

FOCUSING ON THE BIG PICTURE: HOW WIDENING ATTENTION DECREASES  
SPENDING

BY

FAITH SHIN

DISSERTATION

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Doctoral Committee:

Professor Dov Cohen, Chair  
Professor Dolores Albarracín  
Assistant Professor Joey Cheng  
Professor Robert M. Lawless  
Associate Professor Angela Lyons

## ABSTRACT

Seven studies tested the hypothesis that thinking about one's overall financial situation (e.g., how much one has in total debts, assets, or net worth) reduces participants' willingness to spend. Four of the seven studies found significant results in favor of this hypothesis; however, three of the studies resulted in null effects. There was variation from study to study, with some changes to the dependent measures and some studies containing additional mediating measures, so a meta-analysis of the seven studies was conducted. Studies 5 through 8 attempted to find a significant mediator for this effect, including testing whether participants are more likely to consider opportunity costs, have an abstract construal, feel financial scarcity, or experience negative emotion, compared to the control condition. However, no significant mediating measure was identified. Future plans for additional research are discussed.

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## CHAPTER 1: INTRODUCTION

Considerations of trade-offs are important facts of human decisions. Deciding whether to do something now vs. later, whether it's worth it to expend time, energy, or resources to obtain a given goal, or whether one should make a purchase or save the money for something else each require consideration of what one gains from each alternative and what one gives up.

Normatively, individuals should always consider opportunity costs when making decisions. Economists assume that rational individuals consider that, "A dollar is a dollar . . . and so what comes to mind as the next best use for money remains fairly constant across situations." (Okada & Hoch, 2004). However, behavioral research has shown that individuals often neglect opportunity costs (Becker, Ronen, & Sorter, 1974; Frederick, Novemsky, Wang, Dhar, & Nowlis, 2009). When outside options are not explicit components of the decision-making process, individuals' attention is drawn towards the focal purchase rather than to other possible alternatives (Cherubini, Mazzocco, & Rumiati, 2003; Frederick et al., 2009).

However, consideration of opportunity costs can be beneficial in budgeting or reducing spending (Frederick et al., 2009). Consumers who consider their opportunity costs are likely to be better off financially compared to those who do not (Ameriks, Caplin, & Leahy, 2003; Lynch, Netemeyer, Spiller, & Zammit, 2010). Individuals who self-identify as "tightwads" (i.e., individuals who spend less than they would ideally like to spend) are more likely to chronically think about opportunity costs and are less susceptible to frames intended to highlight opportunity costs (Frederick et al., 2009).

One important question is how or when people come to move away from just thinking about the focal object and move more in the direction of thinking about trade-offs ("if I have X now, I can't have Y later" rather than "I want X now."). Also, when people do consider trade-

offs about spending their resources, are they likely to consider all of their resources and commitments or only a subset of their resources and commitments? How might taking the former (more global) perspective on their overall financial situation affect spending and saving behavior?

Regarding the first question, previous research suggests that people are more likely to consider opportunity costs when they perceive immediate resource constraints or are using limited resources (Spiller, 2011). Tight or small mental budgets can constrain spending and reduce the amount people are willing to pay (Heath & Soll, 1996; Spiller 2011). Typically, interventions to get people to save more or spend less will focus people's attention on micro-level budgeting, or the interventions encourage people to use mental accounting to their advantage, focusing them on specific objects they want to buy. For example, Ariely and the Common Cents lab found that "a short time frame allows us to better understand trade-offs" (Tergesen, 2017). Thus, a \$30 grocery bill seems like a larger expense when our budget is \$60 per week rather than \$240 per month. Likewise, they have found that there is much to be gained by having people think of their savings not as a lump sum but as various smaller amounts allocated to accounts, such as "Rainy Day Savings" or a "Vacation Fund."

However, there's also malleability in mental accounting, such that people can flexibly construct accounts or assign expenditures in order to justify spending (Cheema & Soman, 2006). For example, an expense could be assigned to two or more categories or not assigned at all if it's a one-time or infrequent expense. Further, mental accounting often ignores the fact that money is fungible – a dollar spent towards one expense could just as easily be put towards something else. Thus, whereas previous research suggests that narrowing attention might work to reduce consumption, perhaps removing the constraints of mental accounts and widening people's

attention to their comprehensive financial situation (across all accounts) can also reduce spending. Standard economic theory assumes that when making a financial decision, rational people consider a comprehensive accounting of their finances that incorporates their current wealth, current income, and future earnings (Ando & Modigliani, 1963). In practice, in everyday situations, it may be rare that people consider their entire financial portfolio when faced with a consumption decision; however, it's possible that bringing people's attention to a more comprehensive view of their finances by asking them to report their entire debts owed, assets owned, or net worth could increase their consideration of opportunity costs and how the purchase fits within their comprehensive financial situation.

The present research suggests that focusing people's attention on the "big picture" of their entire financial lives may reduce spending. In 7 studies, participants were asked to think about how much they owe in debts, have in assets, or have in net worth. The effect was not always consistent, but in 4 of the 7 studies, participants who thought about their overall debts, assets, or net worth reported a decreased willingness to spend, compared to a control condition.

It would not be too surprising that reminding people of their debts caused them to spend less. Nor would it be surprising if reminding people that they are relatively less well-off than others caused them to spend less. However, the present research finds that simply asking people about big picture financial questions discourages people from wanting to spend a) even when they are reminded about their assets or net worth and b) even when they think they are relatively well-off (vs. worse off), compared to their peers or to the average citizen. In these latter cases, people aren't more likely to spend; instead, focusing them on their overall financial lives leads them to want to spend less.

Four of the studies attempted to identify mediators or explanations for why thinking about one's overall financial situation reduces spending. While a significant mediator for the effect was not found, the studies suggested against the a priori hypothesized possibilities that the manipulation is 1) generating thoughts of opportunity costs or 2) inducing an abstract mindset. The next sections discuss these hypotheses and why we hypothesized that they might have explained the effect.

### **1.1. Widening attention**

The goal of this paper is to demonstrate that widening attention and viewing one's financial situation from a more global perspective may have positive effects on decision-making, such as reducing spending or making opportunity costs more salient. The concept of 'stepping back' and perceiving the entirety of the obstacle or problem at hand may be beneficial in focusing attention on the larger context of one's financial situation. According to Lewin (1935), people find solutions "by reason of a restructuring of the field, [where] there occurs a perception of the total situation of such a kind that the path to the goal becomes a unitary whole." These ideas can be traced to Gestalt psychology which takes the position that the whole is other than the sum of its parts.

Prior to running experiments, there were two hypotheses for why thinking about big picture financial questions reduces willingness to spend. One, bringing attention to large, superordinate financial accounts (such as how much one has in total debts, assets, or net worth) may affect people's construal of their financial situation. Priming people to report how much they owe or have across all accounts may cue an abstract mindset about their financial situation. High-level construals bring attention to more global concerns and have been shown to promote self-control (Fujita, 2008; Fujita, Trope Liberman, & Levin-Sagi, 2006). If the manipulation is

inducing an abstract mindset, people may be more likely to consider broad, goal-relevant implications of their choices, leading to lower willingness to spend. (This is referred to as the “Construal level” hypothesis below).

Another possibility is that thinking about these big picture financial questions makes people more likely to consider tradeoffs and opportunity costs. Bringing attention to large financial accounts may make people more likely to consider their spending in relation to the total available resources they have and what they may be giving up by spending money now. It could bring attention to the fungibility of money and that the money could be saved or used for alternative purchases. That is, it may remind them that the choice is not “Do I buy vs. not buy this item in front of me?” but rather “Do I buy this item vs. save the money or use it for some other purpose?” Although economists assume rational people consider opportunity costs, previous research has shown that people neglect opportunity costs and fail to consider the possible utility gained from other alternatives (Frederick et al., 2009). (This is referred to as the “Salience of opportunity cost” hypothesis below).

### **1.1.1 Construal Level Hypothesis**

People may be less likely to spend if their focus is shifted to see the proverbial forest beyond the trees. According to construal level theory, people can mentally represent objects or behaviors at high-level, abstract or low-level, concrete construals. Abstract representations tend to focus on central or superordinate features that convey the broad meaning and contain less specific details about the object or action performed. In contrast, concrete construals capture subordinate, incidental features and describe objects and events that are more specific and detailed (Liberman & Trope, 1998). Research has shown that psychologically distant events (such as in time, space, social distance) are viewed more abstractly (Liberman & Trope, 1998;



Trope & Liberman, 2003), but people can construe objects differently in the absence of distance. For instance, generating superordinate or subordinate exemplars can also affect the way in which people construe information (Fujita et al., 2006).

The level at which people construe objects or events has distinct effects on judgment and decision-making. High-level construals are beneficial in bringing attention to abstract, global concerns and can promote self-control (Fujita et al., 2006). For example, having people generate superordinate ends (abstract) vs. subordinate means (concrete) for actions decreased people's preference for immediate over delayed rewards. Similarly, having college students generate subordinate (e.g., electronics) vs. superordinate (e.g., phone) categories for objects decreased their evaluations of tempting words that may undermine studying (e.g., TV, cellphone, party; Fujita et al., 2006). More abstract thinking leads people to base their decisions on global concerns (that are superordinate and primary) rather than local, more low-level concerns. Global processing may also be an adaptive way to overcome or restructure obstacles that are impeding goals (Higgins, 2006; Marguc; Forster, & Van Kleef, 2011).

One possible explanation is that thinking about large financial accounts activates more abstract, global concerns. Focusing on superordinate accounts may cause people to distance themselves from the situation and take a more abstract, broad perspective of their finances. Assuming that the manipulation is inducing an abstract construal, people who think about their debts, assets, or net worth should be more likely to construe their financial situation in an abstract way. Study 5 tested whether the manipulation affects people's tendency to categorize fringe financial exemplars as belonging to a category (Isen & Daubman, 1984) or construe financial behaviors in terms of high-order reasons rather than low-level descriptions (Vallacher & Wegner, 1989), both of which have been used previously to test for abstract construal. Study 6

examined whether people report more abstract or long-term goals after the manipulation. Study 7 tested whether people are more likely to make financial planning goals after the manipulation. However, in these studies, these measures of abstract construal were not significant mediators.

### **1.1.2. Salience of Opportunity Costs Hypothesis**

Another possibility is that priming large financial accounts reduces spending because people are more likely to consider tradeoffs and the opportunity costs associated with purchasing consumer goods. Although economists assume that humans will be rational decision makers, studies have shown that people fail to consider opportunity costs and the alternative uses of their money (Becker et al., 1974; Frederick et al., 2009). For example, when the choice to buy vs. not buy something is changed to buy vs. keep the money for other purchases, people are significantly less likely to buy when this opportunity cost cue is provided (Frederick et al., 2009). Likewise, if people are asked to list things they would like to buy with \$20, they're more likely to choose a cheaper consumer option (Frederick et al., 2009).

Considering opportunity costs involves evaluating outside, external factors that are not explicit factors of the purchasing decision (Spiller, 2011). Although people do not spontaneously consider opportunity costs, Spiller (2011) suggests that two factors may bring to mind opportunity costs: perceived constraint and the accessibility of alternate resource uses. By bringing people's attention to how much they have or owe in large financial accounts (across all balances) and broadening their attention, I hypothesized that people are more likely to consider alternative uses of their money, rather than spending it on the goods at hand. Study 4 tested the hypothesis that after the manipulation people are more likely to consider opportunity costs when responding to a series of decision-making scenarios. Studies 5 and 6 used an opportunity cost manipulation from Frederick et al., 2009 to test whether when reminded of alternative uses of

money, participants' spending in the overall financial accounts condition is less likely to be affected by the reminder. If opportunity costs are already cued by the financial accounts manipulation, the Frederick et al., 2009 manipulation should have a smaller effect. Study 7 examined whether participants self-report more consideration of opportunity costs using a scale (Spiller, 2011). However, in all of these studies, opportunity cost measures were not found to be a significant mediator of the effect.

### **1.1.3. Small vs. Large Accounts**

The general hypothesis that thinking about one's overall financial situation should reduce spending runs counter to evidence showing that narrow, short-term financial perspectives are beneficial in reducing consumption. Having people think about small resource accounts (e.g., calories in a day) compared to large resource accounts (e.g., calories in a week) leads people to consume less money, time, and calories (Morewedge, Holtzman, & Epley, 2007). People given recommended weekly food stamp budgets compared to monthly budgets consumed less and were able to stretch their food stamp balances approximately 21% longer (Yeh & De La Rosa, 2016). Similar, evidence suggests that resource constraints may be important in inducing opportunity cost consideration (Spiller, 2011).

This raises the question of whether priming large resource accounts or small resource accounts are beneficial. Studies 5-7 tested whether having people think about large resource accounts (overall assets, net worth, debt) or small resource accounts (how much a person has last withdrawn from an ATM, how much a person pays towards their debts each month) has an effect on spending and consideration of opportunity costs. Results from the 3 studies suggest that priming people to think about large or small resource accounts has a similar effect on reducing spending.

#### **1.1.4. Affect and Spending.**

Affective feelings and moods have also been found to influence spending decisions (Cryder, Lerner, Gross, Dahl, 2008; Lerner, Li, & Weber, 2013). Some evidence has found that negative emotions, such as sadness, increase willingness to spend because of greater impatience (Lerner et al., 2013) or to increase evaluations of the self (Cryder et al., 2008). However, other research would suggest that positive emotions induce an approach tendency and can increase spending (Babin & Darden, 1996). Priming individuals to think about their financial situation may have an effect on their mood – however, I do not predict that mood will be the mechanism for participants’ change in spending. To rule out the possibility that mood is affecting their spending decisions, positive and negative affect measures were included in some studies (Studies 2-4, Study 7). I tested whether the manipulation has an effect on participants’ mood and self-esteem, as well as whether the main effect holds while controlling for the affect measures.

#### **1.2. The Present Research**

In sum, seven studies examined whether having participants think about “big” financial accounts, such as how much they have in total debts, assets, or net worth, would reduce their hypothetical willingness to buy consumer goods, compared to a control condition. The goal of the manipulation was to widen their attention to their entire financial situation, rather than focus them on smaller budgets, such as how much they owe/have in a week or month.

Seven studies were conducted to establish the size of the effect and that people indicate a lower willingness to spend when they are reminded of all types of financial accounts (debts, assets, net worth). Studies 2 and 3 also aimed to demonstrate that the manipulation discourages people from wanting to spend a) even when they’re *reminded* others are relatively worse off (or

better off) and b) even if they're *manipulated* to believe others are worse-off (or better off) than them. Even in these cases, the present research demonstrates that focusing people on their overall financial lives leads them to want to spend less. Study 4 through 7 examined whether different mediator constructs (opportunity costs, abstract construal, negative emotion, financial scarcity) are affected by the manipulation or explain the effect.

## CHAPTER 2: Meta-Analysis of Results

### 2.1 Meta-Analysis

Studies 1 through 7 prime participants with thoughts of large financial accounts and assess whether they are less likely to buy hypothetical goods. The primary effect – that thinking about one’s overall financial situation reduces spending – is inconsistent, with null effects in 3 out of the 7 studies (studies 4, 5, and 7). To provide an average effect size, results across the 7 studies were meta-analyzed. As described below, there are some variations in results from study to study. Results from the 7 experiments were analyzed using a fixed-effects meta-analytic procedure. I obtained mean effect sizes and confidence intervals using the “metafor” package in R. Meta-analytic effects are shown next, followed by chapters for each study individually.

#### 2.1.1 Method

**Procedure.** In all seven studies, participants were told that they would be participating in a study about economic and financial matters. On the next page, participants were randomly assigned to answer questions about how much they have in debts, assets, net worth, or received no questions (control condition). In the debt condition, they were asked, “Approximately, how much debt do you owe (for example, personal loans, auto loans, credit cards)? Do NOT include your home mortgage.” In the assets condition, they were asked, “Approximately, how much do you own in assets (for example, cash, durable goods, stocks and bonds, automobiles)?” In the net worth condition, they were asked, “What is your household’s net worth (ALL assets minus ALL debt)? Positive numbers indicate more assets than debt. Negative numbers indicate more debts than assets.”

In all studies, they then indicated their willingness to purchase hypothetical consumer goods. Studies varied in whether additional manipulations or measures were included (detailed below). See Table 1 for participant demographics in each study.

**Results.** To analyze results in each study, I ran a planned contrast (1 = debt, 1 = asset, 1 = net worth, -3 = control) testing whether priming people with large financial accounts compared to no manipulation has an effect on hypothetical spending. For studies with only debt and asset conditions (Studies 5-7), the planned contrast tested the debt and asset conditions compared to the control. Across the seven studies, the financial accounts manipulation decreased spending compared to the control (fixed effects  $d = .18$  [.11, .24],  $z = 5.46$ ,  $p < .0001$ ) (see Table 2 for each study's effect size). There was significant effect of heterogeneity across samples though ( $Q(6) = 21.68$ ,  $p = .001$ ). This may have been due to the variation in sample sizes or additional manipulations or measures included.

Results were also meta-analyzed comparing each condition to the control condition (debt vs. control, asset vs. control, net worth vs. control). Across studies, having people think about how much they owe in overall debt compared to the control condition (fixed effects  $d = .23$  [.15, .30],  $z = 5.89$ ,  $p < .0001$ ), overall assets vs. control condition (fixed effects  $d = .15$  [.07, .22],  $z = 3.87$ ,  $p = .0001$ ), and overall net worth vs. control condition reduced spending (fixed effects  $d = .24$  [.13, .34],  $z = 4.25$ ,  $p < .0001$ ).

