device FE	Yes	Yes	Yes	Yes
Clustered By	Church	Device	Device	Device

Robust standard errors clustered by device in parentheses: *** p<0.001, ** p<0.01, * p<0.05, + p<0.1

3.3. Previous Earthquake Exposure

We also test whether the pattern of results differs by individuals with varying levels of previous exposure to earthquakes. In this case, we look at whether the exposure to earthquakes between 2011 and 2016 affects whether individuals are as sensitive to the effects of experiencing an earthquake in 2017:

$$Y_{id} = \beta_1 * Earthquake\ Intensity\ 2017_{id} + \beta_2 * Earthquake\ Intensity\ 2017_{id} * MC\ Earthquake\ Exposure\ 2011-16_{id} + \mu_i + \delta_d + \varepsilon_{id}$$

Table 1-2 reports the estimates of the effect of earthquake exposure on church attendance, segregation and isolation in the following 7 days, and its interaction with previous exposure to earthquakes in the six years prior. Column 1 shows that the simple effect of earthquake exposure on church attendance is higher for individuals with a mean level of previous earthquake exposure, with 29.3 more phones visiting a place of worship in the week after a 5.5 magnitude earthquake 10 km away (β = 29.30, p < 0.001, 95% CI = [18.24, 40.36]). Interestingly, the positive and significant interaction term suggests a higher effect on church attendance among individuals with higher levels of previous earthquake exposure.

The simple effect of earthquake exposure on segregation and isolation in the 7 days following an earthquake is also higher. In column 2, we find that experiencing a 5.5 magnitude earthquake that is 10 km away decreases political mismatch by 1.05% (p < 0.05, 95% CI = [-1.90%, -0.21%]). We observe a larger effect in column 3: the probability of racial mismatch decreases 13.5% (p < 0.001, 95% CI = [-15.07%, -11.93%]) instead. Column 4 shows that people stay at home more after an earthquake, with an increase of 8.08% time at home (p < 0.001, 95% CI = [5.65%, 10.51%]).

In line with the church attendance result, we find that higher levels of previous exposure also exacerbate the effect of current earthquake exposure on social segregation and isolation (Table 1-2), as it suggests that current earthquakes increase mortality salience more for individuals with higher past earthquake exposure, resulting in larger behavioral responses that demonstrate greater in-group bias.

TABLE 1-2

EFFECTS OF EARTHQUAKES ON CHURCH ATTENDANCE AND SOCIAL SEGREGATION AND INTERACTIONS WITH PREVIOUS EXPOSURE LEVELS

	(1)	(2)	(1)	(3)
VARIABLES	Church Attendance	Political Mismatch	Racial Mismatch	% Time Home
Eng/Dist (Scaled)	29.30***	-1.053*	-13.50***	8.081***
	(5.644)	(0.431)	(0.803)	(1.238)
EngD(S) X Exposure 11-16	30.50***	-0.899*	-12.75***	7.060***
	(6.351)	(0.436)	(0.802)	(1.252)
Observations	1,287,807	344,790,356	344,842,565	474,257,050
R-squared	0.935	0.791	0.795	0.437
Date FE	Yes	Yes	Yes	Yes
Device FE	Yes	Yes	Yes	Yes
Clustered By	Church	Device	Device	Device

Robust standard errors clustered by device in parentheses: *** p<0.001, ** p<0.01, * p<0.05, + p<0.1

4. Discussion

In our study, we examined the effect of mortality salience on real-world behavior by combining device-level smartphone location data with records of seismic activity. The analysis revealed a significant increase in church attendance and a propensity for increased time spent at home, coupled with a reduced likelihood of interacting with individuals of differing political or racial backgrounds, in the immediate aftermath of earthquakes. These behavioral changes remained significant after controlling for differences in person-specific and time-specific effects. We also see that these effects vary by prior levels of earthquake exposure.

Post-earthquake behaviors indicate a heightened awareness of one's mortality, as evidenced by the surge in religiosity and increased preference for the in-group. This lends empirical weight to the concept of mortality salience and its existence in a non-laboratory

setting. Field studies have historically been scarce on the theory of mortality salience, as constraints, both ethical and logistical, have restricted most research on mortality salience to controlled laboratory environments. Such studies have cast doubt on the effect size, or even the existence, of mortality salience outside the laboratory context. Our research method offers distinct advantages over previous studies in that it is able to address these concerns about external validity.

First, utilizing randomly occurring, real-life events such as earthquakes to induce a sense of mortality salience produces a more authentic stimulus than conventional laboratory methods, which usually include exposure to stories or imagery related to death, or require participants to write down death-related thoughts. Not only does our manipulation avoid the problems commonly associated with laboratory experiments, but it also avoids using a single event as a catalyst. Rather, we evaluated 2,421 earthquakes across six U.S. states throughout 2017. This does not constrain the data to one time and location, as single natural disasters do. Additionally, it does not limit us to large-scale disasters, which while increasing mortality salience, may also have other unintended effects that are difficult to identify or control for, such as home displacement, job loss, or property loss. Instead, we measure any earthquake with a magnitude of 2.5 or higher.

Second, we are also able to use device-level smartphone geolocation data to measure the effect of mortality salience on real-world behavior—moving beyond the attitudinal surveys traditionally employed in lab studies and previous field research. In the current experiment, we measure in-group bias by looking at whether people choose to interact with others who are out-group members, and find evidence of actual social segregation and isolation, suggesting that not only does mortality salience exist in the wild, but it also has very real consequences.

4.1. Limitations

Despite the study's contributions, there are inherent limitations. First, our data set does not allow for direct surveying of participants to measure how strongly earthquakes affect mortality salience, nor can we measure attitudes. Instead, we rely on the fact that we observe an increase in church attendance in the week after an earthquake as a manipulation check.

Second, we limit our observations to earthquakes that occur between February and November of 2017, in six U.S. states. During this time period, the largest magnitude earthquake was a 5.8. As such, we do not observe any earthquakes that were extremely destructive or caused large losses of life. This helps us avoid confounds that may occur from displacement, property loss, job loss, loss of family members or friends. However, it also limits our results to smaller earthquakes that may have a smaller impact on individuals' mortality salience.

Lastly, although our smartphone data is representative of U.S. adult smartphone users, approximately 20% of U.S. adults in this time period did not own a smartphone. This may affect the estimates of our dependent measures, like the political and racial mismatch estimates.

This study illustrates the utility of using large-scale, real-world data to explore behavioral science questions traditionally addressed in more controlled but less representative and generalizable environments. By employing randomly occurring natural disasters as a means to examine the effect of mortality salience on real-world actions, we provide new insights into human behavior and offer a robust model for future research beyond the confines of the laboratory.

CHAPTER 2

Moralization and Self-Diagnosticity in Financial Decision Making: How Debt Enforceability Changes Motivations for Debt Repayment

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Abstract

Every year, millions of Americans are contacted by debt collectors about legally and financially unenforceable debt (e.g., debt for which the statute of limitations has expired, and which no longer negatively affects credit). The amounts in question are far from trivial, with repayment running into billions of dollars. Yet surprisingly little is known about why consumers repay such debt. In this research, we introduce the concept of *debt enforceability*, and explore how it changes consumer motivations for debt repayment. Specifically, we propose that for unenforceable debt, moral considerations play an outsized role in motivating repayment, relative to enforceable debt. We further explain that this is because moralization renders repayment self-diagnostic of identity—but only for unenforceable debt. While past research has shown that removing external incentives from a task tends to undermine internal motivations, our findings reveal that for debt repayment, the opposite is true: Removing external (dis)incentives (e.g., the threat of a lawsuit or adverse credit effects) actually heightens the role of internal motivations (e.g., believing it is the right thing to do). An analysis of archival credit data (N = 203,010) and six laboratory experiments (N = 4,189) offer a novel theoretical lens for better understanding the psychology of debt repayment, yielding meaningful strategic and regulatory implications for firms and policymakers alike.

Keywords: debt, debt enforceability, morality, ethics, financial decision making, identity, self-diagnosticity, motivation

1. Introduction

Debts do not always have to be repaid. And yet, many are, often out of concern simply for "doing what is right." For example, after a New Jersey woman passed away with an outstanding $544.96 credit card bill, a debt collector explained to the woman's daughter: "I'm not telling you it needs to be paid at all." She nevertheless insisted, "I will talk to my brothers and sisters and we will pay this"—a sentiment *The New York Times* described as resulting from "a strong sense of morality" (Streitfeld, 2009). Or consider the Paycheck Protection Program (PPP), explicitly designed to offer forgivable loans to small businesses during the COVID-19 pandemic. Approximately 73,000 borrowers who qualified for forgiveness chose to repay anyway. One such borrower (who received $700,000) reasoned, "paying it back was the right thing to do" (Martin and Pfeiffer, 2024). Other times, the statute of limitations has expired, as in the case of time-barred debt. To which the personal finance guru Dave Ramsey responds: "Creditors can't legally take you to court over time-barred debt, but…if you made the choice to borrow the money in the first place, you should take responsibility for it—no matter how far behind you are. It's called *doing the right thing*" (emphasis in original; Ramsey, 2023).

Previous research has largely focused on explaining how and why consumers end up in debt (e.g., Bertrand et al., 2010; Hirst, Joyce, and Schadewald, 1994; Howard et al., 2022; Fernandes, Lynch, and Netemeyer, 2014; Prelec and Loewenstein, 1998; O'Brien, Hayes, and Kiviat, 2022; Sharma, Tully, and Cryder, 2021; Soman and Cheema, 2002; Sussman and O'Brien, 2016; Tully and Sharma, 2018). But this literature has yet to examine a critical feature of debt that implicates millions of consumers and billions of dollars annually (CFPB, 2017; Reid, 2015): whether it has to be repaid at all. For example, in the United States (U.S.), most statutes of limitations do not exceed four years, and in no jurisdiction does it exceed 10 (Irby, 2023).

Unpaid debts moreover "roll off" of credit reports after seven years (Fair Credit Reporting Act). This raises a natural question: Why would anyone repay such debt when they know the statute of limitations has expired, and that it no longer negatively affects their credit?

In this research, we introduce the concept of *debt enforceability*, and explore how it changes motivations for debt repayment. Specifically, we propose that the extent to which repayment can be compelled—legally, financially, or otherwise—systematically affects the extent to which moral considerations matter to borrowers, such that these concerns become more salient as debts become less enforceable. We furthermore explain that this is because moralization renders the repayment of unenforceable debt (but not enforceable debt) self-diagnostic of identity (i.e., when someone construes an action as representative of the type of person they are; Bryan et al., 2011; Touré-Tillery and Fishbach, 2015).

As such, we believe this account not only yields meaningful strategic and regulatory implications for firms and policymakers (see General Discussion), but also contributes theoretical insights to several distinct literatures. First, with respect to the psychology of debt, we develop a new construct characterizing a key way in which debts meaningfully differ (i.e., their enforceability). Second, we spotlight the process of moralization (i.e., when preferences are converted into values; Rozin, 1999) in a novel context (e.g., financial decision making), whereas prior work has focused largely on managerial settings (e.g., Celniker et al., 2022; Fehr, Yam, and Dang, 2015; Kwon et al., 2023). Finally, while recent findings have linked moral considerations to debt repayment (e.g., Bursztyn et al., 2019; Liao et al., 2021; Seiler et al., 2012), our framework suggests the strength of this relationship depends crucially on a third factor: enforceability. As a result, this research is both the first to explore motivations for the repayment

of *unenforceable* debt (as opposed to enforceable debt), and the first to probe the relationship between moralization and self-diagnosticity in financial decision making.