I also meta-analyzed effects for hedonic and non-hedonic consumer goods, specifically for the goods that were randomly assigned to be described as either for hedonic vs. non-hedonic purposes (bike, iPad; more details below). Across the five studies, the financial accounts manipulation decreased hedonic spending (fixed effects  $d = .20$  [.09, .31],  $z = 3.66$ ,  $p = .0003$ ) and marginally decreased non-hedonic spending compared to the control (fixed effects  $d = .10$  [.00, .21],  $z = 1.85$ ,  $p = .06$ ). I also conducted meta-analyses for all hedonic (vacation, iPad, bike) and non-hedonic items (iPad, bike, washer/dryer). The effects were significant for both hedonic (fixed effects  $d = .21$  [.10, .32],  $z = 3.85$ ,  $p = .0001$ ) and non-hedonic items (fixed effects  $d = .14$

[.03, .25],  $z = 2.52$ ,  $p = .01$ ) – although the effect was smaller for non-hedonic compared to hedonic spending.

Across the first four studies, effects were also meta-analyzed by whether people thought they had more or less debts, assets, or net worth compared to their peers and other Americans. The effect was not significant for people who thought their peers have less debt than them (fixed effects  $d = .12$  [-.05, .29],  $z = 1.39$ ,  $p = .16$ ), mainly because the effect was reversed in Study 1 where people were more likely to spend after being reminded of their financial accounts. The effect was significant for people who thought their peers have more debt than them (fixed effects  $d = .32$  [.20, .44],  $z = 5.30$ ,  $p < .0001$ ), people who think other Americans have less debt than them (fixed effects  $d = .23$  [.05, .40],  $z = 2.57$ ,  $p = .01$ ), and people who think other Americans have more debt than them (fixed effects  $d = .22$  [.12, .32],  $z = 4.21$ ,  $p < .0001$ ). The effect was also significant for people who think their peers have less assets than them (fixed effects  $d = .25$  [.07, .44],  $z = 2.66$ ,  $p = .008$ ), people who think their peers have more assets than them (fixed effects  $d = .20$  [.08, .32],  $z = 3.33$ ,  $p = .0009$ ), people who think Americans have less assets than them (fixed effects  $d = .25$  [.10, .41],  $z = 3.19$ ,  $p = .001$ ), and people who think Americans have more assets than them (fixed effects  $d = .24$  [.13, .35],  $z = 4.36$ ,  $p < .0001$ ). Similar, the effect was significant for people who think their peers have less net worth than them (fixed effects  $d = .28$  [.11, .47],  $z = 3.16$ ,  $p = .0016$ ), people who think their peers have more net worth than them (fixed effects  $d = .23$  [.11, .36],  $z = 3.63$ ,  $p = .0003$ ), people who think Americans have less net worth than them (fixed effects  $d = .29$  [.15, .44],  $z = 3.91$ ,  $p < .0001$ ), and for people who think Americans have more net worth than them (fixed effects  $d = .22$  [.10, .33],  $z = 3.67$ ,  $p = .0002$ ).

Last, I meta-analyzed effects depending on whether people reported above or below median net worth or income. A planned contrast (1 = debt, 1 = asset, 1 = net worth, -3 = control)



was significant for people who reported below (fixed effects  $d = .13$  [.03, .23],  $z = 2.54$ ,  $p = .01$ ) and above (fixed effects  $d = .24$  [.12, .36],  $z = 3.98$ ,  $p < .0001$ ) median net worth. Similar, the effect was significant for people who reported below (fixed effects  $d = .16$  [.06, .26],  $z = 3.07$ ,  $p = .002$ ) and above median income (fixed effects  $d = .18$  [.07, .30],  $z = 3.03$ ,  $p = .002$ ).

Table 1. Participant demographics from Studies 1-7.

Study	Age		Gender		Social Class				SES relative to Americans (1-7 scale)	
	M	SD	Males	Females	Lower	Working	Middle	Upper	M	SD
Study 1	36.0	12.4	280	348	-	-	-	-	4.35	1.83
Study 2	34.33	11.3	407	554	11.6%	42.8%	43.3%	2.2%	4.71	1.84
Study 3	34.95	11.4	191	299	13.3%	39.8%	45.3%	1.4%	4.40	1.76
Study 4	37.45	12.3	301	303	11.8%	36.8%	48.7%	2.6%	4.55	1.72
Study 5	37.6	12.1	385	520	13%	42.4%	42.2%	2.3%	4.63	1.85
Study 6	36.6	12.2	369	607	10.8%	41.5%	45.8%	1.9%	4.63	1.78
Study 7	33.0	13.4	464	1091	16%	47.2%	35.2%	1.7%	4.53	1.95

Table 2. Summary of Study 1-7 Designs

Study	Independent variable	Dependent Variables	Changes from Previous Study
Study 1	People are asked to report their overall debts, assets, or net worth. They are also asked whether they have more or less than their peers and the average American. The control condition receives no questions.	Average preference for consumer goods on a 0 to 100 scale: Bike (Hedonic/Non-hedonic purposes) and Vacation	

Table 2 (cont).

Study 2	<p>People are asked to report their overall debts, assets, or net worth. Half of participants are also asked about whether they have more or less than their peers and the average American. The control condition receives no questions.</p>	<p>Average preference for consumer goods on a 0 to 100 scale: Bike (Hedonic/Non-hedonic purposes), iPad (Hedonic/Non-Hedonic Purposes), a 6-night hotel stay in Los Angeles and a washing machine/dryer</p>	<p>Half of participants are asked about whether they have more or less than their peers. Additional spending items are added.</p>
Study 3	<p>People are asked to report their overall debts, assets, or net worth. They are manipulated to believe that others have less or more than them. The control condition receives no questions.</p>	<p>Average preference for consumer goods on a 0 to 100 scale: Bike (Hedonic/Non-hedonic purposes), iPad (Hedonic/Non-Hedonic Purposes), a 6-night hotel stay in Los Angeles, and a washing machine/dryer</p>	<p>Participants are manipulated to believe that others have less or more than them.</p>
Study 4	<p>People are asked to report their overall debts, assets, or net worth. The control condition receives no questions.</p>	<p>Average preference for consumer goods on a 0 to 100 scale: Bike (Hedonic/Non-hedonic purposes), iPad (Hedonic/Non-Hedonic Purposes), a 6-night hotel stay in Los Angeles</p>	<p>Opportunity cost and cognitive functioning measures are added.</p>
Study 5	<p>People are asked to report their overall debts or assets. The control condition receives no questions.</p>	<p>Average preference for consumer goods on a 0 to 100 scale: Bike (Hedonic/Non-hedonic purposes), iPad (Hedonic/Non-Hedonic Purposes), a 6-night hotel stay in Los Angeles, washer/dryer</p>	<p>Opportunity cost and construal level measures are added. An opportunity cost cue is shown to half of participants. A small debt and small asset condition are added.</p>
Study 6	<p>People are asked to report their overall debts or assets. The control condition receives no questions.</p>	<ul style="list-style-type: none"> <li>• Average preference for consumer goods on a 0 to 100 scale: Consumer spending goods - Bike (Hedonic/Non-hedonic purposes), iPad (Hedonic/Non-Hedonic Purposes), a 6-night hotel stay in Los Angeles, washer/dryer</li> <li>• Windfall Measure</li> <li>• Budgeting Measure – Next Months + Next 12 Months</li> </ul>	<p>Participants are asked to report 3 financial goals.</p>
Study 7	<p>People are asked to report their overall debts or assets. The control condition receives no questions.</p>	<ul style="list-style-type: none"> <li>• Windfall Measure</li> <li>• Budgeting Measure – Next Months + Next 12 Months</li> </ul>	<p>The consumer goods are removed in this study.</p>

Table 3. Effect sizes from Studies 1-7 for dependent spending measures

Study	N	Overall Financial Accounts		N	Control		ES (Cohen's <i>d</i> ),
		Mean	SD		Mean	SD	95% CI
Study 1	483	33.03	27.14	167	38.57	23.17	.21 [.03, .38]
Study 2	709	41.44	19.88	253	49.65	18.39	.42 [.28, .56]
Study 3	366	33.72	20.62	124	37.44	18.08	.20 [0.0, .40]
Study 4	419	47.83	22.56	185	47.24	23.31	.01 [-.16, .18]
Study 5	329	44.83	21.13	209	45.76	21.93	.04 [-.13, .22]
Study 6	391	-.06	.65	191	.13	.73	.27 [.10, .45]
Study 7	524	.00	.77	285	.03	.80	.04 [-.11, .18]

\*This table contains mean differences between the overall financial accounts condition (debt, asset, net worth (if included in the study)) compared to the control condition. If the study also had small financial accounts conditions, these participants are excluded from this table. Studies 1 to 5 are on a 0 to 100 scale (0 = definitely don't want to buy, 100 = definitely want to buy). Studies 6 and 7 are standardized indexes of spending.

## CHAPTER 3: STUDY 1

Study 1 tested whether participants who thought about how much they had in total debts, assets, or net worth would indicate a lower willingness to purchase a hypothetical bike and vacation, compared to the control condition.

### 3.1 Method

**Participants.** Power analysis for a t-test (debt, asset, net worth vs. control) was conducted in G\*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, allocation ratio  $N_2/N_1 = 3$ , and a small to medium effect size (Cohen's  $d = .35$ ). Based on these assumptions, the minimum sample size for a two-tailed test is 568. 664 (290 men, 352 women, 22 missing,  $M_{age} = 35.8$ ) participants were recruited on Amazon's Mechanical Turk in exchange for a small fee. 14 participants were excluded from the study due to duplicate IP addresses or IP addresses that were not within the United States, leaving 650 participants (280 men, 348 women, 22 missing,  $M_{age} = 36$ , Race (82.2% White, 7.5% Black, 5.4% Hispanic, 3.3% Asian, 2% other, subjective social class relative to other Americans (1-7 scale):  $M = 4.35$ ,  $SD = 1.83$ , subjective social class relative to peers (1-7 scale):  $M = 5.02$ ,  $SD = 1.54$ ).

**Procedure.** Participants were told that they would be participating in a study about economic and financial matters. On the next page, participants were randomly assigned to answer questions about how much they have in debts, assets, net worth, or received no questions (control condition). See above for description of questions. Participants in the debt, assets, and net worth condition reported on whether they thought their friends, neighbors, and peers have more or less household debt, assets, or net worth compared to them, as well as how much the average American household has in debt, assets, or net worth (relative to the condition).

Participants were then presented with the options to purchase a bicycle and a 6-night hotel stay in Los Angeles, California. To test for differences in willingness to purchase hedonic vs. non-hedonic goods, participants were told that they were interested in buying the bicycle to “go riding with friends and for rides around the park” (hedonic bike condition) or so that “it could save you time when you go to work” (non-hedonic bike condition). The bicycle and 6-night hotel were each offered on a payment plan for \$110 for the next 6 months.

Participants were asked a series of questions about how satisfied they are with their financial situation, how frequently they compare their financial situation to others, and how careful they are with their money compared to others. Last, they answered demographic questions (income, gender, religion, age, subjective social class) and were debriefed.

### 3.2. Results

One-way ANOVAs were conducted to compare the effect of condition (debt, assets, net worth, control) on willingness to purchase the bike and hotel stay (see Table 3 for means).

**Main effects.** The bike and hotel stay were collapsed into one dependent variable. There was a significant main effect of condition on willingness to spend (WTS) ( $F(3, 645) = 2.98, p = .03$ , partial  $\eta^2 = .014$ ). Similarly, using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant difference in WTS, where people are less willing to buy after being reminded of their financial accounts ( $t(644) = -2.31, p = .02$ , Cohen’s  $d = -.21 [-.38, -.03]$ ). The effect in Study 1 is driven by the hotel stay more than the bike (see Table 3), though in studies 2 and 3, effects for the bike and hotel are comparable to one another.

Using Tukey post-hoc comparisons, the only significant difference between conditions was between the debt and control condition for WTS ( $M = -8.44 [-15.75, -1.13], SE = 2.84, p = .02$ ). There was no significant difference between the asset and control condition ( $M = -3.58 [-$

11.03, 3.87],  $SE = 2.89$ ,  $p = .60$ ) or the net worth and control condition ( $M = -4.28$  [-11.87, 3.31,  $SE = 2.95$ ,  $p = .47$ ) for WTS.

**Hedonic vs. Non-Hedonic.** Separate ANOVAS were conducted to examine differences in participants' willingness to purchase the hedonic bike vs. non-hedonic bike. There was no significant main effect of willingness to purchase the hedonic bike ( $F(3, 324) = 1.86$ ,  $p = .14$ ) or non-hedonic bike ( $F(3, 316) = .22$ ,  $p = .88$ ). Using planned linear contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was also no significant effect for the hedonic ( $t(324) = -.56$ ,  $p = .58$ ) or non-hedonic bike ( $t(316) = -.78$ ,  $p = .44$ ). However, a contrast comparing only the debt and control conditions (1 = debt, -1 = control, 0 = assets, 0 = net worth) revealed a marginally significant effect where people are less likely to buy the hedonic bike in the debt condition ( $t(324) = -1.85$ ,  $p = .07$ ).

**Comparison to Peers, Friends, and Neighbors.** I also looked to see whether willingness to spend differs for participants who think that they are doing financially worse or better than their peers. I predicted that there should be no difference for people doing financially worse or better off than their peers. Participants were split by whether they thought their peers have more or less debt than them. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant main effect of condition on WTS who thought others had more debt than them ( $t(355) = -3.12$ ,  $p = .002$ , Cohen's  $d = -.38$  [-.62, -.14]) but not for those who thought others owed less debt than them ( $t(155) = 1.51$ ,  $p = .13$ ). In a 2 x 2 ANOVA using condition (debt, asset, net worth vs. control) and debt comparison (more vs. less) as factors, the interaction is significant ( $F(1, 514) = 8.78$ ,  $p = .003$ ). People who think others have less debt than them are more likely to spend after the financial accounts manipulation ( $M = 39.33$ ,  $SD = 27.74$ ) compared to the control ( $M = 32.12$ ,  $SD = 19.80$ ), whereas people who think others have more

debt than them are less likely to spend after the financial accounts manipulation ( $M = 29.36$ ,  $SD = 26.82$ ) compared to the control ( $M = 39.26$ ,  $SD = 24.39$ ).

Participants were split by whether they thought their peers had more or less assets than them. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant effect of condition on willingness to spend for those who thought others had more assets than them ( $t(359) = -2.13$ ,  $p = .03$ , Cohen's  $d = -.26$  [-.50, -.02]) but not for those who thought others had less assets than them ( $t(119) = -1.08$ ,  $p = .28$ ). There was no significant interaction in a 2x2 ANOVA using condition (debt, asset, net worth vs. control) and asset comparison (more vs. less) as factors ( $F(1, 482) = .006$ ,  $p = .94$ ).

Participants were split by whether they thought others had more or less net worth than them. Using planned contrasts (1=debt, 1 = assets, 1 = net worth, -3 = control), there was a significant main effect of condition on willingness to spend those who thought others had greater household net worth than them ( $t(296) = -2.09$ ,  $p = .04$ , Cohen's  $d = -.29$  [-.56, -.02]) but no significant effect for those who thought others had less net worth than them ( $t(143) = -1.32$ ,  $p = .19$ ). The interaction was not significant in a 2x2 ANOVA ( $F(1, 443) = .08$ ,  $p = .78$ ).

There are some mixed results as to whether believing that your friends, neighbors, and peers are doing better or worse than you on spending. People who thought that others have more debt than them (i.e., peers are relatively worse off) indicated less willingness to spend after the financial accounts manipulation. But people who thought that others have more assets and net worth (i.e., peers are relatively better off) also indicated a lower willingness to spend after the financial accounts manipulation. The smaller sample size in these groups may have contributed to the non-significant results.

**Comparison to Median American.** I predicted that the effect of condition shouldn't differ for participants who have more or less net worth (\$25,116) and income (\$53,657) than the average American household. Participants were split by whether they have less or more net worth than the average American and separate ANOVAS were run. Using planned contrasts (1=debt, 1 = assets, 1 = net worth, -3 = control), there was a marginally significant effect for those who have less net worth than the median ( $t(356) = -1.85, p = .07$ , Cohen's  $d = -.23$  [-.47, -.01]) but not for those who have more net worth than the median ( $t(261) = -1.24, p = .22$ ).

Participants were also split by whether they make more or less income than the average American household. Using planned contrasts, there was no significant effect for participants who make less than the median income ( $t(383) = -1.46, p = .15$ ) or for those who make more than the median income ( $t(233) = -1.63, p = .11$ ).

**Individuals who have 0 debt.** I also checked to see whether the effect held for individuals who reported 0 debt (21% of the sample). Using planned contrasts, the effect held for individuals who have debt ( $t(504) = -2.52, p = .01$ , Cohen's  $d = -.25$  [-.45, -.06]) but not for participants who have zero debt ( $t(130) = -.62, p = .54$ ), but this may have been due to the small sample size in the zero debt group. In a 2x2 ANOVA, the interaction was not significant ( $F(1, 635) = 1.89, p = .17$ ).

**Age.** There is some evidence suggesting that older adults are more future-oriented and better at delaying rewards compared to young adults (Green, Fry, & Myerson, 1994; Green, Myerson, Lichtman, Rosen, & Fry, 1996), so a regression was run testing whether age moderates these effects. I mean centered age and computed an age x condition (financial accounts vs. control) variable. In a regression predicting WTS, there was a main effect of financial account ( $b = -5.48$  [-10.25, -.72],  $t(623) = -2.25, p = .02$ ) but no significant effect of age ( $b = -.13$  [-.48,



.22],  $t(623) = -.74, p = .46$ ) or interaction between age and financial accounts condition ( $b = -.13$  [-.52, .27],  $t(623) = -.63, p = .52$ ).

**Bottom (least amount of debt) vs. Top 25% Debt (most amount of debt).** I split participants by whether they reported more debt than 25% of the sample or less debt than 25% of the sample and tested whether the main effect of condition was significant. I ran a planned contrast (1 = debt, 1 = asset, 1 = net worth, -3 = control) for these two groups. WTS was not significant for top 25% people who had the most amount of debts ( $t(190) = -1.17, p = .25$ ) or for the bottom 25% of the sample who had the least amount of debt ( $t(163) = -.73, p = .46$ ).

**Bottom vs. Top 25% Assets.** The effect was significant for 25% of the sample that had the most assets ( $t(167) = -2.19, p = .03$ , Cohen's  $d = .36$  [.04, .68]) but not significant for the bottom 25% of the sample ( $t(166) = -1.47, p = .14$ ).

**Bottom vs. Top 25% Net Worth.** The effect was not significant for people who had the top 25% of net worth ( $t(157) = -.62, p = .54$ ) or for people with the bottom 25% of net worth ( $t(161) = -.81, p = .42$ ).

Table 4. Study 1 Means

Dependent Measure	Debt		Assets		Net worth		Control	
	M	SD	M	SD	M	SD	M	SD
<b>Willingness to Spend</b>	30.13	(27.18)	34.99	(27.83)	34.29	(26.24)	38.57	(23.17)
<b>Bike</b>	24.10	(29.63)	28.56	(30.45)	29.11	(30.87)	29.87	(30.06)
<i>Non-hedonic bike</i>	29.20	(31.57)	30.28	(30.90)	29.38	(32.07)	32.73	(30.36)
<i>Hedonic bike</i>	19.29	(26.97)	26.89	(30.10)	28.85	(29.84)	27.05	(28.15)
<b>Vacation</b>	36.37	(35.37)	41.68	(35.84)	39.16	(33.76)	47.27	(33.00)

### 3.3 Conclusions

The results of Study 1 provide preliminary evidence that being reminded of one's debt reduces participants' willingness to spend – although the effect is stronger for a hypothetical hotel stay than a bike. The effect seems strongest for individuals reminded of their debts. Regardless of whether the bike was framed in terms of hedonic or non-hedonic purposes, there was no significant main effect of condition on the bike (however, the difference between debt and control condition for the hedonic bike was marginally significant).

Results from this study are also mixed as to whether the effect holds for participants who believe that they're relatively better off than their peers or for participants who are above the median income/net worth in the United States. These groups are a minority within the sample, so a lack of adequate power may be a possible reason why the effect wasn't significant for these groups.

## CHAPTER 4: STUDY 2

Study 2 aims to replicate the main effect but with a larger sample size ( $n=962$ ). Another goal is to rule out a possible confound in Study 1. In addition to the question about their overall financial accounts, participants were asked to compare their financial situation to others. Perhaps reminding people that they're doing financially worse or better off compared to their peers is the explanation for the effect found in Study 1. To rule this out, in Study 2, half of the participants were only asked to think about their financial accounts and the other half were asked to think about their financial accounts and to make a financial comparison to their peers. I predicted that the social comparison manipulation would not have an effect, and participants in the debts, assets, and net worth conditions would spend less compared to the control condition, regardless of the comparison manipulation.

Study 2 contains additional dependent spending measures to increase reliability. Study 2 also tests whether negative emotions or self-reported self-esteem explain the effect. I do not predict that mood or self-esteem will be the mechanism for participants' change in spending. But to rule out these possibilities, analyses will be run testing whether the manipulation has an effect on participants' mood and self-esteem, as well as whether the main financial accounts effect holds while controlling for these measures.

### 4.1. Method.

**Participants.** Power analysis for a t-test (debt, asset, net worth vs. control) was conducted in G\*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, allocation ratio  $N_2/N_1 = 3$ , and Cohen's  $d = .21$  (effect size from Study 1). Based on these assumptions, the minimum sample size for a two-tailed test is 750.999 (431 men, 567 women,  $M_{age} = 34.2$ ) participants were recruited on Amazon Mechanical Turk in exchange for a small

fee. 37 participants were excluded from the study due to duplicate IP addresses or IP addresses that were not within the United States, leaving 962 participants (407 men, 554 women,  $M_{\text{age}} = 34.3$ ; Race: 81.7% White, 6.1% Black, 5.0% Hispanic, 5.1% Asian, 2% other, subjective social class relative to other Americans (1-7 scale):  $M = 4.71$ ,  $SD = 1.84$ , subjective social class relative to peers (1-7 scale):  $M = 5.27$ ,  $SD = 1.56$ ; social class: 11.6% lower class, 42.8% working class, 43.3% middle class, 2.2% upper class; education: .5% less than high school, 27% high school or GED, 22% associate/junior college; 36% bachelor's degree, 14% graduate degree).

**Procedure.** Participants were told that they would be participating in a study about financial matters. On the next page, participants were randomized to answer questions about how much they have in total debt, assets, net worth, or received no questions (control condition) (see Study 1 for description of questions). If participants were asked about their debts, assets, or net worth, half of the participants were also asked to report how much they believe their peers have in debts/assets/net worth, whether they think they think their peers have more, less or equal debts/assets/net worth, and how much the average American has in debts/assets/net worth.

Participants were then presented with the options to purchase a bicycle, a 6-night hotel stay in Los Angeles, California, an iPad, and a washing machine/dryer. To test for differences in willingness to purchase hedonic vs. non-hedonic goods, the purpose of buying the iPad and bicycle was presented for either pleasure or work. Participants were randomized to receive both the bike and iPad descriptions in terms of hedonic or non-hedonic purposes. Participants were told that they were interested in buying the bicycle to “go riding with friends and for rides around the park” (hedonic condition) or so that “it could save you time when you go to work” (non-hedonic condition). Participants were told that they wanted to buy the iPad so that “in their spare time, they could use it to watch TV shows and play games” (hedonic condition) or “mainly

for work- for example, reading and editing documents, responding to emails, or video conferencing” (non-hedonic condition).

In this experiment, the spending options were offered either in terms of a payment plan (for example, \$350 down payment plus \$100 per month for 6 months) or in full (\$950). This was included to see whether people’s willingness to spend decreases for items that are offered for the full amount, not just in payment plan form.

Participants were also asked to report how they were feeling (happy, neutral, sad, angry, afraid, depressed, irritated, excited, blue, amused, bored) and respond to a Self Esteem measure (Rosenberg, 1965) either right after the manipulation (asking about total debts, assets, or net worth) or at the end of the survey. At the end of the survey, participants were asked a series of financial satisfaction questions (see Study 1 for description of questions). Last, they answered demographic questions (income, gender, religion, age, subjective social class) and were debriefed.

## 4.2 Results.

One-way ANOVAs were conducted to compare the effect of condition (debt, assets, net worth, control) on willingness to purchase the consumer spending items (see Table 4 for means). To increase reliability, the four consumer spending items were averaged to create one dependent measure called Willingness to Spend (WTS) ( $\alpha=.50$ ).

**Main effect.** There was a significant main effect of condition on WTS ( $F(3, 958) = 13.05, p < .001, \text{partial } \eta^2 = .039$ ). Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant difference in WTS, where people were less willing to spend after being reminded of their financial accounts ( $t(958) = -5.77, p < .001, \text{Cohen’s } d = -.42 [-.57, -.28]$ ). Using Tukey post-hoc comparisons, there was a significant difference between the debt

and control condition ( $M = -10.43 [-14.98, -5.88]$ ,  $SE = 1.77$ ,  $p < .001$ ), asset and control condition ( $M = -6.02 [-10.54, -1.49]$ ,  $SE = 1.76$ ,  $p = .004$ ), and net worth and control condition ( $M = -8.22 [-12.73, -3.70]$ ,  $SE = 1.76$ ,  $p < .001$ ).

**Hedonic vs. Non-hedonic.** The bike and iPad items were averaged into one dependent measure. Separate ANOVAS were conducted to examine differences in participants' willingness to purchase the hedonic bike/iPad vs. non-hedonic bike/iPad. There was a significant main effect of willingness to purchase the non-hedonic items ( $F(3, 477) = 2.69$ ,  $p = .05$ , partial  $\eta^2 = .017$ ) and the hedonic items ( $F(3, 477) = 6.53$ ,  $p < .001$ , partial  $\eta^2 = .039$ ). Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant difference for the non-hedonic items ( $t(477) = -2.46$ ,  $p = .01$ , Cohen's  $d = -.18 [-.32, -.04]$ ) and hedonic items ( $t(477) = -3.55$ ,  $p < .001$ , Cohen's  $d = -.26 [-.40, -.12]$ ). These findings suggest that thinking about "big" financial accounts reduces overall spending, regardless of whether it's hedonic or non-hedonic spending.

**Payment plan vs. no payment plan.** A 2 (debts, assets, net worth vs. control) x 2 (payment plan, full amount) ANOVA was run to determine if the method of payment had an effect. There was a main effect of financial account condition ( $F(1, 958) = 33.19$ ,  $p < .001$ ,  $\eta^2 = .03$ ) and a main effect of method of payment ( $F(1, 958) = 5.15$ ,  $p = .02$ ,  $\eta^2 = .005$ ), where participants indicated greater willingness to spend when items were offered for the full amount ( $M = 45.64$ ,  $SD = 19.23$ ) compared to a payment plan ( $M = 41.59$ ,  $SD = 20.22$ ). However, there was no significant interaction ( $F(1, 958) = 1.48$ ,  $p = .22$ ).

**Social Comparison Manipulation.** In the beginning of the survey, half of the participants were also asked to report how much their neighbors, peers, and friends have in debts/assets/net worth and whether they think they have more or less than them. The goal was to

determine whether being asked to compare your debts to neighbors/friends/peers influences people's spending. I ran a 2 (debts, assets, net worth vs. control) x 2 (social comparison, no social comparison) testing whether the social comparison manipulation had an effect on spending. There was a main effect of the financial accounts condition ( $F(1, 958) = 33.05, p < .001$ ) but no effect of social comparison ( $F(1, 958) = .16, p = .69$ ), and also no significant interaction ( $F(1, 958) = .03, p = .85$ ), suggesting that the social comparison manipulation did not have an effect on people's willingness to spend.

This manipulation also allowed us to check whether participants' reports of their peers and Americans' financial information were influenced by their own self-report of financial information. That is, it's possible that because participants were first asked about their financial situation, they anchored to this number and this changed their self-reports of how much their peers and average Americans have. However, participants' reports of their peers' debts ( $F(1, 208) = .23, p = .63$ ) and Americans' debts ( $F(1, 221) = .16, p = .69$ ) did not differ when the question was asked before or after their own self-report of financial information. Likewise, participants' responses did not differ when asked about their peers' assets ( $F(1, 206) = .22, p = .64$ ), Americans' assets ( $F(1, 212) = .82, p = .37$ ), peers' net worth ( $F(1, 206) = .60, p = .44$ ), or American's net worth ( $F(1, 207) = 1.16, p = .28$ ) when asked before or after their own financial information.

**Comparison to friends, neighbors, and peers.** I also looked to see whether WTS differs for participants who think that they are doing financially worse or better off than their peers. Participants were split by whether they thought their peers have more or less debt than them. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant effect of condition on WTS for those who thought others had more debt than them ( $t(469) = -$

5.06,  $p < .001$ , Cohen's  $d = -.51$  [-.71, -.31]) and also a significant effect for those who thought others owed less debt than them ( $t(277) = -3.06$ ,  $p = .003$ , Cohen's  $d = -.42$ [-.70, -.15]). In a 2 x 2 ANOVA using condition (debt, asset, net worth vs. control) and debt comparison (more vs. less) as factors, the interaction is not significant ( $F(1, 750) = .45$ ,  $p = .50$ ).

Participants were split by whether they thought their peers have more or less assets than them. Using planned contrasts (1 = debt, 1=assets, 1 = net worth, -3 = control), there was a significant effect of condition on WTS for those who thought others have more assets than them ( $t(528) = -3.75$ ,  $p < .001$ , Cohen's  $d = -.37$  [-.57, -.18]) and those who thoughts others have less assets than them ( $t(85) = -2.73$ ,  $p = .007$ , Cohen's  $d = -.61$ [-.95,-.29]). There was no significant interaction in a 2x2 ANOVA using condition (asset vs. control) and asset comparison (more vs. less) as factors ( $F(1, 713) = .14$ ,  $p = .71$ ).

Participants were split by whether they thought others have more or less net worth than them. Using planned contrasts (1= debt, 1 = asset, 1= net worth, -3 = control), there was a significant main effect of condition on WTS for those who thought others had greater household net worth than them ( $t(469) = -3.96$ ,  $p < .01$ , Cohen's  $d = -.41$  [-.62, -.21]) and a significant effect for those who thoughts others had less net worth than them ( $t(202) = -3.57$ ,  $p < .001$ , Cohen's  $d = -.67$  [-.94, -.31]). The interaction was not significant in a 2x2 ANOVA ( $F(1, 675) = .57$ ,  $p = .45$ ).

**Comparison to Median American.** As in Study 1, participants were split by whether they have less or more net worth than the average American (\$25,116) and separate ANOVAS were run. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant effect for those who have more net worth than the median ( $t(357) = -4.73$ ,  $p < .001$ , Cohen's  $d = -.56$  [-.80, -.33]) and for those who have less net worth than the median ( $t(595) = -$



3.62,  $p < .001$ ). In a 2x2 ANOVA using condition (debt, asset, net worth vs. control) and median net worth (less vs. more), the interaction was not significant ( $F(1, 956) = 1.61, p = .21$ ).

Participants were also split by whether they make more or less income than the average American household (\$53,657). Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant effect for participants who make more than the median income ( $t(401) = -4.20, p < .001$ , Cohen's  $d = -.54 [-.77, -.31]$ ) and for those who make less than the median income ( $t(546) = -4.03, p < .001$ , Cohen's  $d = -.39 [-.58, -.20]$ ). In a 2x2 ANOVA, the interaction was not significant ( $F(1, 951) = .17, p = .68$ ).

**Participants who have 0 debt.** I also checked to see whether the effect held for individuals who reported 0 debt (16% of the sample). Using planned contrasts (1=debt, 1 = assets, 1 = net worth, -3 = control), the effect was significant for individuals who have zero debt ( $t(143) = -3.84, p = .001$ , Cohen's  $d = -.70 [-1.06, -.33]$ ) and individuals who had some debt ( $t(804) = -4.44, p < .001$ , Cohen's  $d = -.36 [-.51, -.20]$ ). In a 2x2 ANOVA, the interaction was marginally significant ( $F(1, 951) = 3.34, p = .07$ ), indicating that the effect was larger for people without debt (financial account:  $M = 38.13, SD = 20.34$ ; control:  $M = 52.08, SD = 20.20$ ) than people with debt (financial account:  $M = 42.20, SD = 19.70$ ; control:  $M = 49.10, SD = 18.02$ ).

**Emotion Measure.** To increase reliability, emotions were averaged into a positive emotion scale (happy, excited, amused) and negative emotion scale (sad, angry, afraid, depressed, irritated, blue). Using planned contrasts (1=debt, 1=assets, 1 = net worth, -3 = control), the effects of condition on positive emotion ( $t(954) = -.85, p = .40$ ), negative emotion ( $t(954) = .79, p = .43$ ), and the self-esteem scale were not significant ( $t(958) = .41, p = .68$ ).

I also ran a linear regression testing the effect of the financial account condition on willingness to spend, while controlling for self-esteem and emotion measures. There was a

significant negative effect of the financial accounts condition ( $b = -7.65 [-10.37, -4.92]$ ,  $t(953) = -5.51$ ,  $p < .001$ ) but a positive effect of the Positive Emotion Scale ( $b = 3.50 [2.58, 4.42]$ ,  $t(953) = 7.47$ ,  $p < .001$ ). The self-esteem scale was not a significant predictor of WTS ( $b = -.56 [-1.81, .68]$ ,  $t(953) = -.89$ ,  $p = .37$ ) and negative emotion was also not a significant predictor of WTS ( $b = -.31 [-1.37, -.75]$ ,  $t(953) = -.58$ ,  $p = .56$ ).

**Age.** As in Study 1, I ran a regression testing whether age moderates these effects. I mean centered age and computed an age x condition (financial accounts vs. control) variable. In a regression predicting WTS, there was a significant effect of financial accounts ( $b = -8.09 [-10.88, -5.30]$ ,  $t(956) = -5.70$ ,  $p < .001$ ), but no significant effect of age ( $b = -.05 [-.28, .18]$ ,  $t(956) = -.43$ ,  $p = .67$ ). There was a marginally significant interaction ( $b = -.24 [-.49, .02]$ ,  $t(956) = -1.80$ ,  $p = .07$ ), suggesting that older people (compared to young) are less willing to spend after being reminded of their financial accounts.