1.1. Theoretical Development

1.1.1. The Psychology of Debt

Debt is a serious issue for many Americans. For example, in 2022, consumer debt totaled $16.5 trillion (Federal Reserve Bank of New York, 2022), with average residential, educational, automotive, and credit card debt topping $220,000, $39,000, $20,000, and $5,200, respectively (Horymski, 2022). The typical American household spends approximately 10 percent of its monthly income servicing debt (Federal Reserve Bank of St. Louis, 2022). Meanwhile, chronic indebtedness has been linked to poorer psychological, health, and educational outcomes (Brown, Taylor, and Price, 2005; Clayton, Liñares-Zegarra, and Wilson, 2015; Dwyer, McCloud, and Hodson, 2012; Elliott and Lewis, 2015; Zurlo, Yoon, and Kim, 2014).

No wonder consumers generally dislike borrowing money (Meissner, 2016). As a result, "debt aversion" can cause people to borrow less than they should (i.e., when borrowing more would be economically advantageous; Greenberg and Hershfield, 2016; Prelec and Loewenstein, 1998; Tully and Sharma, 2018). Other times, debt is simply impossible to avoid, as it can be difficult to forecast expenses accurately (Howard et al., 2022; Lukas and Howard, 2023; Sussman and Alter, 2012; Ülkümen, Thomas, and Morwitz, 2008). These mispredictions, in turn, sometimes create budget shortfalls that necessitate costly short-term borrowing, like revolving credit (Angeletos et al., 2001) and payday loans (Agarwal, Skiba, and Tobacman, 2009; Shah, Cire, and Akchurina, 2023).

Related work has explored how borrowers adopt and manage various repayment strategies once debts have been incurred. For example, many consumers prioritize repaying loans

with smaller balances, as opposed to those with higher interest rates (Amar et al., 2011; Brown and Lahey, 2015; Gal and McShane, 2012). Borrowers moreover use minimum monthly payments as cues, paying less than they could or would (Bolton, Bloom, and Cohen, 2011; Hershfield and Roese, 2015; Stewart, 2009). They also tend to employ heuristics (e.g., Isaac, Wang, and Schindler, 2021), such as paying down balances proportionally (Gathergood et al., 2019) or refusing to dip into savings for any reason—even when the alternative would be to take on even more debt (Gross and Souleles, 2002; Sussman and O'Brien, 2016). An assumption implicit in this literature, however, is that these debts need to be repaid in the first place.

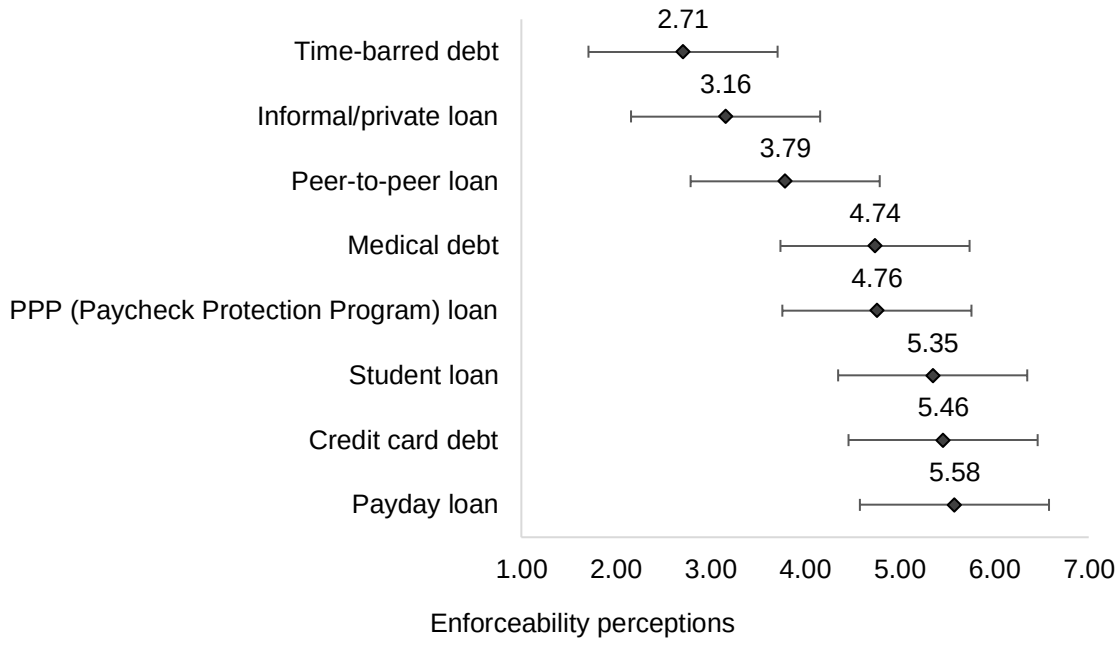
1.1.2. Motivations for Debt Repayment

As noted, whether because the relevant statutes of limitations have expired, or failure to repay no longer negatively impacts credit, many debts do not, in fact, have to be repaid (CFPB, 2017; Irby, 2023; Reid, 2015). In this research, we leverage this unique context to advance a more nuanced understanding of when and why certain motivations for debt repayment matter more than others. In particular, we argue that an underappreciated (and understudied) characteristic that meaningfully distinguishes various types of debt is their perceived and actual enforceability. Indeed, when we asked Amazon Mechanical Turk (MTurk) workers to express their beliefs about the enforceability of eight common types of debt in a pilot survey, we observed significant variation (Figure 2-1).[2]

[2] For each type of debt, we presented three counterbalanced measures ($\alpha = .91$): "Can borrowers be forced to repay this type of debt?" ("Definitely no" = 1; "Definitely yes" = 7); "How serious are the consequences of failing to repay this type of debt?" ("Not at all serious" = 1; "Very serious" = 7); and "How much power do lenders have to make sure this type of debt is repaid?" ("Very little power" = 1; "A lot of power" = 7).

FIGURE 2-1

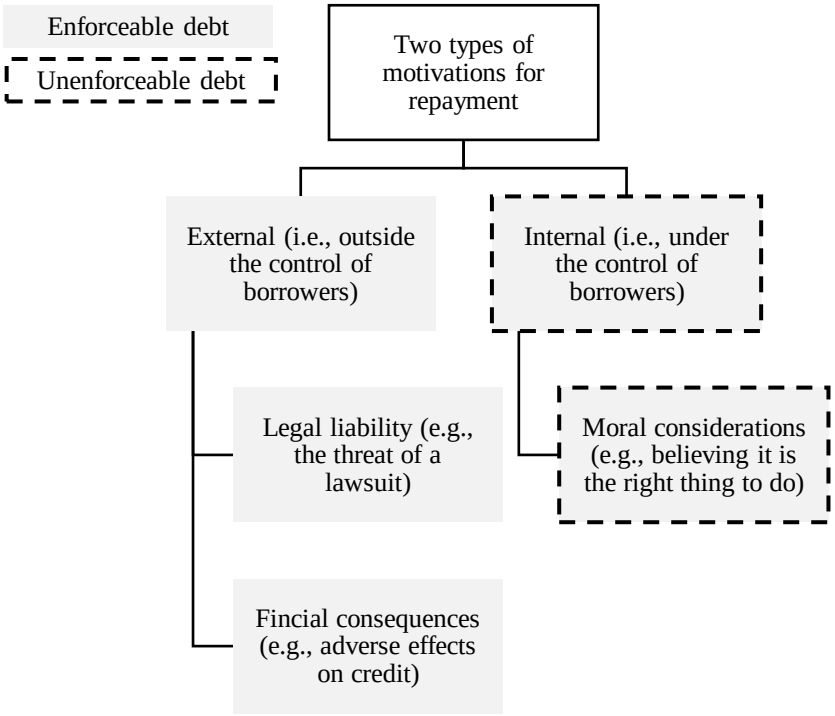
PILOT SURVEY: PERCEIVED ENFORCEABILITY OF VARIOUS TYPES OF DEBT (BARS REFLECT 95% CONFIDENCE INTERVALS)



To better understand and help organize these beliefs, we note that for most types of debt, a combination of legal liability (e.g., the threat of a lawsuit), financial consequences (e.g., adverse credit effects), and moral considerations (e.g., believing it is the right thing to do) compels repayment. Moreover, we suggest these (and other) sources of enforceability can be broadly classified as either *external*—outside the control of borrowers, like legal liability and financial consequences—or *internal*—under the control of borrowers, like moral considerations (Figure 2-2; see General Discussion for other potential external and internal factors). A key distinction is that external factors are (by definition) less relevant for unenforceable debt; a key *question*, therefore, is whether, in the absence of those external (dis)incentives, internal motivations are sufficient to motivate repayment.

FIGURE 2-2

CLASSIFYING MOTIVATIONS FOR DEBT REPAYMENT



Though this specific question remains unanswered, self-determination theory (Deci and Ryan, 2012), along with conventional wisdom (Pink, 2009), suggest that removing extrinsic incentives from a task tends to undermine internal motivations (Deci and Ryan, 1985; Goswami and Urminsky, 2017; Lepper et al., 1973). For example, children who exhibited high levels of interest in an activity, and who were also rewarded for it, engaged in less of that activity when the reward was removed. It is thus plausible that for debt repayment, removing external (dis)incentives (e.g., legal liability and financial consequences) could similarly undermine the effectiveness of internal motivations (e.g., moral considerations), rendering the latter "cheap talk" when a debt becomes unenforceable.

1.2. The Present Research

In contrast to such a "crowding out" account, our conceptualization proposes that moral considerations actually become *more* salient as debts become less enforceable. Specifically, we predict that when a debt becomes less enforceable, moralization—regarding an action as a matter of right or wrong (Haidt, 2008; Hofmann et al., 2014; Rozin, 1999; Skitka et al., 2021)—will play a greater role in motivating repayment.

To explain why, we draw from theories of self-perception (Bem, 1972) and self-signaling (Bodner and Prelec, 2003), hypothesizing that the repayment of unenforceable debt presents borrowers with a unique opportunity to clearly signal their moral identities (Goodwin et al., 2014; Strohminger and Nichols, 2014), both to the self and to others. We expect this signal to be drowned out, however, when borrowers repay enforceable debt, due to the dilutive presence of external factors (e.g., legal liability and financial consequences).

Our reasoning here is broadly consistent with research demonstrating that financial benefits can make it difficult to signal other positive motivations, like prosocial intent (Ariely et al., 2009; Newman and Cain, 2014; Lin-Healy and Small, 2012). For example, participants who wrote hopeful letters to sick children (i.e., a prosocial action) were willing to give up payment (i.e., a financial benefit) to prevent "tainting" their altruism (Kirgios et al., 2020). We thus reason that it will be easier for borrowers to communicate, and for observers to infer, a stronger moral identity when someone chooses to voluntarily repay an unenforceable debt in the absence of legal and financial forcing mechanisms.

To illustrate: Suppose an unpaid credit card balance has been delinquent for 11 years. Such loans are unsecured, so there is no collateral to recover. In the U.S., the statute of limitations does not exceed 10 years (Irby, 2023), and the negative effects of unpaid debts roll off

of credit reports after seven years (FTC, 2018). From a legal and financial standpoint, the debt is unenforceable. Therefore, if contacted by a debt collector, and assuming full knowledge of these legal and financial considerations (see Alternative Explanations below), we expect the likelihood of repayment to depend on internal motivations—that is, whether and the extent to which the borrower moralizes the decision, either spontaneously or when prompted.

1.2.1. Hypotheses and Overview of Studies

Altogether, we predict an inverse relationship between debt enforceability (whether actual or perceived), which we treat as a continuum, and the role that moral considerations will play in motivating debt repayment. Additionally, we expect that beliefs about self-diagnosticity will explain this relationship. Specifically, we propose:

H_1: The correlation between moral considerations and repayment intentions increases as debts become less enforceable.