**Bottom 25% (people who have the least amount of debt) vs. Top 25% Debt (people who have the most amount of debt).** The effect was significant for people who had the bottom lowest 25% of debt ( $t(235) = -4.39$ ,  $p < .001$ , Cohen's  $d = .63 [.34, .92]$ ) and for people who had the top 25% of debt ( $t(250) = -3.00$ ,  $p = .003$ , Cohen's  $d = .46 [.16, .76]$ ).

**Bottom vs. Top 25% Assets.** The effect was also significant for people who had the bottom 25% of assets ( $t(237) = -2.35$ ,  $p = .02$ , Cohen's  $d = .35 [.07, .64]$ ) and top 25% of assets ( $t(247) = -4.49$ ,  $p < .001$ , Cohen's  $d = .65 [.36, .93]$ ).

**Bottom vs. Top 25% Networth.** The effect was significant for people who had the bottom 25% networth ( $t(236) = -3.67$ ,  $p < .001$ , Cohen's  $d = .54 [.25, .84]$ ) and top 25% of net worth ( $t(241) = -4.25$ ,  $p < .001$ , Cohen's  $d = .63 [.33, .92]$ ).

### 4.3. Conclusion

Using a larger sample size, Study 2 replicated the main effect that thinking about “big” financial accounts reduces willingness to spend. Unlike in Study 1, the effect of thinking about one’s assets and net worth also led to decreased spending. In addition, Study 2 varied whether participants were asked about how much their peers, friends, and neighbors have in debts/assets/net worth. Regardless of whether participants were asked to compare their financial situation or not, having people think of large financial accounts reduced hypothetical spending. This suggests that priming people to think about their large financial accounts may be driving the effect rather than financial social comparison.

Unlike in Study 1, the effect also held for participants who have more net worth (\$25,116) and income (\$53,657) than the average American household and for individuals who have no debt. The effect may have been significant in these populations due to the larger sample size.

Table 5. Study 2 means

Dependent Measure	Debt		Assets		Net worth		Control	
	M	<i>SD</i>	M	<i>SD</i>	M	<i>SD</i>	M	<i>SD</i>
<b>Willingness to Spend</b>	39.22	(19.87)	43.63	(20.77)	41.43	(18.81)	49.65	(18.39)
<b>Bike</b>	21.88	(25.89)	27.77	(27.62)	25.22	(26.42)	32.27	(29.46)
<i>Non-hedonic bike</i>	26.08	(28.19)	31.32	(28.82)	25.71	(25.35)	34.26	(28.45)
<i>Hedonic bike</i>	17.69	(22.71)	24.32	(26.06)	24.71	(27.60)	30.30	(30.42)
<b>iPad</b>	43.66	(32.79)	49.40	(33.24)	47.41	(29.73)	54.02	(32.10)
<i>Non-hedonic iPad</i>	48.45	(31.45)	51.32	(31.06)	50.80	(28.38)	55.34	(30.15)
<i>Hedonic iPad</i>	38.83	(33.54)	47.55	(35.26)	43.89	(30.81)	52.71	(33.99)
<b>Vacation</b>	43.13	(34.82)	45.30	(33.88)	43.17	(33.00)	54.20	(32.82)
<b>Washer Dryer</b>	48.21	(31.99)	52.05	(32.03)	49.91	(31.30)	58.09	(29.34)

## CHAPTER 5: STUDY 3

Study 3 had two goals: 1) replicate the main effects from Studies 1-2 and 2) test whether the effect holds if participants are manipulated to believe that others in their community (people in their zip code) have more or less debt, assets, or net worth than them. In Study 1, the effect held for people who thought others had more debt, assets, or net worth than them and not for people who believed others had less debts, assets, or net worth than them. In Study 2, only half of the participants compared their financial situation to close others, and results suggest that the comparison manipulation did not affect their spending. Study 3 aims to test whether actually manipulating whether participants believe they're doing worse or better off compared to others in the community affects their responses.

### 5.1 Method

**Participants.** Power analysis for a t-test (debt, asset, net worth vs. control) was conducted in G\*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, allocation ratio  $N_2/N_1 = 3$ , and Cohen's  $d = -.35$  (the average weighted effect size for WTS from Study 1 and 2). Based on these assumptions, the minimum sample size for a two-tailed test is 344. 503 (198 men, 305 women,  $M_{age} = 35$ ) participants were recruited on Amazon Mechanical Turk in exchange for a small fee. 13 participants were excluded from the study due to duplicate IP addresses or IP addresses that were not within the United States, leaving 490 participants (191 men, 299 women,  $M_{age} = 35$ ; Race: 83.9% White, 5.3% Black, 4.7% Hispanic, 4.9% Asian, 1% other, subjective social class relative to other Americans (1-7 scale):  $M = 4.40$ ,  $SD = 1.76$ , subjective social class relative to peers (1-7 scale):  $M = 5.02$ ,  $SD = 1.47$ ; social class: 13.3% lower class, 39.8% working class, 45.3% middle class, 1.4% upper class; education: .2%

less than high school, 28% high school or GED, 21% associate/junior college; 39% bachelor's degree, 12% graduate degree).

**Procedure.** Participants were told that they would be participating in a study about financial matters. On the next page, participants were randomized to answer questions about how much they have in total debts, assets, net worth, or received no questions (control condition) (see Study 1 for description of questions). If participants indicated that they had more than \$0 in debt, assets, or net worth, they were manipulated to believe that others are either doing relatively better than them, worse than them, or were given no feedback.

If they were provided feedback, on the next page they were told, “Based on census data, government agencies are able to calculate average debt [assets, net worth] by zip code. You reported that you had [their response]. Based on your zip code of [zip code from IP address], your neighbors within a 10-mile radius owe/have approximately [ $1.5 \times$  their response or  $.5 \times$  their response] in debt [assets, net worth].” Thus, in order to determine the estimate, participants manipulated to believe that their neighbors are doing relatively better than them (i.e., neighbors have more in assets/net worth or less debt) were told that their neighbors have approximately 1.5 times the assets or net worth they reported or half the amount of debt they reported. Participants manipulated to believe their neighbors are doing relatively worse off (i.e., neighbors have less assets/net worth or more debt) were told that their neighbors have half the amount of assets or net worth they reported or 1.5 times the amount of debt they reported.

In addition, they were told, “Your reported debt [assets, net worth] is approximately in the 77<sup>th</sup> [23<sup>rd</sup>] percentile. This means that if you took 100 people in your neighborhood, 77 [23] of them would have less debt [assets, net worth] than you and 23 [77] would have more debt [assets, net worth] than you.” Participants were provided with an accompanying picture of 100

stick figures divided into two groups of “number of people with less debt [assets, net worth] than you” and “number of people with more debt [assets, net worth] than you.” In addition, participants were provided a graph showing a normal distribution with lines marked where the “average reported debt [assets, net worth]” falls and where “your reported debt [assets, net worth]” falls. If participants reported \$0 debt or \$0 in assets, they received no feedback.

Participants were then presented with the options to purchase a bicycle, a 6-night hotel stay in Los Angeles, California, an iPad, and a car. To test for differences in willingness to purchase hedonic vs. non-hedonic goods, the purposes of buying the iPad and bicycle were presented for either pleasure or work. Participants were randomized to receive both the bike and iPad descriptions in terms of hedonic or non-hedonic purposes (see Study 2 for descriptions). The vacation and bicycle were offered for \$350 down payment plus \$110 per month for 6 months. The iPad was offered for \$100 down payment plus \$100 per month for 6 months, and the car was offered for a down payment of \$2000 plus \$425 for 54 months.

Participants were also asked to report how they were feeling (happy, neutral, sad, angry, afraid, depressed, irritated, excited, blue, amused, bored) and to respond to a Self Esteem measure (Rosenberg, 1965) either right after the manipulation (asking about total debts, assets, or net worth) or at the end of the survey. At the end of the survey, participants were asked a series of financial satisfaction questions (see Study 1 for description of questions). Last, they answered demographic questions (income, gender, religion, age, subjective social class) and were debriefed.

## **5.2 Results**

One-way ANOVAs were conducted to compare the effect of condition (debt, assets, net worth, control) on willingness to purchase the consumer spending items (see Table 5 for means).

To increase reliability, the four consumer spending items were averaged to create one dependent measure called Willingness to Spend (WTS) ( $\alpha=.55$ ).

**Main effects.** There was no significant main effect of condition on WTS ( $F(3, 486) = 1.29, p = .27, \text{partial } \eta^2 = .008$ ). However, using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a marginally significant difference in WTS ( $t(486) = -1.91, p = .06, \text{Cohen's } d = -.20 [-.40, -.01]$ ), with individuals in the debt/asset/net worth conditions indicating a lower WTS compared to the control. Using Tukey post-hoc comparisons, there were no significant differences between conditions, which may be due to the small sample size.

**Hedonic vs. Non-hedonic.** The bike and iPad items were averaged into one dependent measure. Separate ANOVAS were conducted to examine differences in participants' willingness to purchase the hedonic bike/iPad vs. non-hedonic bike/iPad. There was a significant main effect of willingness to purchase the hedonic items ( $F(3, 242) = 2.69, p = .05$ ) but not the non-hedonic items ( $F(3, 240) = 1.36, p = .26$ ). Similarly, using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant effect for the hedonic items ( $t(242) = -2.48, p = .01, \text{Cohen's } d = -.26 [-.46, -.05]$ ) but no effect for the non-hedonic items ( $t(240) = -.53, p = .60$ ). These results replicate findings from Study 1 but not Study 2 – so far, there's mixed results as to whether the manipulation affects both hedonic and non-hedonic spending.

**Manipulation of comparison to friends, neighbors, peers.** Participants were manipulated to believe that neighbors within 10 miles have more or less debt/assets/net worth than them. To increase power, the debt, asset, and net worth conditions were collapsed into one condition and compared against the control. Individuals who indicated that they owed no debt or had no assets were removed from this analysis. A 2 (debt, asset, net worth vs. control) x 3 (peers are better off, worse off, no feedback) ANOVA was run on WTS. The main effect of condition



was marginally significant for WTS ( $F(1, 464) = 3.56, p = .06, \text{partial } \eta^2 = .008$ ), the main effect of the relative comparison condition was not significant ( $F(2, 464) = .61, p = .55, \text{partial } \eta^2 = .003$ ), and the interaction was not significant ( $F(2, 464) = .76, p = .47, \text{partial } \eta^2 = .003$ ).

**Comparison to friends, neighbors, and peers.** As in Study 1, I looked to see whether the size of the effect differed for participants who think that they have less or more than their peers. Participants were split by whether they thought their peers have more or less debt than them. I ran planned contrasts comparing the three conditions (debt, asset, net worth) compared to the control condition (1 = debt, 1 = assets, 1 = net worth, -3 = control). There was no significant main effect of condition on WTS for those who thought others had more debt than them ( $t(258) = -1.32, p = .19$ ) or for those who thought others owed less debt than them ( $t(116) = .42, p = .68$ ). In a 2 x 2 ANOVA using condition (debt, asset, net worth vs. control) and debt comparison (more vs. less) as factors, the interaction is not significant ( $F(1, 378) = 1.14, p = .29$ ).

Participants were split by whether they thought their peers have more or less assets than them. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was no significant effect of condition on WTS for those who thought others have more assets than them ( $t(257) = -.84, p = .40$ ) or for those who thought others have less assets than them ( $t(76) = -.92, p = .36$ ). There was no significant interaction in a 2x2 ANOVA using condition (debt, asset, net worth vs. control) and asset comparison (more vs. less) as factors ( $F(1, 337) = .18, p = .67$ ).

Participants were split by whether they thought others have more or less net worth than them. Using planned contrasts (1=debt, 1 = assets, 1 = net worth, -3 = control), there was no significant main effect of condition on willingness to spend for those who thought others had greater household net worth than them ( $t(246) = -1.27, p < .20$ ) or for those who thoughts others

had less net worth than them ( $t(105) = -.71, p = .48$ ). The interaction was not significant in a 2x2 ANOVA ( $F(1, 355) = .005, p = .94$ ).

**Comparison to Median American.** As in Study 1, participants were split by whether they have less or more net worth than the average American (\$25,116) and separate ANOVAS were run. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant effect for those who have more net worth than the median ( $t(199) = -2.85, p = .005$ , Cohen's  $d = -.47 [-.80, -.14]$ ) but not for those who have less net worth than the median ( $t(279) = -.10, p = .92$ ), which was the opposite of Study 1's findings. In a 2x2 ANOVA using condition (debt, asset, net worth vs. control) and median net worth (less vs. more), the interaction was significant ( $F(1, 482) = 4.21, p = .04$ ).

Participants were also split by whether they make more or less income than the average American household. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a significant effect for participants who make more than the median income ( $t(201) = -2.14, p = .04$ , Cohen's  $d = -.46 [-.78, -.14]$ ) but no significant effect for those who make less than the median income ( $t(275) = -.98, p = .33$ ), which is the opposite of Study 1's findings. In a 2x2 ANOVA, the interaction was not significant ( $F(1, 480) = .55, p = .46$ ).

**Participants who have 0 debt.** I also checked to see whether the effect held for individuals who reported 0 debt (16% of the sample). Using planned contrasts, the effect was not significant for individuals who have debt ( $t(401) = -1.47, p = .14$ ) and individuals who have zero debt ( $t(75) = -.53, p = .60$ ). In a 2x2 ANOVA, the interaction was not significant ( $F(1, 480) = .01, p = .92$ ), suggesting that having or not having debt did not affect participants' WTS.

**Emotion Measure.** To increase reliability, emotions were averaged into a positive emotion scale (happy, excited, amused) and negative emotion scale (sad, angry, afraid,

depressed, irritated, blue). Using planned contrasts (1=debt, 1=assets, 1 = net worth, -3 = control), the effect of condition on positive emotion ( $t(478) = .19, p = .85$ ) and self-esteem scale was not significant ( $t(479) = -1.15, p = .25$ ). The effect of condition on negative emotion was marginally significant, with participants in the debt, assets, and net worth condition reporting greater negative emotion compared to the control ( $t(478) = 1.85, p = .07$ , Cohen's  $d = .19 [-.01, .40]$ ).

Similar to Study 2, I ran a linear regression predicting WTS using the financial accounts condition, positive and negative emotion scales, and self-esteem scale. The financial accounts condition had a marginally significant negative effect on WTS ( $b = -3.66 [-7.67, .36], t(457) = 1.79, p = .07$ ) and positive emotion had a positive effect on WTS ( $b = 3.18 [1.78, 4.57], t(457) = 4.48, p < .001$ ). Negative emotion ( $b = -.91 [-2.53, .72], t(457) = -1.10, p = .27$ ) and self-esteem measures ( $b = -1.08 [-2.79, .63], t(457) = -1.24, p = .22$ ) did not significantly predict WTS. This finding supports research suggesting that positive moods increasing spending, possibly due to a greater approach response (Babin & Darden, 1996).

**Age.** As in Study 1 and 2, I ran a regression testing whether age moderates these effects. I mean centered age and computed an age x condition (financial accounts vs. control) variable. In a regression predicting WTS, there was a marginally significant effect of financial accounts ( $b = -3.52 [-7.59, .55], t(484) = -1.70, p = .09$ ), but no significant effect of age ( $b = -.27 [-.63, .09], t(484) = -1.49, p = .14$ ), and no significant interaction ( $b = .07 [-.33, .47], t(484) = .33, p = .74$ ).

**Bottom 25% (least amount of debt) vs. Top 25% (most amount of debt) Debt.** For the bottom 25% of people with debt and top 25%, I ran a planned contrast (1 = debt, 1 = assets, 1 = net worth, -3 = control) testing the effect of condition on WTS. The effect was not significant for the bottom 25% of the sample (people who have the least amount of debt) ( $t(120) = -.34, p =$

.74) or for the top 25% of the sample (people who have the most amount of debt) ( $t(118) = -1.12$ ,  $p = .26$ ).

**Bottom 25% vs. Top 25% Assets.** The effect wasn't significant for the bottom 25% (people who have the least amount of assets) ( $t(123) = -1.27$ ,  $p = .21$ ) but the effect was significant for the top 25% of the sample ( $t(117) = -2.51$ ,  $p = .01$ , Cohen's  $d = .50$  [.10, .90]).

**Bottom 25% vs. Top 25% Net Worth.** The effect was significant for people who had the bottom 25% of net worth ( $t(120) = -2.19$ ,  $p = .03$ , Cohen's  $d = .41$  [.04, .79]) and significant for people with the top 25% of net worth ( $t(118) = -2.00$ ,  $p = .05$ , Cohen's  $d = .41$  [.01, .82]).

### 5.3. Conclusion

In Study 3, the effect was much smaller but reminding participants of 'big' financial accounts decreased participants' willingness to spend (when comparing the debt, assets, net worth vs. control), replicating the main finding from Study 1 and 2. In Study 3 (as in Study 1), this effect appears to be stronger for hedonic spending compared to non-hedonic spending. Results from Study 3 also suggest that manipulating whether participants were told that others in the community (people within 10 miles of their zip code) have more or less debts, assets, or net worth than them did not affect their willingness to spend.

Table 6. Study 3 Means

Dependent Measure	Debt		Assets		Net worth		Control	
	M	<i>SD</i>	M	<i>SD</i>	M	<i>SD</i>	M	<i>SD</i>
<b>Willingness to Spend</b>	32.81	(20.58)	34.89	(20.83)	33.47	(20.56)	37.44	(18.08)
<b>Bike</b>	24.41	(26.45)	25.40	(28.74)	28.40	(30.96)	30.02	(26.77)
<i>Non-hedonic bike</i>	25.89	(26.82)	29.27	(30.23)	38.16	(33.44)	32.84	(26.29)
<i>Hedonic bike</i>	22.98	(26.23)	21.27	(26.68)	18.97	(25.25)	27.29	(27.16)
<b>iPad</b>	36.17	(31.58)	46.98	(32.61)	39.88	(30.20)	47.31	(31.63)
<i>Non-hedonic iPad</i>	40.73	(32.38)	50.38	(31.97)	44.33	(29.80)	47.16	(31.81)
<i>Hedonic iPad</i>	31.77	(30.39)	43.35	(33.15)	35.58	(30.22)	47.44	(31.71)
<b>Vacation</b>	42.24	(34.27)	36.35	(32.52)	36.59	(33.72)	41.73	(41.74)
<b>Car</b>	28.40	(29.75)	30.83	(28.96)	29.00	(29.28)	30.69	(28.32)

## CHAPTER 6: STUDY 4

Study 4 aimed to explore whether widening people's attention and having them think about "big" financial accounts may induce consideration of opportunity costs or have an effect on decision-making. Focusing attention on one large mental account versus many small accounts may lead people to recognize opportunity costs or potential tradeoffs that they're making. To test this idea, Study 4 uses several financial decision-making scenarios, such as the Beer on the Beach (Thaler, 1985), proportional tradeoffs (Tversky & Kahneman, 1981), sunk cost fallacy (Arkes & Blumer, 1985), and marginal cost questions (Arkes & Blumer, 1985).

A few of these financial decision-making scenarios were adapted from studies that examined the effects of scarcity (Shah, Shafir, & Mullainathan, 2015). Shafir and colleagues (Mullainathan & Shafir, 2013) argue that scarcity may make opportunity costs more salient – when money is tight, people are forced to think about what they may be giving up when they buy something (for example, a cookie is the same cost as tonight's bus fare or a coffee). I predicted that the manipulation would have an effect on opportunity cost questions but also added in additional decision-making questions to see if reasoning about money in other domains besides opportunity costs are affected.

In addition, I tested whether the manipulation has an effect on participants' cognitive functioning, which can be hindered by scarcity conditions (Mani, Mullainathan, Shafir, & Zhao, 2013). Mani and colleagues (2013) have found that inducing thoughts about how to pay for an upcoming financial expense (such as a car repair) reduces cognitive functioning of low-income individuals, as well as farmers before harvest (when they're relatively poor) but not after harvest (when they're relatively rich). I predicted that the manipulation would *not* have an effect on cognitive functioning measures. I wanted to rule out the possibility that priming financial

accounts induces feelings of scarcity, so included these cognitive measures as well, predicting that there would be a null effect on these measures

## 6.1. Method

**Participants.** Power analysis for a t-test (debt, asset, net worth vs. control) was conducted in G\*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, allocation ratio  $N_2/N_1 = 3$ , and Cohen's  $d = -.31$  (the average weighted effect size for WTS from Studies 1-3). Based on these assumptions, the minimum sample size for a two-tailed test is 438. 616 participants were recruited on Amazon Mechanical Turk in exchange for a small fee. 12 participants were excluded from the study due to duplicate IP addresses or IP addresses that were not within the United States, leaving 604 participants (301 men, 303 women,  $M_{age} = 37.5$ ; Race: 83.4% White, 6.0% Black, 3.6% Hispanic, 6.0% Asian, 1% other, subjective social class relative to other Americans (1-7 scale):  $M = 4.55$ ,  $SD = 1.72$ , subjective social class relative to peers (1-7 scale):  $M = 5.07$ ,  $SD = 1.47$ ; social class: 11.8% lower class, 36.8% working class, 48.7% middle class, 2.6% upper class; education: .3% less than high school, 25.2% high school or GED, 21.5% associate/junior college; 39.6% bachelor's degree, 12.7% graduate degree)).

**Procedure.** Participants were told that they would be participating in a study about financial matters. On the next page, participants were randomly assigned to answer questions about how much they have in total debt, assets, net worth, or received no questions (control condition) (see Study 1 for description of questions). If participants were asked about their debts, assets, or net worth, half of the participants were also asked to report how much they believe their peers have in debts/assets/net worth, whether they think they think their peers have more,

less or equal debts/assets/net worth, and how much the average American has in debts/assets/net worth.

Participants were presented with the options to purchase a bicycle, a 6-night hotel stay in Los Angeles, California, and an iPad. To test for differences in willingness to purchase hedonic vs. non-hedonic goods, the purpose of buying the iPad and bicycle was presented for either pleasure or work (see Study 2 for descriptions). As in Study 2, the spending options were offered either in terms of a payment plan (for example, \$350 down payment plus \$100 per month for 6 months) or in full (\$950).

Participants also performed two tasks to measure cognitive functioning: Raven's Progressive Matrices and a spatial compatibility task (Raven, 2000). The Raven's Matrices is a measure of abstract reasoning and involves a sequence of shapes with one shape missing. Participants must choose the correct answer (among 8 choices) that completes a pattern in the matrix – participants first completed 6 practice trials and then 10 test trials. Participants also completed a spatial compatibility task, which requires participants to respond quickly and often contrary to their impulse (Mani, Mullainathan, Shafir, & Zhao, 2013). Participants were told that their response time was being measured and that they would see either a heart or a star appear on the screen. If they saw a heart, they would have to click a box on the same side of the screen as the heart. If they saw a star, they would have to click a box on the *opposite* side of the screen as the star. The page auto-advanced after 1 second. There were 3 practice trials, and then 16 test trials.

To measure participants' valuation of money, 7 different financial scenarios were included: 1) the classic beer-on-the-beach scenario where people report how much they're willing to pay for a beer that is purchased at a convenience store or a fancy hotel (Thaler, 1985),



2) proportional thinking where participants indicate whether they would travel to another store to buy a \$300 (or \$1000 tablet) that is \$50 cheaper at another store (Tversky & Kahneman, 1981), 3) a season ticket package question about opportunity costs (Mullainathan & Shafir, 2013), 4) scenario about purchasing a new ticket after losing \$10 or a ticket (Tversky & Kahneman, 1981; p. 457), 5) printing press scenario about marginal cost (Arkes & Blumer, 1985); 6) airplane company scenario about sunk cost (Arkes & Blumer, 1985); 7) sunk cost Minnesota or Michigan ski trip (Arkes & Blumer, 1985).<sup>1</sup>

The season ticket package question was designed to be a measure of opportunity costs. Participants were provided a scenario where they have purchased a season ticket package for a set schedule of 8 games. Although a single ticket for each game costs \$30, they only paid \$160 for the ticket package (or \$20 for each ticket). They are then told that the season is almost over, and there is only one game left to see. Tickets for the last game are selling for \$75 around town. Participants are asked the extent to which they agree that the ticket feels like it costs them \$75 (the current worth of the ticket), \$20 (the price they paid for the ticket), and \$0 (the ticket is already paid for). Higher numbers for the \$75 statement indicate greater consideration of opportunity costs.

The beer on the beach scenario was designed to test whether participants in the financial accounts condition have consistent valuations of money and whether they have other concerns (ex. fairness) that influence their judgment. Participants are given one of two scenarios where

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<sup>1</sup> The season ticket package was designed to be a measure of opportunity cost. The beer on the beach and proportional thinking were designed to test whether people have other concerns (ex. fairness) that influence their judgment. Also, if scarcity is being induced, we should see more rational responses on the beer on the beach and proportional thinking questions (Shah et al., 2013). The question about losing \$10 or a ticket was supposed to measure people's mental accounting – are people less inclined to purchase a new ticket if they lost money vs. the actual ticket? The marginal cost and sunk cost questions assessed if people were making more rational decisions (i.e., forgoing the sunk cost; taking the marginal cost into consideration).

they are told that their friend is running to [a small, run-down grocery store] [a fancy resort hotel]. The friend asks how much you are willing to buy the beer for and will buy the beer if it costs as much or less than the price you state. Participants are also asked what they were thinking about when they were considering the price for the beer. One possible choice is, “thought about other ways to use/save the money.” This question was included to test if the financial accounts manipulation induces people to consider alternative uses of money.

The order in which participants completed the spending questions, Raven’s matrices and spatial compatibility task, and money valuation questions was randomized.

Participants were also asked to report how they were feeling (happy, neutral, sad, angry, afraid, depressed, irritated, excited, blue, amused, bored) and respond to a Self Esteem measure (Rosenberg, 1965) either right after the manipulation (asking about total debts, assets, or net worth) or at the end of the survey. At the end of the survey, participants were asked a series of financial satisfaction questions (see Study 1 for description of questions). Last, they answered demographic questions (income, gender, religion, age, subjective social class) and were debriefed.

## 6.2. Results

One-way ANOVAs were conducted to compare the effect of condition (debt, assets, net worth, control) on willingness to purchase the consumer spending items (see Table 6 for means). To increase reliability, the three consumer spending items were averaged to create one dependent measure called Willingness to Spend (WTS) ( $\alpha=.51$ ).

**Main effect.** There was no significant main effect of condition on WTS ( $F(3, 600) = 1.58, p = .19$ ). Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was also no significant difference in WTS ( $t(600) = .11, p = .92$ ). Using Tukey post-hoc

comparisons, there were also no significant differences between conditions ( $p < .14$ ). The results of the first three studies thus did not replicate here.

**Hedonic vs. Non-hedonic.** The bike and iPad items were averaged into one dependent measure. Separate ANOVAS were conducted to examine differences in participants' willingness to purchase the hedonic bike/iPad vs. non-hedonic bike/iPad. There was no significant main effects of willingness to purchase the non-hedonic items ( $F(3, 272) = .06, p = .98$ ) or the hedonic items ( $F(3, 289) = .62, p = .61$ ). Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was also no significant difference for the non-hedonic items ( $t(272) = -.04, p = .97$ ) or the hedonic items ( $t(289) = 1.11, p = .27$ ).

**Cognitive functioning.** The number of correct Raven's Progressive Matrices and spatial compatibility responses were totaled. There were no significant main effects of condition on the Raven's Matrices task ( $F(3, 600) = .78, p = .51$ ) or the spatial compatibility task ( $F(3, 600) = .25, p = .86$ ). Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there were also no significant effects for the Raven's task ( $t(600) = -.09, p = .93$ ) or the spatial compatibility task ( $t(600) = -.71, p = .48$ ). There is little evidence for the financial accounts manipulation producing scarcity-induced cognitive decrements.

#### **Valuation of Money.**

**Season ticket package.** Participants responded to whether they felt like the ticket cost them \$75, \$20, or \$0. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was no significant effect of condition for the \$75 response ( $t(598) = -.18, p = .86$ ), \$20 response ( $t(600) = -.47, p = .64$ ) or the \$0 response ( $t(598) = .83, p = .41$ ).

**Beer on the Beach.** Responses for how much participants were willing to pay for a beer ranged from \$0 to \$7500, so I removed outliers that were outside Tukey's "inner fences" (greater

than 1.5 times the interquartile range from the 25<sup>th</sup> and 75<sup>th</sup> percentile), leaving responses that ranged from \$0 to \$15. The debt, assets, and net worth conditions were collapsed into one condition, and a 2x2 ANOVA was run using condition (debt/assets/net worth vs. control) x location (hotel vs. convenience store). There was a significant main effect of the location ( $F(1, 557) = 20.31, p < .001$ ) where people were willing to pay more at the hotel ( $M = \$5.97, SD = 2.87$ ) than at the convenience store ( $M = \$4.90, SD = 2.82$ ), but no main effect of financial account condition ( $F(1, 557) = .36, p = .55$ ), or significant interaction ( $F(1, 557) = 1.00, p = .32$ ). Similar to Shah et al., 2015, I ran a binary logistic regression to compare how frequently participants indicated that location vs. tradeoffs was a main consideration in their purchasing decision. Participants in the debt/asset/net worth conditions were not more likely to name location ( $\beta = .10, \text{Wald-test } \chi^2(1, N = 603) = .23, p = .63$ ) or tradeoffs ( $\beta = -.14, \text{Wald-test } \chi^2(1, N = 603) = .36, p = .55$ ) as a main consideration compared to the control.

***Proportional Tradeoffs.*** In this scenario, participants had the option of buying the \$300 or \$1000 tablet at the current store or traveling to a different store to buy the same tablet to save \$50. I ran a binary logistic regression to compare how frequently participants chose to buy the tablet at the current store or the different store as a function of price (\$300 vs. \$1000) and financial account condition (debt/asset/net worth vs. control condition). There was a significant main effect of condition where participants were more likely to travel to the different store compared to buying it at the current store for the cheaper tablet ( $\beta = -.88, \text{Wald-test } \chi^2(1, N = 603) = 26.22, p < .001$ ). However, there was no significant difference between the debt/asset/net worth conditions vs. control condition ( $\beta = .15, \text{Wald-test } \chi^2(1, N = 603) = .60, p = .44$ ).

I also tested whether participants in the financial accounts condition were more likely to report that they were thinking about “other things I won’t be able to buy if I don’t save money on

the tablet.” The tablet condition was a significant predictor ( $\beta = 2.08$ , Wald-test  $\chi^2(1) = 57.65$ ,  $p < .001$ ) but the financial accounts condition was not a significant predictor ( $\beta = .07$ , Wald-test  $\chi^2(1) = .11$ ,  $p = .74$ ).

**Lost ticket scenario.** Participants were randomized to read a scenario about how they lost \$20 or a ticket to the show they were planning to see. I collapsed the debt, asset, and net worth conditions and ran a 2x2 ANOVA using condition (debt, asset, net worth vs. control) x 2 loss condition (lost \$20, lost ticket). The main effect of loss condition was significant ( $F(1, 600) = 24.10$ ,  $p < .001$ ) with more participants willingness to rebuy the ticket after they lost \$20 ( $M = 5.14$ ,  $SD = 1.80$ ) than the ticket ( $M = 4.34$ ,  $SD = 2.01$ ). However, there was no main effect of financial accounts condition ( $F(1, 600) = 1.21$ ,  $p = .27$ ) or significant interaction ( $F(1, 600) = .15$ ,  $p = .70$ ).

**Printing Press scenario.** Participants indicated on a 1-7 Likert scale whether they would prefer to spend additional money on a new printing press. Overall, participants indicated greater willingness to spend money on a new printing press ( $M = 4.91$ ,  $SD = 1.99$ ). The main effect of financial account condition was not significant ( $F(3, 599) = 1.33$ ,  $p = .26$ ) and using a planned contrast (1=debt, 1 = assets, 1 = net worth, -3 = control), the effect was also not significant ( $t(599) = -.46$ ,  $p = .65$ ).

**Airplane company scenario.** Participants indicated on a 1-7 Likert scale whether they would prefer to spend additional money on a new plane. Overall, participants indicated a preference to purchase the new plane ( $M = 4.52$ ,  $SD = 1.93$ ). The main effect of financial accounts condition was marginally significant ( $F(3, 600) = 2.31$ ,  $p = .08$ ). Using a planned contrast (1=debt, 1 = assets, 1 = net worth, -3 = control), the effect was also marginally significant ( $t(600) = -1.81$ ,  $p = .07$ ), such that participants were less likely to fall into the sunk

cost trap in the debt/asset/net worth condition ( $M = 4.52, SD = 1.93$ ) compared to the control condition ( $M = 4.85, SD = 1.73$ ).

**Michigan/Minnesota ski trip.** Participants indicated on a 1-7 Likert scale whether they would prefer to switch to a more fun Wisconsin ski trip or stay with their current, more expensive Michigan trip (sunk cost). On average, participants were neutral towards which trip to go on ( $M = 3.28, SD = 2.23$ ). The main effect of condition was not significant ( $F(3, 600) = .63, p = .60$ ). Using a planned contrast (1=debt, 1 = assets, 1 = net worth, -3 = control), the effect of condition was also not significant ( $t(600) = .29, p = .78$ ).

**Comparison to friends, neighbors, and peers.** Participants were asked to report how much their neighbors, peers, and friends have in debts/assets/net worth and whether they think they have more or less than them. These participants were split by whether they thought their peers have more or less debt than them. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was no significant effect of condition on WTS for those who thought others had more debt than them ( $t(275) = .47, p = .64$ ) or for those who thought others owed less debt than them ( $t(145) = .19, p = .86$ ).

Participants who were asked to compare themselves to their peers were split by whether they thought their peers have more or less assets than them. Using planned contrasts (1 = debt, 1=assets, 1= net worth, =-3 = control), there was no significant effect of condition on WTS for those who thought others have more assets than them ( $t(254) = .70, p = .49$ ) or less assets than them ( $t(129) = -.64, p = .53$ ).

Participants were split by whether they thought others have more or less net worth than them. Using planned contrasts (1 = debt, 1 = assets, 1= net worth, -3 = control), there was no significant main effect of condition on WTS for those who thought others had greater household

net worth than them ( $t(240) = .72, p = .47$ ) or for those who thoughts others had less net worth than them ( $t(129) = -.47, p = .64$ ). The interaction was not significant in a 2x2 ANOVA ( $F(1, 373) = .605, p = .44$ ).