H_2: Increasing the salience of moral considerations increases repayment intentions for unenforceable debt, but not for enforceable debt.

H_3: Self-diagnosticity mediates the relationship between moral considerations and repayment intentions for unenforceable debt, but not for enforceable debt.

To test this account, we report an analysis of archival credit data (N = 203,010) and six laboratory experiments (N = 4,189; Table 2-1). Our analysis of archival credit data offers initial evidence for the relationship between moralization, debt enforceability, and debt repayment in the real world. Studies 1A–B and 2 reveal that for unenforceable debt (as opposed to enforceable debt), consumers are more likely to mention and endorse moral reasoning when explaining their repayment decisions. In Study 3, we manipulate the salience of moral considerations directly. Study 4 presents actual advice taken from a personal finance website (encouraging borrowers to

moralize repayment) and tests the causal role of self-diagnosticity through a moderated mediation framework. Finally, Study 5 bookends our analysis of archival credit data with a consequential choice paradigm (in which every participant made an incentive-compatible repayment decision).

1.2.2. Alternative Explanations

We of course acknowledge that any major real-world financial decision (like debt repayment) is inherently multiply determined, so we aimed to accommodate a number of alternative explanations throughout. For example, many consumers are uncertain about the relevant rules and regulations governing unenforceable debt. And while federal law requires debt collectors to disclose accurate information about the relevant statute of limitations and credit implications (Fair Debt Collection Practices Act [FDCPA]), many unscrupulous actors fail to do so in practice (violating the FDCPA).[3] However, because we are interested in documenting the core psychological link between debt enforceability and motivations for repayment when consumers are fully informed, we convey this information accurately to participants, when applicable. In other words, we do not mislead participants, though this is a real-world problem that especially concerns policymakers (see General Discussion).

In several studies, we also explicitly measured several competing repayment motivations, like fear of future harassment, implications for credit scores, and concerns about social reputation. This allows us to not only gauge the relative importance of moral considerations, but also address potential concerns about experimenter demand. To further preempt such concerns, we also allow participants to endorse a wide range of alternative motivations for repayment in

[3] For example, FDCPA case law prohibits debt collectors from both "collect[ing] on time-barred debt without disclosing the fact that the collector cannot sue on the debt" and "represent[ing] that the collector's reporting of a seven-year-old debt will damage the consumer's credit rating" (National Consumer Law Center, 2021).

Studies 1A–B and 2, manipulate the salience of moral considerations orthogonally in Study 3, present an incentive-compatible repayment decision in Study 5, and use secondary data to explore the relationship between these constructs in our analysis of archival credit data.

TABLE 2-1

OVERVIEW OF STUDIES

Study number	*N*	Hyp.	Description	Overview of finding(s)
-	203,010	H_1	Analysis of archival credit data	Observed weekly church attendance (i.e., a proxy for the salience of moral considerations in daily life) in the three months comprising a given quarter correlated negatively with the number of time-barred debts reported at the end of the quarter (implying greater repayment activity), but not with the corresponding number of enforceable debts
1A	600	H_1	Open-ended explanations for debt repayment	When explaining repayment of unenforceable debt (as opposed to enforceable debt), participants were likelier to spontaneously mention moral considerations
1B	396	H_1	Measured motivations for debt repayment	When explaining repayment of unenforceable debt (as opposed to enforceable debt), participants were likelier to endorse moral reasoning, relative to considerations like fear of future harassment, implications for credit scores, and concerns about social reputation
2	199	H_1	Levels of debt enforceability	The correlation between endorsement of moral reasoning and repayment intentions increased as debts became less enforceable. In other words, removing each additional layer of debt enforceability heightened the role of moral considerations in motivating repayment
3	1,016	H_2	Manipulating moralization	The salience of moral considerations, when manipulated orthogonally (in an unrelated task), increased repayment intentions for time-barred debt, but not for enforceable debt
4	1,189	H_3	Moderated mediation	Self-diagnosticity (i.e., whether someone construes a particular action as representative of the type of person they are) mediated the effect of moralization on repayment intentions for time-barred debt, but not for enforceable debt
5	789	H_2	Consequential choice	A moral appeal increased actual repayment of "loans," in an incentive-compatible choice paradigm, for unenforceable debt, but not for enforceable debt

Note. For all studies, we report every variable tested, and we excluded instructional manipulation check (IMC) failures (Oppenheimer, Meyvis, and Davidenko 2009) prior to analysis. All data and stimuli are publicly available (https://osf.io/jyche/?view_only=4ed58278f1914301999a6543ef2c484e)

2. Analysis of Archival Credit Data

As an initial exploration of our account, we first examined the real-world relationship between debt repayment (drawing from archival credit data) and variations in observed church attendance, which we leverage as a proxy for the salience of moral considerations in daily life (e.g., Bloom, 2012; Graham and Haidt, 2010; Hofmann et al., 2014). Our empirical strategy combines four datasets:

1. Anonymized credit histories for two percent of all U.S. consumers
2. Geolocation data for approximately 30 percent of all U.S. smartphones
3. A database of roughly 300,000 church locations in the U.S.
4. Demographic data from the U.S. Census

Our theory suggests that moralization plays an outsized role in motivating repayment of unenforceable debt, relative to enforceable debt. We therefore expected a stronger relationship between quarterly changes in church attendance and repayment activity on unenforceable debts, as opposed to enforceable debts (H_1).

2.1. Method

We acquired anonymized credit histories for two percent of all U.S. consumers from the California Policy Lab, which maintains the University of California Consumer Credit Panel (UC-CCP). The UC-CCP contains, for each individual, "raw tradeline-level information about each loan or collections item, including payment history, credit limits and balances" (CPL, 2022). The UC-CCP data comes from Experian, one of the nationwide credit bureaus. We obtained geolocation data for approximately 30 percent of all U.S. smartphones from Veraset, a data broker specializing in real-time location and movement data. This dataset includes timestamped pings for approximately 50 million unique smartphone IDs, including the latitude and longitude

for every ping. We acquired addresses (and geofenced GPS coordinates) for roughly 300,000 churches in the U.S. from Rohla (2020). Finally, we used demographic data from the U.S. Census Bureau (2017). We merged these four datasets at the ZIP-Code-quarter level, with the final sample comprising 203,010 ZIP-Code-quarter observations in 2017 (the only year for which we have complete coverage across all four datasets; see Table 2-2 for summary statistics). We tested the following model specifications:

(1) $Debts_{it} = \beta_1 * church\ attendance_{it} + \beta_2 * church\ attendance_{it} \times debt\ type_{it} + \beta_3 * debt\ type_{it} + controls_{it} + demographics_i + \epsilon_{it}$

(2) $Debts_{it} = \beta_1 * church\ attendance_{it} + \beta_2 * church\ attendance_{it} \times debt\ type_{it} + \beta_3 * debt\ type_{it} + controls_{it} + demographics_i + quarter\ FE + \epsilon_{it}$

(3) $Debts_{it} = \beta_1 * church\ attendance_{it} + \beta_2 * church\ attendance_{it} \times debt\ type_{it} + \beta_3 * debt\ type_{it} + controls_{it} + quarter\ FE + ZIP\ FE + \epsilon_{it}$

$Debts_{it}$ reflects the total number of debts (i.e., lines of credit, whether in good standing or collections) reported at the end of each quarter, in each ZIP Code; $church\ attendance_{it}$ reflects the total number of smartphones appearing in any church, based on the latitude and longitude of its geofenced GPS coordinates (see methodology in Chen et al., 2021), averaged across all Sundays throughout the quarter, in each ZIP code; $debt\ type_{it}$ is a dummy-coded variable indicating whether a debt is unenforceable ("unenforceable" = 1; based on whether the account is in collections, the loan age, and prevailing statute of limitations) or enforceable ("enforceable" = 0; all accounts not coded as unenforceable); $controls_{it}$ includes the log of the total dollar amount of unenforceable debts and the average credit score reported at the end of each quarter, in each ZIP code; $demographics_i$ includes demographic controls (total population, percent male, percent white, median age) for each ZIP Code. Model (1) includes demographic controls; Model (2) adds

quarter fixed effects; Model (3) adds ZIP Code fixed effects. All standard errors were clustered at the ZIP Code level.

2.2. Results and Discussion

Under all three specifications, and as predicted (H_1), increased church attendance during the three months comprising a quarter was associated with a significant decrease in the number of unenforceable debts reported at the end of that quarter (e.g., Model 1: $b_2 = –2.918$, $SE = 1.127$, $p = .010$; Panel 1, Table 2-3), indicating greater repayment activity on such debts (i.e., these accounts are no longer listed as delinquent when repaid). Though not the focus of our conceptualization, we also observed the opposite pattern for enforceable debts, such that increased church attendance was associated with a significant increase in the number of enforceable debts (e.g., Model 1: $b_1 = 1.534$, $SE = .658$, $p = .020$).

As robustness checks, we additionally fit Models (1), (2), and (3) with the total dollar amount of debts as the dependent variable, rather than the total number of debts (Panel 2, Table 2-3). We also reran Models (1), (2), and (3) as Poisson regressions, rather than linear regressions (Panel 3, Table 2-3). Both sets of robustness checks result in qualitatively similar patterns.

Our analysis of archival credit data documents a real-world relationship between moralization, debt enforceability, and debt repayment, consistent with our theorizing. But despite the inclusion of numerous controls, fixed effects accounting for unobserved time- and geography-varying confounds, the lagged nature of the dependent variable (reported at the end of each quarter), relative to predictors (measured across the three months comprising each quarter), and several robustness checks, these results are ultimately correlational. We therefore designed the next two studies to conceptually replicate basic effect in a controlled laboratory setting.

TABLE 2-2

ANALYSIS OF ARCHIVAL CREDIT DATA: SUMMARY STATISTICS FOR KEY VARIABLES

Variable	Mean	SD	Median	Mode	Min.	Max.
Number of unenforceable debts	86.12	197.08	10	0	0	3,394
Dollar amount of unenforceable debts	$68,888	$186,307	$4,692	$0	$0	$6,153,302
Total number of debts	3,332.42	4,578.26	1,211	41	0	44,215
Total dollar amount of debts	$5.00e7	$8.31e7	$1.35e7	$0	$0	$9.47e8
Weekly church attendance	45.92	148.79	9	1	1	15,479
Credit score	653.57	39.81	656	631	175	842

Note. All statistics are reported at the ZIP-Code-quarter level

TABLE 2-3

ANALYSIS OF ARCHIVAL CREDIT DATA: CHURCH ATTENDANCE CORRELATES WITH REPAYMENT OF UNENFORCEABLE DEBTS

	Panel 1: Number of debts			Panel 2: Dollar amount of debts			Panel 3: Poisson regressions		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Church attendance	1.534*	1.530*	1.466*	$47,458**	$47,367**	$38,116**	.000007*	.000007*	.000007*
	(.658)	(.657)	(.600)	(17,059)	(17,037)	(13,884)	(.000003)	(.000003)	(.000003)
Church attendance × unenforceable debt	–2.918**	–2.918***	–2.918*	–$69,746**	–$69,746**	–$69,767*	–.0007***	–.0007***	–.0007***
	(1.127)	(1.127)	(1.211)	(25,129)	(25,129)	(26,995)	(.00008)	(.00008)	(.00008)
Debt amount (log)	132.301***	132.625***	121.354***	-	-	-	.0003***	.0002**	.0001†
	(3.226)	(3.235)	(2.895)				(.00008)	(.00008)	(.00008)
Debt amount (log) × unenforceable debt	–	–	–	-	-	-	.4138***	.4138***	.4138***
	240.656***	240.656***	240.656***				(.0052)	(.0052)	(.0052)
	(5.382)	(5.382)	(5.780)						
Credit score	18.096***	18.100***	12.295***	$525,187***	$525,012***	$284,107***	.0004***	.0004***	.0004***
	(.381)	(.381)	(.318)	(11,544)	(11,537)	(8,007)	(.00005)	(.00005)	(.00005)
Credit score × unenforceable debt	–24.530***	–24.530***	–24.530***	–$554,016***	–$554,011***	–$553,205***	–.0126***	–.0126***	–.0126***
	(.591)	(.591)	(.635)	(13,413)	(13,413)	(14,426)	(.0003)	(.0003)	(.0003)
Demographics controls	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Quarter fixed effects	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
ZIP-Code fixed effects	No	No	Yes	No	No	Yes	No	No	Yes
Observations	203,010	203,010	203,010	202,924	202,924	202,924	203,010	203,010	202,884

Note. ***$p < .001$, **$p < .01$, *$p < .05$, †$p < .10$; Models 3, 6, and 9 drop demographic controls due to collinearity with ZIP-Code fixed effects

3. Study 1A: Open-Ended Explanations for Debt Repayment

In Study 1A (https://aspredicted.org/B1G_SQF), we presented participants with one of three scenarios in which they expressed their willingness to repay debt, predicting that those who chose to repay unenforceable debt would be more likely to spontaneously cite moral considerations (i.e., invoking morality, ethics, matters of right and wrong, etc.) when explaining their decisions, relative to those who chose to repay enforceable debt (H_1).