**Comparison to Median American.** As in Study 1-3, analyses were run to check whether the effect held for participants who have more net worth (\$25,116) and income (\$53,657) than the average American household. Participants were split by whether they have less or more net worth than the average American and separate ANOVAS were run. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was no significant effect for those who have more net worth than the median ( $t(220) = .81, p = .42$ ) or for those who have less net worth than the median ( $t(307) = -.36, p = .72$ ). In a 2x2 ANOVA using condition (debt, asset, net worth vs. control) and median net worth (less vs. more), the interaction was not significant ( $F(1, 531) = .84, p = .36$ ).

Participants were also split by whether they make more or less income than the average American household. Using planned contrasts (1 = debt, 1 = assets, 1 = net worth, -3 = control), there was a marginally significant effect for participants who make more than the median income but in the opposite of the usual direction ( $t(261) = 1.70, p = .09$ ) and no significant effect for participants who make less than the median income ( $t(304) = -1.20, p < .23$ ). In a 2x2 ANOVA, the interaction was significant ( $F(1, 569) = 5.53, p = .02$ ) – participants who make less than median income were less likely to buy in the debt/asset/net worth conditions ( $M = 45.11, SD = 23.74$ ) compared to the control condition ( $M = 48.85, SD = 24.64$ ), whereas participants who make more than the median income were more likely to spend in the debt/asset/net worth conditions ( $M = 50.14, SD = 20.75$ ) compared to the control condition ( $M = 44.14, SD = 21.04$ ).

**Participants who have 0 debt.** I also checked to see whether the effect held for individuals who reported 0 debt. Using planned contrasts, the effect was not significant for individuals who have zero debt ( $t(102) = -.79, p = .43$ ) and individuals who have debt ( $t(492) = -.22, p = .83$ ). In a 2x2 ANOVA, the interaction was not significant ( $F(1, 598) = .72, p = .40$ ).

**Emotion Measure.** To increase reliability, emotions were averaged into a positive emotion scale (happy, excited, amused) and negative emotion scale (sad, angry, afraid, depressed, irritated, blue). Using planned contrasts (1=debt, 1=assets, 1 = net worth, -3 = control), the effects of condition on positive emotion ( $t(481) = -.14, p = .89$ ), negative emotion ( $t(481) = 1.40, p = .16$ ), and the self-esteem scale were not significant ( $t(481) = -1.40, p = .16$ ).

**Age.** As in the previous studies, I ran a regression testing whether age moderates these effects. I mean centered age and computed an age x condition (financial accounts vs. control) variable. In a regression predicting WTS, there was no significant effect of financial accounts ( $b = .65 [-3.31, 4.60], t(599) = .32, p = .75$ ), no significant effect of age ( $b = .20 [-.07, .46], t(599) = 1.46, p = .15$ ), and no significant interaction ( $b = -.18 [-.50, .14], t(599) = -1.09, p = .28$ ).

**Bottom 25% vs. Top 25% Debt.** I ran a planned contrast (1 = debt, 1 = asset, 1 = net worth, -3 = control) for people who reported the bottom 25% of debt and for people who reported the top 25% of debt. The financial accounts manipulation wasn't significant for the bottom 25% of people ( $t(150) = .19, p = .85$ ) or for the top 25% of people ( $t(146) = -.14, p = .89$ ).

**Bottom 25% vs. Top 25% Assets.** The effect wasn't significant for people who had the bottom 25% of assets ( $t(133) = -.15, p = .88$ ) or for people who had the top 25% of assets ( $t(134) = 1.00, p = .32$ ).



**Bottom 25% vs. Top 25% Networth.** The effect wasn't significant for people who reported the bottom 25% of net worth ( $t(131) = .28, p = .78$ ) or for people who reported the top 25% of net worth ( $t(130) = -.58, p = .56$ ).

**Opportunity Cost Individual Difference.** I was also interested in the effect of the financial accounts manipulation on willingness to spend for people for who are more vs. less likely to consider opportunity costs. If the main effect is explained by opportunity costs, I expect that people who are already likely to consider opportunity costs to be *less* affected by the manipulation. That is, regardless of being in the financial accounts or control condition, people more likely to consider opportunity costs should indicate a lower willingness to spend. However, people who do not consider opportunity costs should indicate a lower willingness to spend *only* when they are reminded of their overall financial accounts.

**Beer on the Beach.** I created a binary variable (1 = tradeoff, 0 = other options) coding for whether people indicated thinking about using the beer money for other purchases ( $n_{\text{tradeoffs}} = 103, n_{\text{other}} = 501$ ). I also created an interaction term (tradeoffs01 \* financial accounts). When predicting WTS, financial accounts condition was not a significant predictor ( $b = -.14 [-4.43, 4.16], t(600) = -.06, p = .95$ ), tradeoff variable was a neg. predictor ( $b = -10.43, t(600) = -2.28, p = .02$ ), and the interaction wasn't significant ( $b = 5.26, t(600) = .97, p = .33$ ).

**Proportional Tradeoffs.** I also tested whether willingness to travel (0 = don't travel, 1 = travel) to the different store predicted willingness to spend. I created an interaction using the travel binary variable (0 = don't travel, 1 = travel) and financial accounts condition variable (0 = control, 1 = financial accounts). The financial accounts condition was a marginally sig. negative predictor ( $b = -6.21 [-12.68, .25], t(600) = -1.89, p = .06$ ), the tablet condition (1 = different store, 0 = current store) was a negative predictor ( $b = -10.89 [-17.72, -4.07], t(600) = -3.13, p =$

.002), and there was a significant interaction ( $b = 10.55 [2.41, 18.69]$ ,  $t(600) = 2.54$ ,  $p = .01$ ).

The interaction suggests that in the control condition, people who were more likely to go to the different store ( $M = 43.36$ ,  $SD = 23.83$ ) were less likely to spend compared to people who pay the premium at the current store ( $M = 54.25$ ,  $SD = 20.74$ ), which makes sense. However, in the financial accounts condition, people who were willing to travel to the different store ( $M = 47.69$ ,  $SD = 23.55$ ) indicated similar willingness to spend compared to people who buy it at the current store ( $M = 48.04$ ,  $SD = 21.04$ ).

### **6.3. Conclusion**

In Study 4, thinking about one's large financial accounts (debt, assets, net worth) did not decrease participant's hypothetical willingness to spend, unlike in Studies 1-3. The manipulation also did not have an effect on people's awareness of opportunity costs/tradeoffs, or cognitive functioning. One possibility is the effect size ( $d = -.31$ ) was overestimated and there wasn't adequate power. Another possibility is that there were too many dependent measures included in the study, and the effect washed-out as participants continued through the survey. However, I split participants depending on which measure they received first and found that the effect of the manipulation still did not have significant effects on spending, money valuation scenarios, or cognitive functioning tasks, even if they were asked first.

Table 7. Study 4 Means

Dependent Measure	Debt		Assets		Net worth		Control	
	M	SD	M	SD	M	SD	M	SD
<b>Willingness to Spend</b>	44.68	(21.53)	50.25	(22.76)	47.44	(23.17)	47.24	(23.31)
<b>Bike</b>	46.16	(31.72)	50.41	(30.51)	46.83	(30.94)	46.83	(30.94)
<i>Non-hedonic bike</i>	55.69	(29.17)	56.25	(30.88)	48.48	(28.74)	55.43	(29.86)
<i>Hedonic bike</i>	46.95	(28.91)	48.32	(27.34)	49.70	(31.21)	43.78	(28.45)
<b>iPad</b>	41.50	(30.77)	50.43	(31.51)	45.47	(32.81)	47.43	(33.54)
<i>Non-hedonic iPad</i>	44.33	(31.62)	52.29	(29.52)	52.05	(34.98)	52.77	(31.99)
<i>Hedonic iPad</i>	47.75	(26.33)	52.49	(31.61)	44.82	(29.49)	47.61	(32.86)
<b>Vacation</b>	46.38	(32.39)	49.90	(32.27)	50.09	(32.67)	47.26	(33.50)

## CHAPTER 7: STUDY 5

The initial three studies found trending results that thinking about large financial accounts (compared to a control condition) reduces hypothetical spending. However, the mechanism for the effect is still unclear. One of the main goals of Study 5 was to determine a mediating mechanism for the main effect. For the second time, I tested whether people are more likely to consider opportunity costs after they are reminded of large financial accounts. Study 5 used a larger sample size ( $n=905$ ) to increase power. I also decreased the number of money valuation measures to three financial scenarios.

Another possible explanation for the main effect is that thinking about large financial accounts activates more abstract, global concerns. Focusing on superordinate accounts may cause people to distance themselves from the situation and take a more abstract, broad perspective of their finances. Study 5 tested this hypothesis by including dependent measures to assess construal level (Behavioral identification form (BIF); Vallacher & Wegner, 1989) and categorization task of atypical examples (Isen & Daubman, 1984). The BIF has been previously used to test individual differences in how people think about behaviors (in terms of low-level or high-level identities) but has also been used to measure situational changes in abstraction (Fujita & Roberts, 2010; Fujita, Trope, et al., 2006). The categorization task will be used as another measure of construal level. For this task, people have to categorize strong, moderate, or weak exemplars as belonging to a category. Higher ratings of weak exemplars as belonging to a category indicate more abstract thinking.

Another goal of Study 5 was to test whether thinking about a small resource account (debts on a credit card, amount withdrawn from an ATM) vs. large resource account (debt/assets overall) has greater effects on reducing spending. Research from Morewedge and colleagues

(2007) found that people are more likely to consume after large resource accounts are made temporarily available, which is the opposite of these findings. In order to prime small accounts, one-third of participants were reminded of how much they owe on a particular credit card (debt) or how much money they last withdrew from the ATM (assets). The other one-third of participants were given the original debt and asset manipulations from Study 1, and the remaining one-third were provided no manipulation.

The last manipulation included was an opportunity cost cue. Half of participants were shown an opportunity cost cue for the spending measures to test whether the manipulation induces consideration of alternative uses of money. Fredrick et al. (2009) found that when the option to buy vs. not buy something is changed to buy vs. keep the money for other purchases, people are significantly less likely to buy when the opportunity cost cue is provided. Half of participants were shown the spending items with endpoints from 0 = definitely don't want to buy, 100 = definitely want to buy. To test whether opportunity costs are cued, half of the participants were shown the spending items but with the endpoints changed to 0 = save the money for other purchases, 100 = definitely want to buy. If opportunity costs are cued for the debt and asset conditions, these participants should be less affected by the opportunity cost manipulation compared to the control condition.

## 7.1. Method

**Participants.** Power analysis for a t-test (debt, asset, net worth vs. control) was conducted in G\*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, allocation ratio  $N_2/N_1 = 3$ , and Cohen's  $d = .23$  (the average weighted effect size for WTS from Studies 1-4). Based on these assumptions, the minimum sample size for a two-tailed test is

822. 904 participants were recruited on Amazon Mechanical Turk in exchange for a small fee (385 men, 520 women,  $M_{\text{age}} = 37.6$ ; Race: 77.9% White, 8.7% Black, 4.1% Hispanic, 7.1% Asian, 2% other, subjective social class relative to other Americans (1-7 scale):  $M = 4.63$ ,  $SD = 1.85$ , subjective social class relative to peers (1-7 scale):  $M = 5.07$ ,  $SD = 1.47$ ; social class: 13% lower class, 42.4% working class, 42.2% middle class, 2.3% upper class; education: 1.1% less than high school, 27.5% high school or GED, 19.2% associate/junior college; 39.0% bachelor's degree, 13.1% graduate degree).

**Procedure.** Participants were told that they would be participating in a study about financial matters. On the next page, participants were randomly assigned to one of five conditions: overall debt (Approximately, how much debt do you owe (for example, personal loans, auto loans, credit cards)? Do NOT include your home mortgage. Please indicate how much you owe across all accounts), small debt account (Think about the last time you used a credit card. How much do you owe on that particular credit card?), overall assets (Approximately, how much do you own in assets (for example, cash, checking/savings account, durable goods, stocks and bonds, automobiles)? Please indicate how much you have in assets across all accounts), small assets (Think about the last time you went to the ATM. Approximately, how much money did you withdraw from the ATM?), or received no question (control condition).

Participants were then presented with the options to purchase a bicycle, a 6-night hotel stay in Los Angeles, California, a washer/dryer, and an iPad. To test for differences in willingness to purchase hedonic vs. non-hedonic goods, the purpose of buying the iPad and bicycle was presented for either pleasure or work (see Study 2 for descriptions). As in Study 2,

the spending options were offered either in terms of a payment plan (for example, \$350 down payment plus \$100 per month for 6 months) or in full (\$950).

To measure participants' valuation of money, 3 different financial scenarios were included: 1) the classic beer-on-the-beach scenario where people report how much they're willing to pay for a beer that is purchased at a convenience store or a fancy hotel (Thaler, 1985), 2) proportional thinking where participants indicate whether they would travel to another store to buy a \$300 (or \$1000 tablet) that is \$50 cheaper at another store (Tversky & Kahneman, 1981), and 3) a season ticket package question about opportunity costs (Mullainathan & Shafir, 2013).

To assess construal level, participants completed two measures: 1) Behavior identification form (BIF; Vallacher & Wegner, 1989) and 2) atypical exemplar categorization task (Isen & Daubman, 1984). For the BIF measure, participants were presented with an action (e.g., making a list) described in concrete (e.g., writing things down) or abstract (e.g., getting organized) terms. Participant selected the description that they believed best describes the behavior, and the number of abstract descriptions vs. concrete descriptions were tallied. 15 actions were presented to participants, with 8 of the actions being every-day behaviors (greeting someone, growing a garden) and 7 of the actions being financial behaviors (putting money in your savings account, paying a credit card bill).

For the categorization task, participants indicated on a 7-item Likert-scale the degree to which different examples belong to a category (Isen & Daubman, 1984). For each category (e.g., clothing), 6 examples were provided – 3 of which were weak (cane, ring, purse) and 3 of which were strong (shirt, pants, tie). A total of four categories were provided to participants – 2 of the categories were for every-day items (clothing, transportation) and 2 were for financial items (money, assets). In addition, participants were instructed what the different breakpoints mean in

the Likert scale. They were told to use a 1 if the item definitely does *not* belong to the category, a 3 if the item does *not* belong to the category but is similar to other members of that category, a 4 if the item belongs to the category but is a weak example of it, and a 7 if the item definitely belongs to the category.

The order in which participants received the spending questions, construal-level items, and opportunity cost questions was randomized. At the end of the survey, participants were asked a series of financial satisfaction questions (see Study 1 for description of questions). Last, they were asked demographic questions (income, gender, religion, age, subjective social class) and debriefed.

## 7.2 Results.

One-way ANOVAs were conducted to compare the effect of condition (debt, assets, control) on willingness to purchase the consumer spending items (see Table 7 for means). To increase reliability, the three consumer spending items were averaged to create one dependent measure called Willingness to Spend (WTS) ( $\alpha=.51$ ).

**Main effect.** There was no significant main effect of condition (debt vs. asset vs. control) on WTS ( $F(2, 901) = .14, p = .87$ ). Using planned contrasts (1 = overall debt, 1 = overall assets, -2 = control), there was also no significant difference in WTS ( $t(901) = -.49, p = .63$ ).

**Small vs. Large vs. Control.** I ran an ANOVA testing whether there were differences between the small account conditions, large account conditions, and control condition in WTS. There were no significant differences across groups ( $F(2, 895) = .64, p = .53$ ). Similar, using a planned contrast (1 = large accounts, -1 = small accounts, 0 = control), there were no significant differences between the small and large account conditions ( $t(895) = -.29, p = .78$ ).



**Hedonic vs. Non-hedonic.** The bike and iPad items were averaged into one dependent measure. An ANOVA was conducted to compare the effect of condition (debt overall/asset overall vs. control) on willingness to purchase the hedonic/non-hedonic bike and iPad. There was a significant main effect of willingness to purchase the non-hedonic items ( $M = 44.29$ ,  $SD = 24.36$ ) items more than the hedonic items ( $M = 38.12$ ,  $SD = 25.15$ ;  $F(1, 537) = 70.01$ ,  $p = .003$ ). However, there was no main effect of the financial condition ( $F(1, 537) = .14$ ,  $p = .71$ ) or significant interaction ( $F(1, 537) = .64$ ,  $p = .43$ ).

**Opportunity Cost Manipulation.** Half of participants were provided an opportunity cost cue when rating the spending items, so that endpoints were changed from (0 = Definitely don't buy the item, 100 = Definitely buy the item) to (0 = Save the money for other purchases, 100 = Definitely buy the item). I ran a 2 x 2 ANOVA using financial condition (debt overall/asset overall vs. control) and opportunity cost manipulation (included vs. not included) on WTS. There was a main effect of the opportunity cost manipulation ( $F(1, 537) = 5.28$ ,  $p = .02$ ) where people are less likely to spend when the cue is provided ( $M = 43.32$ ,  $SD = 20.94$ ) vs. when it's not ( $M = 47.59$ ,  $SD = 22.12$ ), but no effect of the financial condition ( $F(1, 537) = .04$ ,  $p = .85$ ) or significant interaction ( $F(1, 537) = .08$ ,  $p = .78$ ).

### 7.2.1. Mediating Variables - Valuation of Money.

**Proportional Tradeoffs.** In this scenario, participants had the option of buying the \$300 or \$1000 tablet at the current store or traveling to a different store to buy the same tablet to save \$50. I ran a 2 x 2 ANOVA to compare how frequently participants chose to buy the tablet at the current store or the different store as a function of price (\$300 vs. \$1000) and financial account condition (overall debt/asset vs. control). There was a significant main effect of condition where participants were more likely to travel to the different store compared to buying it at the current

store for the cheaper tablet ( $F(1, 533) = 12.87, p < .001$ ) but no significant effect of financial condition (debt/asset vs. control) ( $F(1, 533) = .09, p = .91$ ) or interaction ( $F(1, 533) = .85, p = .43$ ).

Participants were also asked what they were thinking when they indicated wanting to buy the tablet at the current store or different store. On a 1-7 scale (1 = strongly disagree, 7 = strongly agree), there was no significant difference between conditions (debt/assets vs. control) in considering the percentage the discount is off the tablet's regular price ( $t(534) = -1.00, p = .32$ ), about how much they plan to use the tablet ( $t(534) = -.30, p = .77$ ), or about other ways they could use or save the money ( $t(538) = -.11, p = .91$ ). I predicted that participants who were in the debts and assets conditions would be more likely to spontaneously think about ways they could save money; however, this prediction was not supported.

**Beer on the Beach.** Responses for how much participants were willing to pay for a beer ranged from \$0 to \$98,000, so I removed outliers that were outside Tukey's "inner fences" (greater than 1.5 times the interquartile range from the 25<sup>th</sup> and 75<sup>th</sup> percentile), leaving responses that ranged from \$0 to \$15.50. The overall debt and assets conditions were collapsed into one condition, and a 2x2 ANOVA was run using condition (debt overall/assets overall vs. control) x location (hotel vs. convenience store). There was a significant main effect of the location ( $F(1, 499) = 6.79, p = .009$ ), where people were willing to pay more at the hotel ( $M = \$5.81, SD = 2.77$ ) than at the convenience store ( $M = \$4.97, SD = 3.23$ ). There was a marginally significant main effect of financial account condition ( $F(1,499) = 2.73, p = .10$ ), where people were actually willing to pay more in the debt/asset overall condition ( $M = \$5.58, SD = 3.03$ ) compared to the control condition ( $M = \$5.08, SD = 3.03$ ). There was no significant interaction ( $F(1, 499) = 2.24, p = .14$ ).

Participants were also asked what they were thinking when they indicated how much they were willing to pay for a beer. On a 1-7 scale (1 = strongly disagree, 7 = strongly agree), there was no significant difference between conditions (overall debt/assets vs. control) in thinking about where the beer was being purchased ( $t(533) = .53, p = .60$ ), about other ways they could use/save the money ( $t(535) = -.17, p = .86$ ), or about the most recent time they had a beer ( $t(538) = -.95, p = .34$ ). I predicted that participants who were in the debts and assets conditions would be more likely to spontaneously think about ways they could use or save the money; however, this prediction was not supported.

**Season ticket package.** Participants responded to whether they felt like the ticket cost them \$0, \$25, or \$75. Using a t-test (overall debt/asset vs. control), there was no significant effect of condition for the \$0 ( $t(537) = .45, p = .66$ ), \$20 response ( $t(900) = -.19, p = .85$ ), or \$75 response ( $t(537) = .44, p = .66$ ).

### **7.2.2. Mediating Variables – Construal Level.**

**Behavior Identification Form.** For the Behavior Identification Form, participants selected the description that they believed best describes the behavior, and the number of abstract descriptions vs. concrete descriptions were tallied (0 = concrete, 1 = abstract). 15 actions were presented to participants, with 8 of the actions being every-day behaviors (greeting someone, growing a garden) and 7 of the actions being financial behaviors (putting money in your savings account, paying a credit card bill). I coded behaviors as 1 for abstract and 0 for concrete and then tallied the control items and financial items into two scales. Higher numbers on the scale indicate more abstract choices.

I ran an ANOVA using condition (overall debt vs. overall assets vs. control) for the Control and Financial items. There was no significant difference between groups for the Control

( $F(2, 524) = .75, p = .47$ ) or Financial BIF items ( $F(2, 525) = .34, p = .72$ ). Using planned contrasts (1 = overall debt, 1 = overall asset, -2 = control), there were no significant differences for the Control BIF items ( $t(524) = .37, p = .71$ ) or Financial BIF items ( $t(525) = .14, p = .89$ ).

**Categorization Task.** For the categorization task, participants indicated on a 7-item Likert-scale the degree to which different examples belong to a category (Isen & Daubman, 1984). For each category (e.g., clothing), 6 examples were provided – 3 of which were weak (cane, ring, purse) and 3 of which were strong (shirt, pants, tie). There were 4 categories – 2 of which were control and 2 were about financial items. There were no significant differences between groups (overall debt vs. overall asset vs. control) for the weak control items ( $F(2, 538) = .52, p = .60$ ), strong control items ( $F(2, 538) = 1.15, p = .32$ ), weak financial items ( $F(2, 538) = .13, p = .88$ ), or strong financial items ( $F(2, 538) = .05, p = .95$ ). Using planned contrasts (1 = debt, 1 = asset, -2 = control), there were no significant differences between conditions for the weak control items ( $t(538) = .45, p = .65$ ), weak financial items ( $t(538) = -.50, p = .62$ ), strong financial items ( $t(538) = -.18, p = .86$ ), or strong control items ( $t(538) = -1.44, p = .15$ ).

**Order of Measures.** Due to the number of measures included in the study, it's possible that the main effect wore off as participants continued with the experiment. In order to test the immediate effect of the manipulation, I only analyzed participants who received the spending measures directly after the financial accounts manipulation. For the sake of sample sizes, I combined the small and overall debt and asset conditions for these analyses. There were no significant differences between financial conditions (debt vs. asset vs. control) ( $F(2, 324) = .61, p = .55$ ), and when I ran a planned contrast (1 = debt, 1 = assets, -2 = control), there was also no significant difference ( $t(324) = -1.10, p = .28$ ) between the debt/asset and control conditions. The debt ( $M = 44.97, SD = 22.67$ ) and asset ( $M = 44.34, SD = 21.53$ ) conditions indicated a lower

willingness to spend compared to the control ( $M = 47.54$ ,  $SD = 20.49$ ), however, the differences weren't significant.

To test the immediate effect of the manipulation on the construal level measures, I only analyzed participants who received the BIF and categorization tasks after the financial accounts manipulation. The BIF items are scored so that higher numbers mean more abstract choices selected. For the BIF control items, contrary to my hypothesis, the debt ( $M = 4.73$ ,  $SD = 2.43$ ) and asset conditions ( $M = 4.86$ ,  $SD = 2.31$ ) selected less abstract choices compared to the control condition ( $M = 5.36$ ,  $SD = 2.03$ ) ( $t(305) = -1.90$ ,  $p = .06$ ). In the debt condition, the BIF control items were positively associated with spending, suggesting that more abstract thinking is associated with more spending. Using a planned contrast (1 = debt, 1 = asset, -2 = control), there were no significant differences for the BIF Financial items though ( $t(306) = -.86$ ,  $p = .39$ ). There was a marginally significant effect where individuals in the debt ( $M = 7.50$ ,  $SD = 1.14$ ) and asset conditions ( $M = 7.53$ ,  $SD = 1.35$ ) rated strong categorization items as belonging more to the category compared to the control condition ( $M = 7.76$ ,  $SD = .77$ ) ( $t(314) = -1.62$ ,  $p = .11$ ). There were no significant differences for the weak control items ( $t(314) = .29$ ,  $p = .77$ ), strong financial items ( $t(314) = -.20$ ,  $p = .84$ ), or weak financial items ( $t(314) = .20$ ,  $p = .85$ ).

Last, I wanted to test the immediate effect of the manipulation on the money valuation questions. Using planned contrasts (1 = debt, 1 = asset, -2 = control), there was a marginally significant difference between the financial conditions and control in whether they think the ticket feels like it costs them \$20 ( $t(218) = -1.83$ ,  $p = .07$ ). Participants in the debt ( $M = 4.47$ ,  $SD = 2.00$ ) and asset conditions ( $M = 4.99$ ,  $SD = 1.89$ ) were less likely to agree with this statement, compared to the control ( $M = 5.24$ ,  $SD = 1.88$ ). There were no significant differences between conditions in whether they think the ticket feels like it costs them \$75 ( $t(218) = -.74$ ,  $p = .46$ ) or

feels like it costs \$0 ( $t(217) = .36, p = .72$ ). Using planned contrasts (1 = debt, 1 = asset, -2 = control), there were no significant differences between conditions regarding thinking about where the beer was being purchased ( $t(359) = -1.20, p = .23$ ), other ways they could use/save the money ( $t(361) = .53, p = .59$ ), or the most recent time they had a beer ( $t(362) = -.07, p = .94$ ). Using planned contrasts (1 = debt, 1 = asset, -2 = control), there were also no significant difference between conditions regarding considering the percent the discount is off the tablet's original price ( $t(360) = -.04, p = .97$ ), how much they plan to use the tablet ( $t(357) = -.13, p = .90$ ), or other ways they could use/save the money ( $t(361) = -1.09, p = .28$ ).

### **7.3 Conclusion**

In Study 5, there was no significant main effect of thinking about one's overall debts or assets on spending. One possibility for the null effects in the last two studies is the number of measures included before the spending dependent measure. The order of measures is randomized, so only a third of the sample received the spending items first. It's possible that the effect is short-lived and needs to be shown first to participants. In Study 6 and in future studies, the dependent spending measure will always be presented first, and then the mediator measures will be shown.

Study 5 also found that responses to the decision-making scenarios were not significantly different between the overall financial accounts conditions and control. Participants in the overall financial accounts condition do not seem to be considering opportunity costs more or having more consistent valuations of money. Study 6 also did not find evidence that the manipulation induced an abstract mindset, as measured by the BIF (Vallacher & Wegner, 1989) and the atypical exemplar categorization task (Isen & Daubman, 1984).

Table 8. Study 5 Means

Dependent Measure	Debt		Assets		Control	
	M	<i>SD</i>	M	<i>SD</i>	M	<i>SD</i>
<b>Willingness to Spend</b>	43.70	(21.87)	45.97	(20.36)	45.76	(21.93)
<b>Bike</b>	29.17	(30.00)	31.82	(31.38)	29.45	(31.57)
<i>Non-hedonic bike</i>	35.05	(31.29)	33.88	(33.33)	31.29	(31.87)
<i>Hedonic bike</i>	22.86	(27.36)	29.83	(29.45)	27.33	(31.26)
<b>iPad</b>	51.68	(33.03)	51.96	(32.31)	52.28	(33.33)
<i>Non-hedonic iPad</i>	56.57	(31.95)	54.43	(32.56)	54.20	(33.48)
<i>Hedonic iPad</i>	46.43	(33.55)	49.59	(32.08)	50.06	(33.20)
<b>Vacation</b>	39.05	(34.46)	42.33	(35.39)	44.70	(35.91)
<b>Washer Dryer</b>	54.90	(31.58)	57.77	(32.96)	56.60	(31.72)

## CHAPTER 8: STUDY 6

There are three main goals of Study 6: 1) the last two studies resulted in null main effects, and so one important goal is to replicate the main effect that reminding people of their debts, assets, or net worth decreases spending, 2) another goal is to test whether reminding people of their overall financial accounts or a small financial account (e.g., balance on a credit card, last check received in the mail) has different effects on people's spending, and 3) measure whether people are making financial goals that are abstract or concrete after the manipulation. I predict that people who are primed to think of their overall assets/debt will report more abstract goals (i.e., longer time frames).

One possible reason for the null effects in the last two studies is the number of dependent measures in the study. There were at least two other blocks of mediator variables and these were presented in randomized order with the spending dependent measures. In Study 6, the dependent spending measures are presented first, and then the mediator measures are shown.

### 8.1. Method

**Participants.** Power analysis for a t-test (debt, asset, net worth vs. control) was conducted in G\*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, allocation ratio  $N_2/N_1 = 3$ , and Cohen's  $d = .18$  (the average weighted effect size for WTS from Studies 1-5). Based on these assumptions, the minimum sample size for a one-tailed test is 1144. 1013 participants were recruited on Amazon Mechanical Turk in exchange for a small fee. 37 people failed an attention check and were omitted from the study, leaving 976 participants (369 men, 607 women,  $M_{age} = 36.5$ ,  $SD_{age} = 12.15$ , Race: 75.6% White, 10.1% Black, 6.5% Hispanic, 5.1% Asian, 2% other, subjective social class relative to other Americans (1-7 scale):  $M = 4.63$ ,  $SD = 1.78$ , subjective social class relative to peers (1-7 scale):  $M = 5.24$ ,  $SD = 1.54$ ;



social class: 10.8% lower class, 41.5% working class, 45.8% middle class, 1.9% upper class; education: .8% less than high school, 26.3% high school or GED, 23.8% associate/junior college; 36.4% bachelor's degree, 12.7% graduate degree).

**Procedure.** Participants were randomly assigned to one of five conditions: overall debt (Approximately, how much debt do you owe (for example, personal loans, auto loans, credit cards)? Do NOT include your home mortgage. Please indicate how much you owe across all accounts), small debt account (Think about the last time you used a credit card. How much do you owe on that particular credit card?), overall assets (Approximately, how much do you own in assets (for example, cash, checking/savings account, durable goods, stocks and bonds, automobiles)? Please indicate how much you have in assets across all accounts), small assets (Think about the last time you received a check in the mail. How much money did you deposit?), or received no question (control condition). Note, the small asset condition in Study 6 was changed from the small asset condition in Study 5. A concern was raised that withdrawing money from an ATM may be construed as money already spent and, therefore, not an asset; whereas depositing a check in one's account may be construed as adding assets to the account and so would be a better prime of small assets.

Next, participants were told to imagine that a store is offering a unique "Name your Price" special where they have the opportunity to propose their own price for some of the items in their store. If the price that they propose is higher than the minimum selling price, they can purchase the item at that price. Participants were then presented with the options to purchase 5 items: a bicycle, a washer/dryer, leather messenger bag, speaker, and a 4-night hotel stay with vacation options of Denver, Los Angeles, New York, or Chicago. I hypothesized that participants in the overall debt and asset conditions would report significantly lower willingness

to pay (WTP) compared to the control condition. I did not have specific hypotheses about the difference between the overall and small asset/debt conditions. To test for differences in willingness to purchase hedonic vs. non-hedonic goods, the purpose of buying the iPad and bicycle was presented for either pleasure or work (see Study 2 for descriptions). An opportunity cost measure for the spending items was also included – half of participants were shown the slider but with labels from “Save the money for other purchases” to “Spend X amount.” If the overall debt/asset conditions are cueing individuals to think about opportunity costs, I would predict that the opportunity cost measure would have no significant effect on these participants.

As an additional measure of spending, participants were asked to imagine that they unexpectedly received \$1000 and could allocate it amongst the following choices: 1) use it for a fun experience, 2) save it/pay off debt, 3) use it to buy something you’ve wanted, or 4) give it to charity. I predict that participants asked to think about their overall debt or assets would put more money towards savings/paying off debt and less money towards fun experiences and buying something you’ve wanted, compared to the control condition.

Participants were then told that we were going to ask them some questions about their financial situation. On the next page, they were asked to list two or three of their financial goals. I predicted that priming participants to think of their overall assets or debt would induce them to make more abstract goals (e.g., further in time, less specific) compared to the small assets/debt conditions or control condition. RAs (who were blind to condition and the hypothesis) coded for how large vs. small the goal is, how abstract vs. concrete the goal is, and whether the goal mentions saving, spending, paying off debt, or another category.

Participants were then asked to consider their take-home income in the next month or next 12 months and what percent they intend to spend on mandatory purchases (e.g.,

rent/mortgage, loan payments, groceries), discretionary purchases (e.g., eating out, vacations, entertainment), and how much they intend to save. Their answers for the three categories were supposed to total to 100%. The questions about their take-home income in the next month or next 12 months were randomized in order. I predicted that participants asked to think about their overall debts/assets would indicate lower percentages for discretionary spending, compared to the control condition.

Participants were then asked to think back to the question about their financial goals and to indicate a time frame for each of their financial goals (1 = less than 12 months, 2 = 1-3 years, 3 = 4-10 years, 4 = 11-20 years, 5 = 21-30 years, 6 = 31-50 years). Finally, participants answered demographic questions and were debriefed.

## 8.2 Results.

One-way ANOVAs were conducted to compare the effect of condition (debt, assets, control) on willingness to purchase the consumer spending items (see Table 8 for means).

**Spending Items.** To increase reliability, the five consumer spending items were standardized and then averaged to create one dependent measure called Willingness to Spend (WTS) ( $\alpha=.83$ ). There was no significant main effect of condition (overall debt vs. small debt vs. overall asset vs. small asset vs. control) on WTS ( $F(4, 970) = .88, p = .48$ ). Using planned contrasts (1 = overall debt, 1 = overall assets, -2 = control), there was also no significant difference in WTS ( $t(970) = -1.32, p = .18$ ), although the effect was trending in the correct direction with participants in the overall debt and asset conditions ( $M = -.05, SD = .67$ ) indicating a lower willingness to spend compared to the control ( $M = .03, SD = .81$ ).

The two windfall items about putting the \$1000 toward fun experiences or buying something you've been wanting were z-scored and averaged to create one dependent measure

called Windfall\_Spend. There was a significant main effect of condition (overall debt vs. small debt vs. overall asset vs. small asset vs. control) on Windfall\_Spend ( $F(4, 971) = 3.74, p = .005$ ). Using planned contrasts (1 = overall debt, 1 = overall assets, -2 = control), there was a significant difference in Windfall\_Spend ( $t(971) = -2.21, p = .03$ ) with participants in the debt and asset conditions indicating a lower amount ( $M = -.04, SD = .97$ ) compared to the control ( $M = .16, SD = 1.06$ ). Participants in the debt and asset conditions also indicated a larger amount that they would like to put towards savings/paying off debt (Windfall\_Save) ( $t(971) = 2.12, p = .03$ ).