3.1. Method

We recruited 600 MTurk workers (M_{age} = 38.86; 307 men, 256 women, 2 other) for Study 1A, which employed a 3 (scenario: *credit card* vs. *medical debt* vs. *student loan*) × 2 (enforceability: *unenforceable* vs. *enforceable*), between-subjects design.

Participants imagined that they had outstanding credit card debt ("Several years ago"…"you incurred $2,500 in credit card debt"), medical debt ("you had a medical emergency that required surgery, resulting in a $1,750 hospital bill"), or private educational loan debt ("you took out a $875 private educational loan to pay for community college courses"). In each scenario, participants further read: "You were unable to pay it off, and the outstanding balance has been in "default" ever since." Those in the *unenforceable* condition read: "The debt still exists, but because the statute of limitations has expired, you cannot be legally pursued for repayment (i.e., you cannot be forced to pay it back). This unpaid bill has already "rolled off" your credit report, so it can no longer impact your credit one way or another (whether you choose to repay or not)." Those in the *enforceable* condition read nothing else. All participants then answered: "Would you try to pay back some or all of this debt?" ("Yes" or "No"). They next explained why in an open text field: "Please briefly explain your reasoning."

3.2. Results and Discussion

Repayment intentions did not differ by scenario ($\chi^2(2) = 2.84$, $p = .241$), so we collapsed over this variable. Unsurprisingly, repayment intentions did differ by enforceability: Willingness to repay was higher in the *enforceable* condition (77%, 95% CI = [72%, 82%]) than in the *unenforceable* condition (36%, 95% CI = [30%, 41%]; $\chi^2(1) = 105.52$, $p < .001$, $\varphi_c = .42$).

To test our main prediction (H_1), two coders blind to the hypothesis reviewed the open-ended explanations, citing invocations of moral considerations (e.g., mentions of "morality," "ethics," "right and wrong," etc.). Coder agreement was 84% ($\kappa = .68$), and disagreements were tie-broken by the first author. First, participants who expressed willingness to repay were more likely to cite moral considerations (referenced morality = 1; did not reference morality = 0) when explaining their reasoning in the *unenforceable* condition (71%, 95% CI = [63%, 80%]) than in the *enforceable* condition (51%, 95% CI = [47%, 58%]; $\chi^2(1) = 12.68$, $p < .001$, $\varphi_c = .19$).[4] Second, repayment intentions and mentions of moral considerations were more strongly correlated in the *unenforceable* condition ($r = .66$, 95% CI = [.60, .72]) than in the *enforceable* condition ($r = .37$, 95% CI = [.27, .47]; $z = 4.95$, $p < .001$).

4. Study 1B: Measured Motivations for Debt Repayment

We designed Study 1B (https://aspredicted.org/GYN_YBM) as a conceptual replication of Study 1A. However, rather than asking participants to explain their motivations for repayment, we asked them to indicate the extent to which they agreed with a wide range of

[4] Though not preregistered, we also subjected the open-ended explanations to Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2015), which includes a "moralization" score capturing the presence of "a moral evaluation (either good or bad)" (Boyd et al., 2022, p. 19). Consistent with our preregistered analysis, the presence of a moral evaluation was likelier in the *unenforceable* condition ($M = .85$, 95% CI = [.52, 1.18]) than in the *enforceable* condition ($M = .48$, 95% CI = [.28, .69]; $z = 2.19$, $p = .029$).

potential motivations. This allowed us to not only ask about moral considerations, in particular, but also address several alternative explanations, in general.

4.1. Method

We recruited 396 MTurk workers (M_{age} = 35.86; 216 men, 176 women, 4 other) for Study 1B, which employed a 3 (scenario: *credit card* vs. *medical debt* vs. *student loan*) × 2 (enforceability: *unenforceable* vs. *enforceable*), between-subjects design.

Study 1B was identical to Study 1A, with one exception: We replaced the open text field soliciting explanations for repayment with nine statements describing potential motivations for repayment:

- *Moral considerations*. "To what extent do moral considerations (i.e., doing what is morally right) play a role in explaining your decision?"
- *Credit score concerns*. "To what extent does desire to improve your credit score play a role in explaining your decision?"
- *Confusion*. "To what extent does confusion about the statute of limitations play a role in explaining your decision?"
- *Harassment*. "To what extent does desire to avoid being contacted by creditors play a role in explaining your decision?"
- *Need for closure*. "To what extent does need for closure play a role in explaining your decision?"
- *Belief in karma*. "To what extent does belief in karma (i.e., people ultimately get what they deserve) play a role in explaining your decision?"
- *Skepticism about truthfulness*. "To what extent does skepticism about whether you are being told the truth play a role in explaining your decision?"

- *Reputation*. "To what extent does concern about what other people may think of you play a role in explaining your decision?"
- *Societal consequences*. "To what extent do considerations of broader societal consequences play a role in explaining your decision?"

Participants indicated their agreement with each statement ("Not at all" = 1; "A great deal" = 7), which were presented in random order on a single page.

4.2. Results and Discussion

Repayment intentions did not differ by scenario ($\chi^2(2) = .21$, $p = .900$), so we collapsed over this variable. As in Study 1A, repayment intentions did differ by enforceability: Willingness to repay was higher in the *enforceable* condition (75%, 95% CI = [69%, 81%]) than in the *unenforceable* condition (27%, 95% CI = [21%, 33%]; $\chi^2(1) = 93.13$, $p < .001$, $\varphi_c = .48$).

Next, testing our main hypothesis (H_1), a logistic regression of repayment intentions on enforceability (enforceable = 0; unenforceable = 1), each of the nine motivations, and all two-way interactions revealed the predicted interaction between enforceability and moral considerations ($b = .973$, SE = .307, $z = 3.17$, $p = .002$). Conceptually replicating Study 1A, repayment intentions and moral considerations were more strongly correlated in the *unenforceable* condition ($r = .74$, 95% CI = [.67, .80]) than in the *enforceable* condition ($r = .41$, 95% CI = [.29, .52]; $z = 5.06$, $p < .001$; Table 2-4). We also observed an interaction between enforceability and credit score concerns ($b = –.881$, SE = .302, $z = 2.91$, $p = .004$), such that repayment intentions and credit score concerns were more strongly correlated in the *enforceable* condition ($r = .65$, 95% CI = [.57, .73]) than in the *unenforceable* condition ($r = .27$, 95% CI = [.13, .39]; $z = 5.04$, $p < .001$). No other two-way interactions were significant.

TABLE 2-4

STUDY 1B: MORAL CONSIDERATIONS WERE MORE POSITIVELY ASSOCIATED WITH REPAYMENT INTENTIONS FOR UNENFORCEABLE DEBT THAN FOR ENFORCEABLE DEBT

	Repayment intentions			
	b	SE	*z*	Sig.
Unenforceable debt	–3.786	2.042	–1.85	†
Moral considerations	0.191	.184	1.04	
Moral considerations × unenforceable debt	.973	.307	3.17	**
Credit score	.632	.208	3.04	**
Credit score × unenforceable debt	–.881	.302	–2.91	**
Confusion	–.398	.210	–1.89	†
Confusion × unenforceable debt	.299	.303	0.99	
Harassment	.513	.193	2.66	**
Harassment × unenforceable debt	–.449	.278	–1.61	
Need for closure	.708	.242	2.93	**
Need for closure × unenforceable debt	.160	.337	0.47	
Belief in karma	.140	.197	0.71	
Belief in karma × unenforceable debt	–.186	.293	–0.63	
Skepticism about truthfulness	–.820	.299	–2.74	**
Skepticism about truthfulness × unenforceable debt	.555	.391	1.42	
Reputation	–.016	.229	–0.07	
Reputation × unenforceable debt	–.094	.335	–0.28	
Societal consequences	.332	.238	1.39	
Societal consequences × unenforceable debt	.010	.321	0.03	
Constant	–4.763	1.267	–3.76	***

***$p < .001$, **$p < .01$, †$p < .10$

Studies 1A–B offer initial evidence for the proposed inverse relationship between debt enforceability and the role of moral considerations in motivating repayment. However, we only compared debt that was enforceable to debt that was *both* legally and financially enforceable. A more discerning test would involve manipulating various *levels* of enforceability (i.e., treating enforceability as a continuum) and measuring any resulting sensitivity to moral considerations on repayment intentions.

5. Study 2: Levels of Debt Enforceability

In Study 2 (https://aspredicted.org/HYD_7MQ), we asked participants to express their repayment intentions for debt that was (a) both legally and financially enforceable, (b) only

legally enforceable, (c) only financially enforceable, or (d) neither legally nor financially enforceable. We predicted that removing each layer of enforceability would heighten the role of moral considerations in motivating repayment (H_1).

5.1. Method

We recruited 199 Prolific workers (M_{age} = 37.6; 113 men, 79 women, 7 other) for Study 2, which employed a single factor (enforceability: *financially/legally enforceable* vs. *financially enforceable only* vs. *legally enforceable only* vs. *financially/legally unenforceable*), within-subjects design.

We adapted the credit card scenario from Study 1A, presenting each of the four debt conditions on a separate page, in random order:

- *Financially/legally enforceable*. "The statute of limitations has not expired, so you can still be legally pursued for repayment (i.e., you can still be sued over this debt). This unpaid bill is still on your credit report, so it continues to negatively impact (i.e., hurt) your credit score."
- *Financially enforceable only*. "The statute of limitations has expired, so you cannot be legally pursued for repayment (i.e., you cannot be sued over this debt). This unpaid bill is still on your credit report, so it continues to negatively impact (i.e., hurt) your credit score."
- *Legally enforceable only*. "The statute of limitations has not expired, so you can still be legally pursued for repayment (i.e., you can still be sued over this debt). This unpaid bill has already "rolled off" your credit report, so it can no longer impact your credit score (irrespective of whether you choose to repay or not)."

- *Financially/legally unenforceable*. "The statute of limitations has expired, so you cannot be legally pursued for repayment (i.e., you cannot be sued over this debt). This unpaid bill has already "rolled off" your credit report, so it can no longer impact your credit score (irrespective of whether you choose to repay or not)."

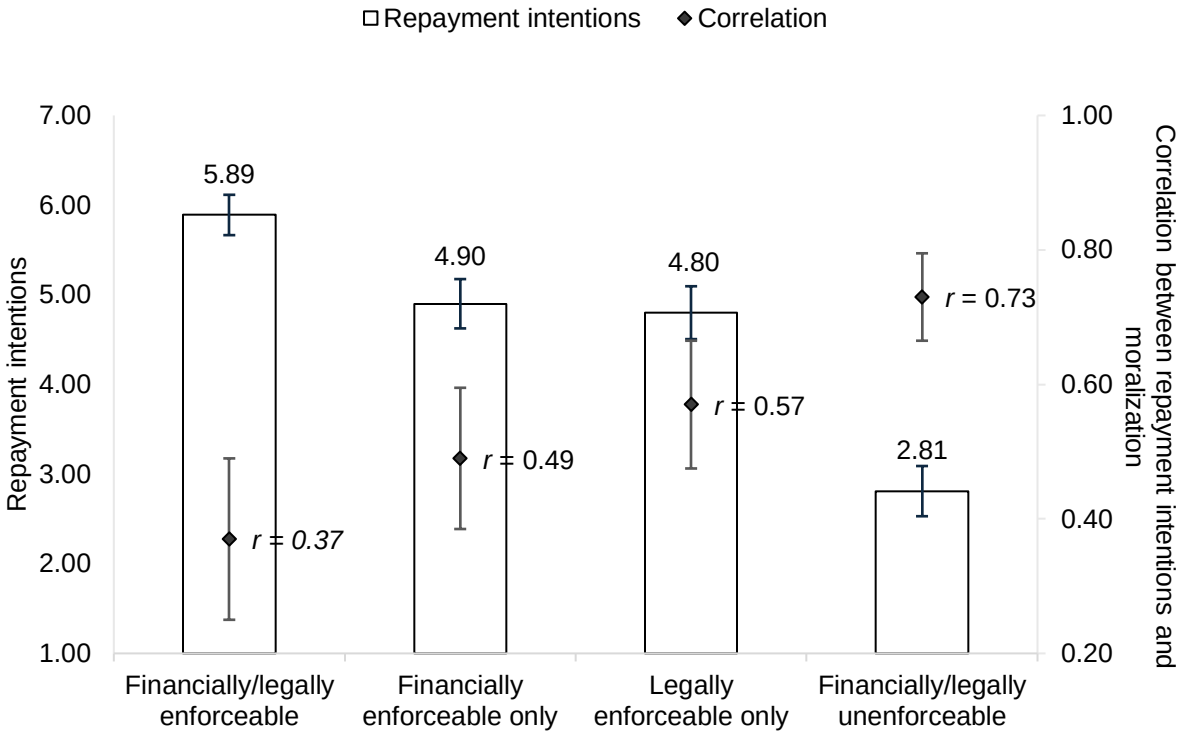
For each scenario, participants first expressed repayment intentions: "How likely is it that you would try to pay back some or all of this debt?" ("Not at all likely" = 1; "Extremely likely" = 7). They then rated moral considerations (also for each scenario): "To what extent do moral considerations (i.e., doing what is morally right) play a role in explaining your decision?" ("Not at all" = 1; "A great deal" = 7).

5.2. Results and Discussion

A within-subjects repayment intentions ANOVA revealed a main effect of enforceability ($F(3, 594) = 177.8$, $p < .001$, $\eta_p^2 = .47$; Figure 2-3), such that repayment intentions were lowest in the *financially/legally unenforceable* condition ($M = 5.89$, 95% CI = [5.67, 6.11]) and highest in the *financially/legally enforceable* condition ($M = 2.81$, 95% CI = [2.53, 3.09]).

FIGURE 2-3

STUDY 2: THE CORRELATION BETWEEN MORAL CONSIDERATIONS AND REPAYMENT INTENTIONS INCREASES AS DEBTS BECOME LESS ENFORCEABLE (BARS REFLECT 95% CONFIDENCE INTERVALS)



We next regressed repayment intentions on moral considerations, enforceability, and all two-way interactions (including participant fixed effects; Table 2-5). As predicted (H_1), enforceability moderated the relationship between moralization and repayment intentions, as indicated by the magnitude, direction, and significance of each two-way interaction. Specifically, repayment intentions and moral considerations were most strongly correlated in the *financially/legally unenforceable* condition (r = .73, 95% CI = [.66, .79]), followed by the *legally enforceable only* condition (r = .57, 95% CI = [.47, .66]), the *financially enforceable only*

condition (r = .49, 95% CI = [.37, .59]), and the *financially/legally enforceable* condition (r = .37, 95% CI = [.25, .49]; Table 2-5).

TABLE 2-5

STUDY 2: REMOVING EACH ADDITIONAL LAYER OF DEBT ENFORCEABILITY HEIGHTENS THE ROLE OF MORAL CONSIDERATIONS IN MOTIVATING REPAYMENT

	Repayment intentions			
	b	SE	*t*(590)	Sig.
Moral considerations	0.225	.065	3.45	***
Financially enforceable only	–0.952	.129	–7.38	***
Financially enforceable only × moral considerations	0.144	.061	2.36	***
Legally enforceable only	–1.078	.129	–8.36	***
Legally enforceable only × moral considerations	0.226	.061	3.69	***
Financially/legally unenforceable	–2.789	.134	–20.83	***
Financially/legally unenforceable × moral considerations	0.315	.062	5.06	***
Constant	6.487	.645	10.057	***

Note. ***p < .001; Model includes participant fixed effects. We coded the finally/legally enforceable condition as the reference group

Taken together, Studies 1A–B and 2 reveal that moral considerations play an outsized role in motivating repayment of unenforceable debt, relative to enforceable debt. In all three studies, however, we measured moralization directly (in various ways). An implication of our account is that increasing the salience of moral considerations *indirectly* should similarly affect repayment intentions.

6. Study 3: Manipulating Moralization

In Study 3 (https://aspredicted.org/QWC_7F9), we orthogonally manipulated the salience of moral considerations by asking participants to write a short essay, either about morality or their typical day. We predicted that the salience of moral considerations would increase repayment intentions for unenforceable debt, but not for enforceable debt (H_2).

6.1. Method

We recruited 1,016 MTurk workers (M_{age} = 40.83; 467 men, 543 women, 6 other) for Study 3, which employed a 2 (essay task: *moral* vs. *control*) × 2 (enforceability: *unenforceable* vs. *enforceable*), between-subjects design. We told all participants that the study comprised "two unrelated surveys." We explained that in the first survey they would "write a few short sentences," while in the second survey they would "respond to a scenario."

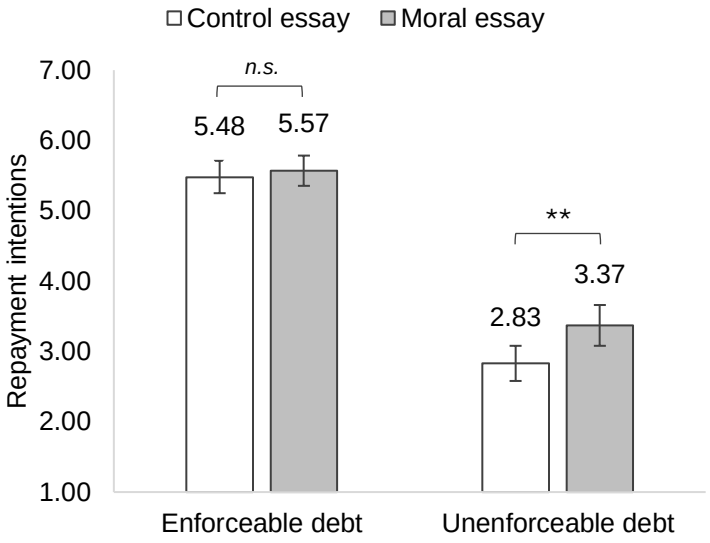
For the *moral* essay task, we asked participants to "please explain why morality is important." For the *control* essay task, we asked participants to "please describe your typical day." After a filler screen, we presented the credit card scenario from Study 1A. We then measured repayment intentions on a seven-point scale: "How likely is it that you would try to pay back some or all of this debt?" ("Not at all likely" = 1; "Extremely likely" = 7).

6.2. Results and Discussion

A two-way ANOVA revealed main effects of essay task ($F(1, 1{,}012) = 13.04$, $p < .001$), enforceability ($F(1, 1{,}012) = 376.44$, $p < .001$), and a marginal interaction ($F(1, 1{,}012) = 3.20$, $p = .074$; H_2). Decomposition of this interaction revealed a simple effect of essay task in the *unenforceable* condition, such that repayment intentions were higher after participants completed the *moral* essay task ($M = 3.37$, 95% CI = [3.08, 3.66]; Figure 2-4) than after they completed the *control* essay task ($M = 2.83$, 95% CI = [2.58, 3.08]; $F(1, 1012) = 9.35$, $p = .002$, $\eta_p^2 = .01$). There was no simple effect of essay task in the *enforceable* condition ($M_{\text{moral essay}} = 5.57$, 95% CI = [5.36, 5.79]; $M_{\text{control essay}} = 5.48$, 95% CI = [5.25, 5.71]; $F(1, 1012) = 0.28$, $p = .59$, $\eta_p^2 = .00$).

FIGURE 2-4

STUDY 3: MANIPULATING THE SALIENCE OF MORAL CONSIDERATIONS (IN AN UNRELATED TASK) BOOSTS REPAYMENT INTENTIONS FOR UNENFORCEABLE DEBT, BUT NOT FOR ENFORCEABLE DEBT (BARS REFLECT 95% CONFIDENCE INTERVALS)



The results of Study 3 experimentally corroborate the correlational results of Studies 1A–B and 2. We propose that this relationship between moralization, debt enforceability, and debt repayment is explained by beliefs about self-diagnosticity, which we test with a moderated mediation framework in Study 4.

7. Study 4: Moderated Mediation

Study 4 (https://aspredicted.org/H1N_992) additionally introduces a more externally valid manipulation of moralization. Specifically, we presented participants with a quote from personal finance expert Dave Ramsey (see Introduction). We took this advice (effectively verbatim) from an online article ostensibly intended to educate consumers searching for information about unenforceable debt ("What Is the Statute of Limitations on Debt?"; Ramsey,

2023).[5] Thus, the nature of this advice would be similar to what a consumer searching for information about unenforceable debt might naturally encounter through an internet search. Moreover, we measured self-diagnosticity with an adapted version of the Self-Diagnosticity Scale developed by Touré-Tillery and Light (2018), predicting these beliefs would mediate the effect of moralization on repayment intentions for unenforceable debt, but not for enforceable debt (H_3).

7.1. Method

We recruited 1,189 MTurk workers (M_{age} = 42.50; 642 men, 537 women, 9 other) for Study 4, which employed a 2 (personal finance advice: *moral* vs. *control*) × 2 (enforceability: *unenforceable* vs. *enforceable*), between-subjects design. Participants reviewed the Study 2 credit card scenario (either accompanied by the Dave Ramsey quote or not) and then indicated whether they believed their repayment decision was self-diagnostic of their identity.

The *unenforceable* condition was identical to the *financially/legally unenforceable* condition of Study 2, while the *enforceable* condition was identical to the *financially/legally enforceable* condition of Study 2. However, in the *moral* condition, after reviewing the scenario, participants further read that they "found a website with advice about how to manage debt, along with the following quote from a personal finance guru." We then reproduced the following quote: "Now, you might think you can just wait out the statute of limitations and then not pay your debts because they'll be time-barred. But missing debt payments on purpose (even though you have the money to pay) dives into some tricky moral territory." In the *control* condition, after reviewing the scenario, participants read nothing else. All participants were asked to confirm their understanding that their debt was either enforceable or unenforceable (by checking a box),

[5] We lightly edited the advice to reduce the potential for demand effects (e.g., removing the phrase, "if you made the choice to borrow the money in the first place, you should take responsibility for it").

before answering: “How likely is it that you would try to pay back some or all of this debt?” (“Not at all likely” = 1; “Extremely likely” = 7).

On the next page, we presented participants with four items adapted from the Self-Diagnosticity Scale (Touré-Tillery and Light, 2018). Specifically, we wrote: “We are interested in understanding your thought process on the previous page. Please indicate the extent to which you agree or disagree with the following statements.” Participants then expressed agreement with each of following four statements, presented in random order: “My decision about whether I would try to pay back some or all of the debt…” (a) “Says a lot about who I am,” (b) “Is very telling of my character,” (c) “Is an indication of my personality,” and (d) “Reflects my inner goals and values” (“Strongly disagree” = 1; “Strongly agree” = 7).

7.2. Results and Discussion

A two-way repayment intentions ANOVA revealed main effects of personal finance advice ($F(1, 1{,}185) = 5.18$, $p = .023$), enforceability ($F(1, 1{,}185) = 653.41$, $p < .001$), and the predicted interaction ($F(1, 1{,}185) = 12.22$, $p < .001$; H_2). Decomposition of this interaction revealed a simple effect of personal finance advice in the *unenforceable* condition, such that repayment intentions were higher in the *moral* condition (i.e., after participants read the Dave Ramsey quote; $M = 3.45$, 95% CI = [3.19, 3.71]; Figure 2-5) than in the *control* condition ($M = 2.82$, 95% CI = [2.59, 3.06]; $F(1, 1{,}185) = 17.02$, $p < .001$, $\eta_p^2 = .01$). There was no simple effect of personal finance advice in the *enforceable* condition ($M_{moral} = 5.82$, 95% CI = [5.65, 6.00]; $M_{control} = 5.95$, 95% CI = [5.78, 6.11]; $F(1, 1{,}185) = .68$, $p = .409$, $\eta_p^2 = .00$).

To analyze self-diagnosticity, we first averaged the four scale items ($\alpha = .96$) to form a composite. A two-way self-diagnosticity ANOVA revealed main effects of personal finance advice ($F(1, 1{,}185) = 8.45$, $p = .004$), enforceability ($F(1, 1{,}185) = 119.31$, $p < .001$), and an

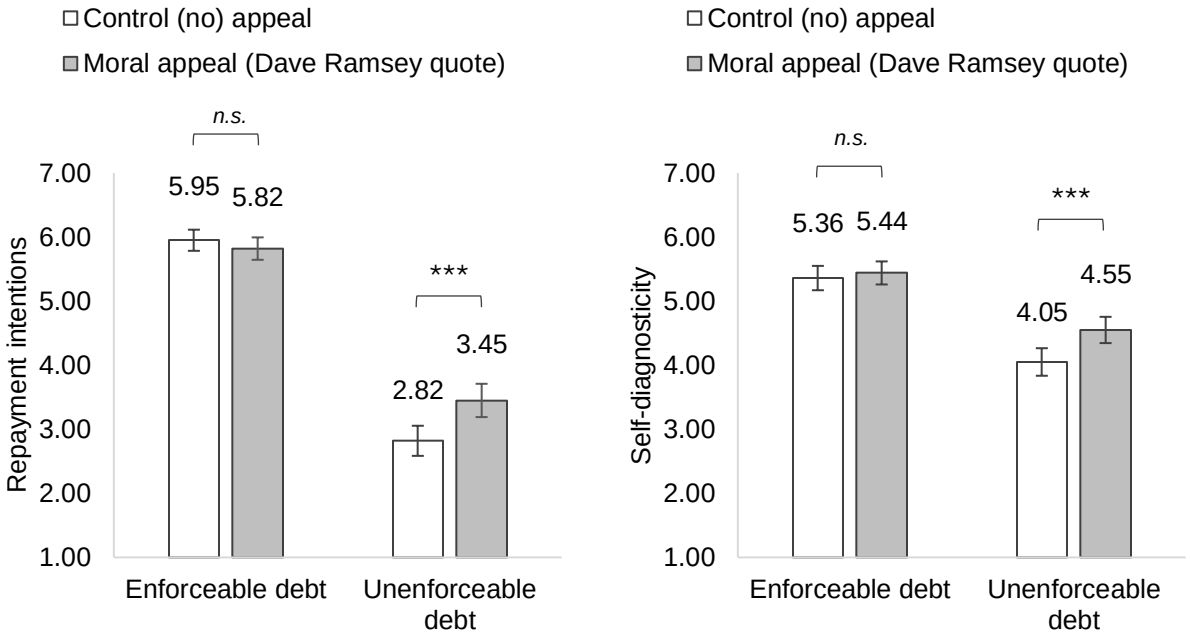
interaction ($F(1, 1{,}185) = 4.43$, $p = .036$). Decomposition of this interaction revealed a simple effect of personal finance advice in the *unenforceable* condition, such that self-diagnosticity was higher in the *moral* condition (i.e., after participants read the Dave Ramsey quote; $M = 4.55$, 95% CI = [4.35, 4.76]; Figure 2-5) than in the *control* condition ($M = 4.05$, 95% CI = [3.83, 4.26]; $F(1, 1{,}185) = 12.71$, $p < .001$, $\eta_p^2 = .01$). There was no simple effect of personal finance advice in the *enforceable* condition ($M_{moral} = 5.44$, 95% CI = [5.26, 5.62]; $M_{control} = 5.36$, 95% CI = [5.17, 5.55]; $F(1, 1{,}185) = .37$, $p = .562$, $\eta_p^2 = .00$).

We next performed a moderated mediation analysis (with 10,000 bootstrapped resamples), the results of which confirmed that self-diagnosticity mediated the effect of moralization on repayment intentions in the *unenforceable* condition (indirect effect = .330, 95% CI = [.146, .512]; H_3), but not in the *enforceable* condition (indirect effect = .053, 95% CI = [–.129, .237]; index of moderated mediation = –.276, 95% CI = [–.808, –.144]).

Study 4 offers evidence for the full causal chain: Moralization boosts repayment intentions for unenforceable debt, but not for enforceable debt, because repayment of unenforceable debt is uniquely self-diagnostic of identity. We also note that self-diagnosticity ratings were higher overall in the enforceable debt condition. This is likely because repayment intentions were *also* higher in the enforceable debt condition (and participants could have self-servingly regarded their "responsible" decision to repay as reflecting positively on their identities). But our account pertains specifically to the effect of moral considerations on beliefs about self-diagnosticity. We thus find in Study 4 that moralization *only* increases self-diagnosticity for unenforceable debt, and that this relationship shapes repayment intentions (as evidenced by the index of moderated mediation).

FIGURE 2-5

STUDY 4: SELF-DIAGNOSTICITY MEDIATED THE EFFECT OF MORALIZATION ON REPAYMENT INTENTIONS FOR UNENFORCEABLE DEBT, BUT NOT FOR ENFORCEABLE DEBT (BARS REFLECT 95% CONFIDENCE INTERVALS)



The laboratory experiments reported thus far offer both evidence of the basic effect ($H_{1–2}$) and support for our proposed process (H_3). And though participants reviewed realistic scenarios, they were nevertheless hypothetical. In Study 5, therefore, we asked participants to make an actual repayment decision in a consequential choice paradigm.

8. Study 5: Consequential Choice

For Study 5, we designed an investment game that required participants to take out a "loan" to use as principal. We then manipulated whether they were prompted to view debt in moral terms and asked participants to actually repay enforceable or unenforceable "loans." We designed the message to mirror what debt collectors actually say in practice, and threatened to

"garnish" wages in the enforceable condition (both mirroring real-world practices). We predicted that the moral appeal would only affect repayment of the unenforceable "loan" (H_2).

8.1. Method

We recruited 789 MTurk workers (M_{age} = 42.41; 417 men, 372 women) for Study 5, which employed a 2 (appeal: *moral* vs. *control*) × 2 (enforceability: *unenforceable* vs. *enforceable*), between-subjects design. We first told all participants that they would be playing an investment game that would require borrowing $1.00. Participants read and "signed" a contract, in which they both acknowledged and promised to repay the loan at the end of the study (Figure 2-6). They also learned that any profit would be theirs to keep as a bonus.

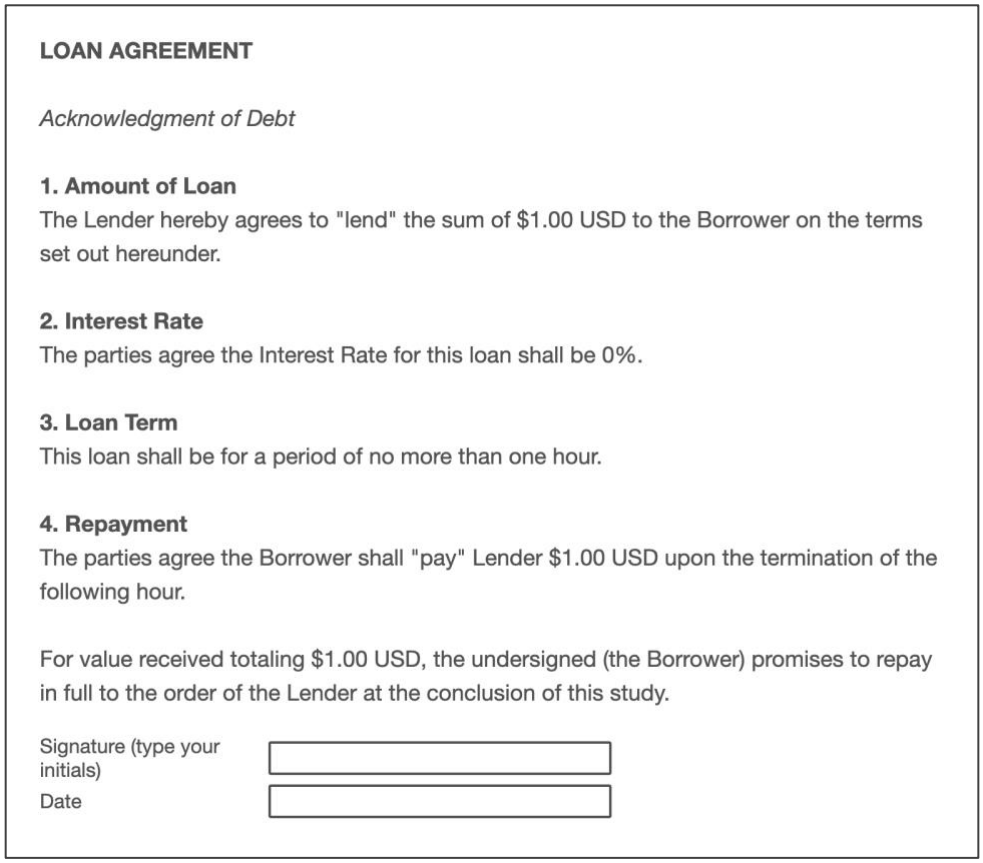
After "signing" the contract, participants subsequently "received" $1.00 to invest in one of three stocks. They next selected Stocks A, B, or C and then viewed a loading wheel while waiting for their return to be calculated. All participants subsequently learned that their investment had earned a $1.00 profit (regardless of their actual choice).

In the *enforceable* condition, participants read: "As you recall, you signed a contract to borrow $1.00 and committed to repaying the loan. The contract you signed is enforceable. In other words, if you choose not to repay the $1.00 loan, we may force you to repay it by garnishing your wages (i.e., not paying your $1.00 return on investment as a bonus)." In the *unenforceable* condition, participants read: "As you recall, you signed a contract to borrow $1.00 and committed to repaying the loan. The contract you signed is unenforceable. In other words, there is no way we can force you to repay the $1.00 loan. You are free to keep the additional $1.00 for yourself (with no negative consequences)." Participants assigned to the *control* appeal read nothing else, while participants assigned to the *moral* appeal additionally read: "We ask that you repay the $1.00 loan, because it is the moral thing to do." All participants then chose

between two counterbalanced options: “Do not repay the $1.00 loan (i.e., keep an additional $1.00 for myself)” and “Repay the $1.00 loan (i.e., do not keep an additional $1.00 for myself).” After completing data collection, we processed bonus payments for every participant (i.e., every choice for every participant was consequential).

FIGURE 2-6

STUDY 5: LOAN AGREEMENT SIGNED BY PARTICIPANTS



LOAN AGREEMENT

Acknowledgment of Debt

1. Amount of Loan
The Lender hereby agrees to "lend" the sum of $1.00 USD to the Borrower on the terms set out hereunder.

2. Interest Rate
The parties agree the Interest Rate for this loan shall be 0%.

3. Loan Term
This loan shall be for a period of no more than one hour.

4. Repayment
The parties agree the Borrower shall "pay" Lender $1.00 USD upon the termination of the following hour.

For value received totaling $1.00 USD, the undersigned (the Borrower) promises to repay in full to the order of the Lender at the conclusion of this study.

Signature (type your initials)

Date

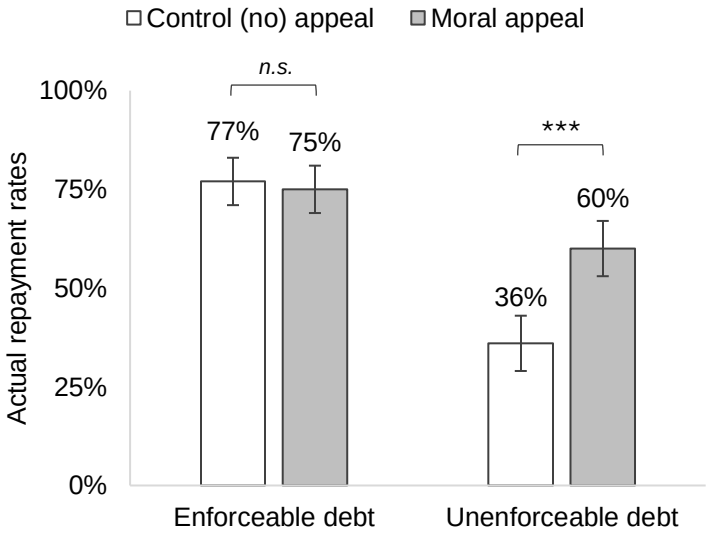
8.2. Results and Discussion

A logistic regression of repayment on appeal, enforceability, and their interaction revealed main effects of prompt (b = .965, SE = .207, z = 4.65, p < .001), enforceability (b = .1.757, SE = .224, z = 7.85, p < .001), and an interaction (b = –1.060, SE = .314, z = 3.38, p =

.001; H_2). Conceptually replicating Study 3, decomposition of this interaction revealed a simple effect of prompt in the *unenforceable* condition, such that actual repayment rates were higher in the *moral* appeal condition (60%, 95% CI = [53%, 67%]; Figure 2-7) than in the *control* appeal condition (36%, 95% CI = [29%, 43%]). There was no corresponding simple effect of prompt in the *enforceable* condition (*moral* appeal condition: 75%, 95% CI = [69%, 81%] vs. *control* appeal condition: 77%, 95% CI = [71%, 83%]).

FIGURE 2-7

STUDY 5: MORALIZATION INCREASES ACTUAL REPAYMENT FOR UNENFORCEABLE DEBT, BUT NOT FOR ENFORCEABLE DEBT (BARS REFLECT 95% CONFIDENCE INTERVALS)



The decisions participants made in Study 5 required participants to forgo an extra $1.00 in actual compensation (a nontrivial amount for MTurk workers). That every choice made by every participant was consequential further addresses potential concerns about demand effects, complementing the correlational results of the Archival Data Analysis. We also note that our subtle manipulation (i.e., simply reminding participants the repayment of debt *could* be viewed

in moral terms) caused participants to forfeit real compensation, suggesting an actionable and concrete strategy firms might use to encourage repayment.

9. General Discussion

This research introduces the concept of debt enforceability and offers a theory for how it systematically changes consumer motivations for debt repayment. Across an analysis of archival credit data (N = 203,010) and six laboratory experiments (N = 4,189), we documented a robust, inverse relationship between debt enforceability and the role that moral considerations play in motivating debt repayment, along with additional evidence implicating beliefs about self-diagnosticity as an underlying mechanism.

9.1. Theoretical Implications and Limitations

We believe our findings contribute several important insights to the financial decision making literature (Colby and Chapman, 2013; Greenberg and Hershfield, 2019; Philipp-Muller et al., 2022), and thus expect it to be generative for future research. First, we developed a novel theoretical construct (i.e., debt enforceability) to explain just one aspect (e.g., debt repayment) of the psychology of debt. But it could matter for a variety of other debt-related judgments and decisions, more broadly. For example, the extent to which consumers feel psychological ownership over borrowed money (Sharma et al., 2021) and perceptions of wealth, which are sensitive to the relative balance of assets to debt (Sussman and Shafir, 2012), could be further moderated by beliefs about enforceability. Debt repayment decisions across a wide range of context have been shown to be highly sensitive to various framing, disclosure, and default effects (Donnelly et al., 2023; Hirshman and Sussman, 2022; Navarro-Martinez et al., 2011), which might also critically depend on the extent to which repayment can be compelled. Enforceability itself might change over time, as well, given that regulators regularly promulgate new rules. For

example, the CFPB recently announced a proposal to prevent credit bureaus from reporting outstanding medical bills on credit histories (Chopra, 2024).

Second, though we focused on three primary reasons borrowers repay debt (e.g., legal liability, financial consequences, and moral considerations; Figure 2-1), these factors are of course not collectively exhaustive. For example, present bias (and impatience more broadly; Hardisty and Weber, 2020; Loewenstein and Thaler, 1989; Roberts, Shaddy, and Fishbach, 2021) could reflect another type of internal motivation. Indeed, higher discount rates have been associated with both an unwillingness to strategically default on underwater mortgages (Atlas, Johnson, and Payne, 2017) and increased uptake of loan consolidation offers (Bolton, Bloom, and Cohen, 2011). Conversely, a factor like the purpose of the loan (Tully, Hershfield, and Meyvis, 2015) may represent another type of external motivation. For example, moralization might play a greater role in motivating repayment of loans taken out for needs (e.g., shelter) than for wants (e.g., entertainment), because needs are often outside the control of borrowers. Future research could explore these possibilities.

Third, our findings further contribute to recent research exploring the effect of moral beliefs on debt repayment. For example, text messages encouraging banking customers in Indonesia to moralize repayment reduced credit card delinquency (Bursztyn et al., 2019), and natural language processing of debt collection call transcripts in China revealed a modest correlation between moral appeals and repayment of delinquent loans (Liao et al., 2021). Meanwhile, in the U.S., homeowners surveyed after the Great Recession were less likely to have strategically defaulted (i.e., walked away from underwater mortgages) when they considered it immoral to do so (Guiso, Sapienza, and Zingales, 2013; Seiler et al., 2012). This work exclusively examines *enforceable* debts, however. An advantage of our focus on *unenforceable*

debts is that the comparison permits cleaner isolation of the role of internal motivations, free from external motivations. As a result (and as discussed in the Introduction), we are able to contrast our findings with a potential "crowding out" alternative (e.g., Deci and Ryan, 2012). And our framework furthermore explains *why*: Moralization of unenforceable debt renders repayment self-diagnostic of identity (Bryan et al., 2011; Touré-Tillery and Fishbach, 2015). As such, our account deepens the connection between theories of motivation (Touré-Tillery and Light, 2018) and the financial decision making literature.

Finally, an important unanswered theoretical question is why some consumers believe these decisions implicate their identities, while others do not. For example, it is possible that people who think more intuitively (Frederick, 2005) are likelier to regard the repayment of borrowed money as a matter of right or wrong, given that previous work has shown differing thinking styles change the way people resolve moral dilemmas (Royzman, Landy, and Goodwin, 2014). In particular, the distinction between deontology—evaluating actions based on ethical principles rather than practical consequences—and consequentialism—following utilitarian rules—could have a similar effect (Shaddy, Fishbach, and Simonson, 2021). For example, just as deontologists argue that sacrificing an innocent life is universally wrong, irrespective of its consequences (Holyoak and Powell, 2016), so too might some consumers believe the duty to pay back debt is an inviolable rule.

9.2. Marketplace Consequences and Policy Implications

Identifying potential sources of default risk is a nontrivial issue for firms that extend credit (Avery et al., 2000). Errors in these judgments of creditworthiness can be devastating for firms' bottom lines. Our findings, therefore, may suggest an additional variable—alongside more conventional measures like assets, income, and credit history—that lenders, both institutional

and personal, could consider in assessing risk (Netzer, Lemaire, and Herzenstein, 2019). As demonstrated by Study 5, moral appeals can meaningfully affect actual behavior—and likely extend beyond debt repayment.

We are also careful to emphasize that we do not make any normative claims about whether consumers *should* repay unenforceable debt. After all, people are often willing to engage in various forms of costly identity signaling (e.g., Berger and Heath, 2007; Gintis, Smith, and Bowles, 2001; Sosis, 2003). But, as noted, millions of Americans face these decisions every year (Halpern, 2014). For example, our analysis of the 2017 CFPB Survey of Consumer Views on Debt, which draws from a nationally representative sample of American adults (N = 2,125), reveals that 46% of respondents had been contacted by a debt collector in the past year, with 52% paying some or all of the balance as a result.[6] Consequently, various consumer advocacy groups, state Attorneys Generals, and policymakers have called for an outright ban on attempts to collect unenforceable debt (e.g., CFPB, 2020; Consumer Reports Advocacy, 2020; Comprehensive Debt Collection Improvement Act H.R. 2547, 2021).

In the meantime, our conceptualization may suggest various interventions that regulators could employ to discourage borrowers from moralizing these decisions. To test one such intervention, we recruited prescreened MTurk workers who indicated having previously interacted with debt collectors.[7] We then adapted the *unenforceable* debt condition from Study 4, randomly assigning participants to a *control*, *moral*, or *moral + disclosure* condition.

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[6] We obtained anonymized raw data from the 2017 CFPB Survey of Consumer Views on Debt through a Freedom of Information Freedom of Information Act (FOIA) request. To facilitate and encourage use of these data in future research, we have posted both the survey instrument and full set of responses to the public repository for this manuscript (https://osf.io/jyche/?view_only=4ed58278f1914301999a6543ef2c484e).

[7] Eligibility was limited to MTurk workers who responded affirmatively to a question taken verbatim from the 2017 CFPB Survey of Consumer Views on Debt (e.g., "Have you ever been contacted by a creditor or debt collector trying to collect a past-due debt from you?"). This question was embedded among a longer list of decoy questions (e.g., "Would you say that you are better off or worse off financially than you were a year ago?") intended to obscure the true purpose of the screener.

Those in the *control* condition reviewed only the credit card scenario. Those in the *moral* condition reviewed the Dave Ramsey quote encouraging moralization of the repayment decision. Finally, those in the *moral + disclosure* condition reviewed the same Dave Ramsey quote, in addition to the following disclosure: "Legally, lenders must maintain loan loss reserves, which are like a financial cushion that accounts for the inevitability that some proportion of loans will never be repaid. Lenders charge interest and fees, in part, to cover these anticipated losses, which are expected and planned for. Lenders can further recoup potential losses by charging-off or writing-off loans that are deemed unrecoverable." We designed this disclosure to remind participants that financial institutions regard their lending decisions as impersonal business transactions (as opposed to personal signals of identity). Attesting to the possibility that such framing can neutralize the effect of moral appeals, we found that repayment intentions were higher in the *moral* condition (M = 3.81, 95% CI = [3.30, 4.32]) than in both the *control* condition (M = 3.17, 95% CI = [2.73, 3.61]; $t(300) = 1.93$, $p = .055$, $d = .27$) and the *moral + disclosure* condition (M = 3.25, 95% CI = [2.83, 3.68]; $t(300) = 1.70$, $p = .091$, $d = .24$).

Moreover, from the perspective of consumers, paying back any amount of time-barred debt can be additionally problematic when doing so "restarts the clock" on the statute of limitations (FTC, 2023), meaning that they can again be sued for the remaining balance. This encourages some debt collectors to pressure people into repaying a small fraction of the amount owed (Merle, 2019). Consequently, the CFPB has recently proposed regulations that would require debt collectors to clearly disclose that there are legal time limits to sue borrowers for unpaid debt, and that these time limits can be revived if they make any payment in any amount.

To explore this implication, we presented participants with the credit card scenario from Study 1A and warned them about the prospect of resetting the statute of limitations (e.g., "You

should be aware of the following: 1. You cannot be sued or otherwise forced to repay any portion or all of this debt, since too much time has passed on the statute of limitations "clock." 2. If you pay any portion of the debt back now, the statute of limitations "clock" will restart."). This language mirrored that proposed by the CFPB (Debt Collection Practices Regulation F, 2020), and we found that it significantly reduced repayment intentions ($M_{\text{treatment}}$ = 2.56, 95% CI = [2.20, 2.92]; M_{control} = 4.18, 95% CI = [3.79, 4.57]; $t(317) = 6.04$, $p < .001$, $d = .68$). Yet some participants were nevertheless still willing to repay, despite the cautionary language. Better understanding when and why moral considerations seem to trump even these explicit warnings about resetting statutes of limitations is an important question.

It is also possible that the moralization of debt affects not only repayment decisions, in particular, but also political attitudes about debt policy, in general. For example, student loan forgiveness is a hotly contested political issue (Catherine and Yannelis, 2023). In a third supplemental study, we explained to participants that the government was considering a student loan forgiveness program. We then asked if they would support such a proposal and whether they view debt in moral terms ("To what extent do you feel like paying back debt is a moral obligation?"). Moralization was negatively correlated with endorsement of the student loan forgiveness plan ($r = –.33$, $p < .001$). This could explain why such policy proposals are not supported equally by different political parties, as conservatives and liberals tend to rely on different moral systems when making judgments about right and wrong (Graham, Haidt, and Nosek, 2009; Haidt and Graham, 2007). And it suggests a new factor (e.g., moralization) that could systematically shape political attitudes about such proposals.

9.3. Conclusion

In this research, we asked a seemingly straightforward question: Why do people repay debt when they do not have to, even when they *know* they do not have to? It turns out there is more to the answer than meets the eye. Moralization matters more for unenforceable debt than for enforceable debt because it is easier to communicate and infer identity when someone chooses to voluntarily repay debt in the absence of legal and financial forcing mechanisms. We thus believe our conceptualization not only contributes meaningful insights to the financial decision making literature (e.g., by introducing and exploring the concept of debt enforceability), but also underscores the critical role that consumer psychology can play in advancing an important policy discourse.

Appendix

TABLE A2-1

OVERVIEW OF LITERATURE EXPLORING THE LINKE BETWEEN MORALIZATION AND FULFILLMENT OF VARIOUS FINANCIAL OBLIGATIONS (E.G., DISCRETIONARY PURCHASES, CONSUMER DEBT, TAXES, ETC.)

Citation	Hypothesis	Paradigm(s)	Measure(s)	Key result(s)
Atlas, Johnson, and Payne (2017)	Present bias reduces strategic default	Surveyed 244 homeowners (half of whom were underwater on their mortgages) about self, home, and financial status	Estimated change in value of home that would cause willingness to consider strategy default	Present bias correlated with being underwater on mortgage, but also with greater willingness to stay in an underwater home
Blumenthal, Christian, and Slemrod (2001)	Normative appeals that mention social commitments increase tax compliance	Sent letters to taxpayers reminding them of upcoming tax payments	Increase in reported income on tax returns year-over-year	Taxpayers who received a letter did not report higher taxable income
Brown, Schmitz, and Zehnder (2016)	In economic downturns, social norms around strategic defaults are less likely to be enforced	Prisoners' dilemma game where strategic default created negative externalities	Percent of players who default during "normal" versus "recession" economies	Solvent players were more likely to strategically default when economy was "weak"
Bursztyn, Fiorin, Gottlieb, and Kanz (2019)	Moral appeals reduce credit card delinquency	Sent moral appeals via text message to bank customers encouraging them to pay credit card bill	Percent of customers who made at least the minimum payment before the end of a 10-day grace period	Moral appeal increased minimum payment rate by 4.4%
Davey (2019)	Debtors who cannot afford to repay debt suspend their concern with total repayment and instead turn to amoral humor about being a "bad debtor"	Ethnographic fieldwork on attitudes toward debt repayment in low-income housing in southern England	Stated attitudes toward debt and debt repayment	Debtors disassociated from belief that full repayment was the final goal, and instead joked about being "bad debtors"
Fellner, Sausgruber, and Traxler (2013)	Informal institutions, like social norms and moral appeals, increase payment of television license fees	Letters sent to television customers in Austria with either moral appeal, social information, or threat	Percent compliance (payment of television license fee)	Receiving any letter increased compliance by 15%, but type of letter did not matter
Graver (1997)	Discusses consumer bankruptcy as social policy	Analysis of decisions from cases brought to court after	Qualitative analysis of reasoning behind bankruptcy decisions	Ambiguity in whether bankruptcy discharge is a right or a privilege changed court assessment of

	in finance-driven capitalism	Norway passed bankruptcy law reform		bankruptcy, with moral reasons rendering decisions more ambiguous
Guiso, Sapienza, and Zingales (2013)	Rate of strategic default of mortgages is based on economic, moral, and social norm factors	Quarterly survey of American households from 2008–2010 (Chicago Booth Kellogg School Financial Trust Index Survey)	Percent of defaults, survey questions about morality, beliefs about government responsibility, beliefs about others' decisions	Willingness to strategically default was higher when the value of the house decreased relative to the amount owed and was sensitive to beliefs about morality and exposure social information about others who had strategically defaulted
Hallsworth, List, Metcalfe, and Vlaev (2017)	Reminder of social norms increase compliance with payment of overdue tax	Sent reminder letters to 200,000 non-compliant taxpayers in the U.K.	Percent of taxpayers who paid off overdue taxes	Those who received social norm messages or public service messages increased payment by between 1% and 5% (depending on letter type)
Liao, Du, Yang, and Huang (2021)	Both carrot and stick strategies work when debt collectors attempt to collect payment	Text analysis of debt collection calls from a finance company in East Asia	Words and phrases isolated through natural language processing as predictors of repayment time	Text analysis revealed that carrot strategies increased happy emotions to decrease repayment time, social warnings worked through fear-based emotion, but legal warnings backfired
Masiukiewicz (2017)	Moral norms have eroded recently regarding repayment of debts in Poland	Archival work on rates of debt repayment in Poland compared with other European countries and surveys of attitudes towards debt in Poland	Percent of debts repaid on time in Poland and other European countries. Percent of respondents in surveys who believed debt must be repaid on time	Poland has the lowest rates of debt repayment in Europe, and attitudes found in surveys suggest that most Polish people do not believe debts must always be repaid
Pavan and Barreda-Tarrazona (2020)	People strategically default less than is optimal because of social norm concerns	Lab participants were endowed with a house and income and asked each period in a simulation to make payments, sell the house, or strategically default	Percent who strategically defaulted at each time period	Participants strategically defaulted when prices and income were low. They strategically defaulted less than would have been optimal
Perez-Truglia and Troiano (2018)	Shaming tax delinquents increases tax repayments	Sent letters to 34,000 tax delinquents warning they failure to repay would result in publicizing their names	Percent of people who paid back their debts	Delinquents in first quartile (under $2,273) increased repayment by 2.1% after receiving the letter. No effect for other quartiles
Polletta and Tufail (2014)	People view the relationship between lender and borrower as reciprocal	Interviews with 23 agents and observations at two debt settlement agencies	Interview transcripts and written observations from 29 hours spent at debt settlement agencies	People were less likely to settle debts when they had a positive relationship with the lender, even if settlement could be achieved with few negative repercussions. If service was inadequate, they felt justified in trying to settle debts

Pruckner and Sausgruber (2013)	Moral reminders increase payments on honor system	Printed messages on newspaper boxes with moral or control messages and comparing rates of payment	Amount paid per newspaper taken	Percent who paid for the newspaper remained the same across conditions, but those who did paid more after viewing the moral message
Seiler, Seiler, Lane, and Harrison (2012)	Anticipated shame and guilt predicts why some people strategically default on mortgages and others do not	Survey of homeowners that are underwater on their mortgages and either do not default, default for economic reasons, or strategically default	Knowledge of current debt, emotional drivers for default	Those who did not default feared backlash, which was less than expected among those who did default. Many did not regret defaulting
Stout (2016)	Online forums during 2008 recession changed interpretation of indebtedness among homeowners experiencing foreclosure	Qualitative analysis of online forums discussing mortgages and foreclosure	Analysis of text and interactions on online forums from homeowners from lower- and middle-class neighborhoods in Northern California	Homeowners moralized non-payment of debts as a response to widespread foreclosures after considering the role of Wall Street in triggering the crash
White (2010)	Desire to avoid shame and guilt drive lower rate of strategic defaults	Analysis of strategic default in California, analysis of media stories, and qualitative interviews with homeowners	Comparison of underwater mortgage rates to default rates across California counties	Strategic default rates were much lower than underwater mortgage rates across California. Qualitative interviews suggested this was due to desire to avoid shame and guilt
Wilkinson-Ryan (2009)	A breach of contract is a type of broken promise, which people often believe to be immoral	Participants reviewed breach of contract cases and answered questions about the implications of each case	Damages awarded by participants to breach of contract cases	Participants were more punitive when motive was gain rather than fear of loss, when assignment of damages happened after the fact, or when breach was intentional
Wilkinson-Ryan (2011)	People view a mortgage contract as a promise and default or foreclosure as insufficient punishment for breach of contract	Survey about hypothetical default situations. Participants evaluated and responded to various situations (e.g., bank bailouts, subprime vs. traditional, etc.)	The minimum decrease in home value at which participants would be willing to default and willingness to default	Participants were more willing to default when there was a bank bailout, for subprime mortgages, if the mortgage had been transferred, or when foreclosures were common
Wilkinson-Ryan (2012)	Assignment of contract rights to a third party erodes the moral obligation for fulfillment	Laboratory games involving contract execution between either two original parties or one original party and one third	Percent of players who were “generous” with game tokens, compared to those who “defaulted”	Participants were more generous and less likely to default with players who were originally part of the contract (as opposed to a third party who bought the rights later)

	party who purchased right to contract

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