Participants were also asked what % of their budget (out of 100%) would they put towards discretionary spending next month and in the next 12 months. These responses were standardized and average to create one dependent measure called Discretionary\_Spending. There was also significant main effect of condition (overall debt vs. small debt vs. overall asset vs. small asset vs. control) on Discretionary\_Spending ( $F(4, 971) = 2.43, p = .05$ ). Using planned contrasts (1 = overall debt, 1 = overall assets, -2 = control), there was a significant difference in Discretionary\_Spending ( $t(971) = -2.70, p = .007$ ) with participants in the overall debt and asset conditions indicating a lower percentage ( $M = -.06, SD = .89$ ) compared to the control ( $M = .17, SD = 1.20$ ). There was no significant difference between the overall debt/asset conditions in how much they reported saving ( $t(971) = -.62, p = .53$ ).

In order to look at the effect of condition on the combined dependent measures, four aggregate measures were created. An aggregate discretionary spending variable was created by standardizing response to the 5 consumer spending times, windfall spending, and percentages reported for discretionary spending in the next month and 12 months. An aggregate spending measure was created by standardizing and computing the mean for the 5 consumer spending times, windfall spending, and percentages reported for both mandatory and discretionary

spending in the next month and 12 months. An aggregate saving measure was created using the standardized windfall save variable, percentages reported for saving for the next month and 12 months, and reverse scored spending consumer goods.

Using planned contrasts (1 = overall debt, 1 = overall assets, -2 = control), there was a significant difference between conditions for discretionary spending ( $t(971) = -3.11, p = .002$ ), a marginally significant difference for discretionary and mandatory spending ( $t(971) = -1.67, p = .10$ ), and a marginally significant difference for the aggregate saving variable ( $t(971) = 1.61, p = .11$ ).

**Small vs. Large Conditions.** Independent t-tests were run to see if there were differences between the small account conditions and large account conditions for WTS, Windfall\_Spend, Windfall\_Save, or Discretionary Spending. There were no significant differences between the two groups for WTS ( $t(782) = -.24, p = .81$ ), Windfall\_Spend ( $t(783) = .15, p = .88$ ), Windfall\_Save ( $t(783) = .28, p = .78$ ), or Discretionary\_Spending ( $t(783) = .20, p = .84$ ), suggesting that the small and overall debt/asset conditions had similar effects on the dependent measures.

**Hedonic vs. Non-hedonic.** The bike and iPad items were averaged into one dependent measure. An ANOVA was conducted to compare the effect of condition (overall debt/asset vs. control) on willingness to purchase the hedonic/non-hedonic bike and iPad. There was no significant main effect of financial condition ( $F(1, 576) = .69, p = .41$ ), no significant effect of hedonic condition ( $F(1, 970) = 2.40, p = .12$ ), or significant interaction between hedonic condition and financial condition ( $F(1, 970) = .00, p = .99$ ).

**Opportunity Cost Manipulation.** Half of participants were provided an opportunity cost cue when indicating their willingness to pay, so that endpoints were changed to, "Save the

money for other purchase” and “Spend X amount”. I ran a 2 x 2 ANOVA using financial condition (debt/asset vs. control) and opportunity cost manipulation (included vs. not included) on WTS. There was no main effect of the opportunity cost manipulation ( $F(1, 577) = .04, p = .85$ ), no main effect of the financial condition ( $F(1, 577) = 1.64, p = .20$ ), or significant interaction ( $F(1, 577) = .09, p = .77$ ). Unlike Study 5, the opportunity cost manipulation in Study 6 did not decrease participants’ willingness to spend – this could be for a couple of reasons. One possibility is that the opportunity cost measure works best in scenarios where there is a forced choice to buy vs. not buy (Studies 1-5). Another possibility is the design of the question – the numbers indicating the willingness to pay may have been more noticeable than the opportunity cost manipulation.

**Financial Goals.** Participants self-reported the lengths of the goals that they provided. For the first goal, there was a trending but nonsignificant effect where people in the debt ( $M = 2.68, SD = 1.63$ ) and asset ( $M = 2.52, SD = 1.51$ ) conditions reported longer goal lengths than the control condition ( $M = 2.40, SD = 1.39$ ) ( $t(915) = 1.61, p = .11$ ). However, there was no significant difference between the financial accounts conditions and control condition for the second ( $t(967) = .31, p = .75$ ) or third goal ( $t(801) = .59, p = .56$ ).

Participants’ financial goals were coded for how specific vs. abstract they were and whether they mentioned spending money, saving money, or paying off debt. Planned contrasts (1 = overall debt, 1 = overall assets, -2 = control) were run to see if participants in the overall assets/debts conditions were reporting more abstract goals or indicating greater willingness to save or pay off debts. Participants in the overall debt/asset conditions were not more likely to report abstract goals ( $t(970) = -.17, p = .87$ ) or greater willingness to pay off debt ( $t(971) = 1.01, p = .31$ ) or save ( $t(971) = -1.64, p = .10$ ).

### 8.3. Conclusion

Study 6 replicated the main effect that reminding people of their overall debts/assets reduces their willingness to spend. Moreover, Study 6 used three different dependent measures to measure willingness to spend and found 2 were significant - 1) people were more likely to indicate putting money from a windfall towards savings and less towards fun experiences and 2) indicate putting less money towards discretionary spending in the next month and 12 months. There was a trending but not significant effect for the consumer spending items. However, reminding people of their overall debts/assets *or* a small debt/asset account (e.g., how much is on a credit card, the last check amount deposited) had equal effects on reducing people's willingness to spend.

Study 6 also tested whether participants in the overall debt/asset conditions made more abstract goals or reported more goals about saving money or paying off debts. Independent coders coded for these goal characteristics, but contrary to my hypothesis, no significant differences were found between the overall debt/asset conditions and control in goal abstractness or greater willingness to save money or pay off debts.

In sum, Study 6 replicated the main effect but also found that the small vs. overall conditions did not significantly differ from one another. Although these conditions show similar effects, I predict that each condition (overall, small) would operate through different mechanisms. Morewedge and colleagues (2007) found that making small resource accounts temporarily accessible reduced people's consumption more so than when large resource accounts were made accessible. When small resource accounts are made accessible, commodities may appear less affordable because their subjective costs are greater in comparison. Studies so far have used hypothetical scenarios where participants are asked to make judgments or decisions,

which may be more difficult to change using the financial accounts manipulation. Study 7 uses attitudinal measures to more directly identify the mechanism that drives each effect. I predict that making large resource accounts temporarily accessible may reduce spending because people are thinking more long-term and making financial planning goals.



Table 9. Study 6 Means

Dependent Measure	Overall Debt		Overall Assets		Control	
	M	<i>SD</i>	M	<i>SD</i>	M	<i>SD</i>
<b>Willingness to Spend</b>	-.08	(.68)	-.02	(.69)	.03	(.81)
<b>Windfall Items</b>						
<i>Windfall Spend</i>	-.16	(.94)	.09	(1.08)	.16	(1.06)
<i>Windfall Save</i>	.17	(.96)	-.07	(1.05)	-.14	(1.01)
<b>% Budget Save</b>						
<i>Next Month</i>	16.55	(18.22)	15.72	(16.06)	15.72	(16.06)
<i>12 Months</i>	16.82	(15.88)	17.13	(15.90)	17.75	(15.78)
<b>% Budget Discretionary</b>						
<i>Next Month</i>	16.40	(13.18)	16.19	(12.71)	19.13	(16.87)
<i>12 Months</i>	16.78	(11.30)	16.67	(10.69)	19.51	(15.53)
<b>% Budget Mandatory</b>						
<i>Next Month</i>	67.05	(21.84)	68.09	(20.89)	63.73	(24.57)
<i>12 Months</i>	66.40	(18.87)	66.20	(19.53)	62.74	(21.66)
<b>Total Discretionary</b>	-.11	(.64)	.00	(.66)	.13	(.73)
<b>Total Discretionary + Mandatory</b>	-.08	(.61)	.04	(.52)	.07	(.57)
<b>Total Savings</b>	.08	(.61)	-.04	(.52)	-.06	(.58)

## CHAPTER 9: STUDY 7

One of the main goals of Study 7 is to identify a mediator for the effect of priming people's overall financial situation on their spending. Mediator measures used in previous studies may have been too indirect in assessing participants' attitudes and whether they were thinking abstractly or considering opportunity costs. Most of the measures previously used were judgment and decision measures about different scenarios and may not have captured how participants' thinking or attitudes have changed. Another goal of Study 7 is to rule out the possibility that the effect is due to money priming. An additional control condition will be added where participants will be asked to descramble sentences with words relating to money.

Study 7 uses attitudinal measures to directly test participants' attitudes and thinking after the manipulation. Specifically, attitude measures for opportunity cost consideration, propensity to plan for the long-term, and financial resource scarcity were added to the study after the dependent spending measures. In addition, negative and positive emotion scales were added to assess whether participants' mood changed after the manipulation.

### 9.1. Method

**Participants.** Power analysis for a t-test (debt, asset, net worth vs. control) was conducted in G\*Power to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, allocation ratio  $N_2/N_1 = 2$ , and Cohen's  $d = -.197$  (the average weighted effect size for WTS from Studies 1-6). Based on these assumptions, the minimum sample size for a one-tailed test comparing the overall debt/asset conditions to the control is 720 (480 for overall debt/asset and 240 for control condition). However, there is also an additional money priming condition and small debt/asset conditions, so an additional 720 participants were added. 1600 participants were recruited on Clickworkers in exchange for a small fee. Fifty-seven people had duplicate IP

addresses and were omitted, leaving 1644 participants (1091 females, 464 men,  $M_{\text{age}} = 33$ ,  $SD_{\text{age}} = 13.42$ , Race: 68.9% White, 12.3% Black, 9.3% Hispanic, 5.8% Asian, 5% other, subjective social class relative to other Americans (1-7 scale):  $M = 4.53$ ,  $SD = 1.95$ , subjective social class relative to peers (1-7 scale):  $M = 5.11$ ,  $SD = 1.75$ ; social class: 16% lower class, 47.2% working class, 35.2% middle class, 1.7% upper class; education: 1.8% less than high school, 36% high school or GED, 23% associate/junior college; 29% bachelor's degree, 10.7% graduate degree).

**Procedure.** Participants were randomly assigned to one of six conditions: overall debt (Approximately, how much debt do you owe (for example, personal loans, auto loans, credit cards)? Do NOT include your home mortgage. Please indicate how much you owe across all accounts), small debt account (Think about the last time you used a credit card. How much did you charge for that purchase?), overall assets (Approximately, how much do you own in assets (for example, cash, checking/savings account, durable goods, stocks and bonds, automobiles)? Please indicate how much you have in assets across all accounts), small assets (Think about the last time you received a check for under \$25. How much money was the check for?), received a test concerning language use where they had to unscramble sentences (money priming condition), or received no question (control condition).

Two dependent measures from Study 6 were used and presented in randomized order. As a measure of how much participants are willing to save or pay off debts, participants were asked to imagine that they unexpectedly received \$1000 and could allocate it amongst the following choices: 1) use it for a fun experience, 2) save it, 3) pay off debt, 4) use it to buy something you've wanted, or 5) give it to charity. There was a slight change from Study 6 where the save it and pay off debts are two options now, rather than 1 combined choice. I predicted that participants asked to think about their overall debt or assets would put more money towards

savings and paying off debt and less money towards fun experiences or buying something you've wanted, compared to the control condition.

Participants were also asked to consider their take-home income in the next month or next 12 months and what percent after their mandatory expenses they intend to spend on other purchases (e.g., eating out, vacations, entertainment) and how much they intend to save. Their answers for the two categories were supposed to total to 100%. The questions about their take-home income in the next month or next 12 months were randomized in order. This was a slight change from Study 6, which had an additional mandatory spending category. I predicted that participants asked to think about their overall debts/assets would indicate higher percentages for saving and less for discretionary spending, compared to the control condition.

After the dependent spending measures, participants responded to 4 mediating measures in randomized order. A 5-item scarcity resource measure (Roux, Goldsmith, & Bonezzi, 2010) was included (ex. "My financial resources are scarce") to test if the overall debt/asset manipulation induced feelings of scarcity. Of main interests were a 3-item opportunity cost measure (Spiller, 2011) (ex. "I often think about the fact that spending money on one purchase now means not spending money on some purchases later") and 3-item Propensity to Plan (Lynch et al., 2009) (ex. "I intend to set financial goals for the next 1- 2 months for what I want to achieve with my money."). Returning to my original hypothesis, I wanted to test if participants were more likely to consider opportunity costs after the manipulation. The propensity to plan measure was included to assess if participants were thinking of financial goals due to the manipulation. Participants were also asked how they were feeling right now and to respond on a 1-7 scale (1 = not at all, 7 = very) to 12 different emotions. Three emotions were positive (happy, excited, amused), four were negative emotions relating to anxiousness and regret (anxious,

worried, foolish, regretful), and five were included as negative control emotions (guilty, angry, afraid, depressed, sad). The main emotions of interest were ones relating to anxiety or regret, possibly due to thinking about one's financial situation.

## 9.2 Results.

One-way ANOVAs were conducted to compare the effect of condition (debt, assets, control) on willingness to purchase the consumer spending items (see Table 9 for means).

**Dependent Measures.** One-way ANOVAs were run to test if participants in the overall debt/asset conditions reported that they were more likely to put money from a windfall towards paying off debts or saving. Planned contrasts (1 = overall debt, 1 = overall assets, -2 = control) found that there were no significant differences between the overall debt/asset conditions and the control for saving ( $t(1534) = .02, p = .99$ ) or paying off debts ( $t(1534) = .61, p = .54$ ). To calculate a spending measure from the windfall question, the amounts put toward buying something they wanted and using it for a fun experience were averaged. There was no significant difference between the overall debt/asset conditions in how much people reported spending ( $t(1534) = -.40, p = .69$ ).

Participants were asked what percent of their budget (out of 100%) they would put towards others purchases and what percent they would save in the next month, as well as in the next 12 months. These questions were presented in randomized order. Two means were created by averaging the percent participants would put towards other purchases and percent towards saving. There was no significant difference between the overall asset/debt conditions and control in how much of the windfall participants put towards saving ( $t(1536) = -.07, p = .94$ ) or other purchases ( $t(1536) = .07, p = .94$ ).

In order to look at the effect of condition (overall debt/asset vs. control) on the combined dependent measures, two aggregate measures were created. An aggregate spending variable was created by standardizing responses to the 2 windfall responses (use it for a fun experience, buy something you wanted) and percentages reported for discretionary spending in the next month and 12 months. An aggregate saving measure was created by standardizing and averaging responses to the windfall question about saving and percentages reported for saving in the next month and 12 months. Using planned contrasts (1 = overall debt, 1 = small debt, -2 = control), there was no significant difference between conditions for spending ( $t(1535) = -.50, p = .62$ ) or saving ( $t(1535) = -.12, p = .90$ ).

**Small vs. Large Conditions.** One-way ANOVAs were run to see if there were differences between the small account conditions and large account conditions for aggregate spending or saving measures, or the windfall item about paying off debt. There were no significant differences between the two groups (1 = overall debt, 1 = overall assets, -1 = small debt, -1 = small assets) for aggregate saving ( $t(1535) = .50, p = .62$ ), aggregate spending ( $t(1535) = -.63, p = .53$ ), or the debt windfall response ( $t(1534) = .63, p = .53$ ).

**Money Priming Condition.** Planned contrasts (1 = money priming condition, -1 = control condition) were run to see if the money priming condition had any effect on spending or saving compared to the control. There was no significant difference between the money priming condition and control condition in aggregate saving ( $t(1535) = .83, p = .41$ ), aggregate spending ( $t(1535) = -1.37, p = .17$ ), or paying off debt with the windfall ( $t(1534) = .02, p = .99$ ).

**Mediator Measures.** To see if the overall debt/asset conditions had on any effect on the attitudinal or emotion measures, planned contrasts (1 = overall debt, 1 = overall assets, -2 = control) were run. There was no significant difference between the overall debt/asset conditions

compared to the control in how scarce people felt their financial resources were ( $t(1528) = .28, p = .78$ ). However, participants in the overall debt ( $M = 5.61, SD = 1.20$ ) and overall asset conditions ( $M = 5.64, SD = 1.25$ ) reported feeling more financial scarcity than participants in the small debt ( $M = 5.50, SD = 1.29$ ) and asset conditions ( $M = 5.36, SD = 1.33$ ) ( $t(1528) = 2.49, p = .01$ ). There was no significant difference between the overall debt/asset conditions and control in how much they consider opportunity costs ( $t(1527) = .45, p = .65$ ) or propensity to plan for the long-term ( $t(1529) = -.11, p = .91$ ). There was no significant difference between the overall debt/asset conditions and control condition in their level anxiety or regret; however, participants in the overall debt and asset conditions reported more anxiety and regret compared to participants in the control and money priming conditions collapsed together ( $t(1513) = 2.13, p = .03$ ). Participants in the overall asset/debt conditions reported more negative emotions related to sadness and anger compared to the control ( $t(1516) = 1.91, p = .06$ ). There were no significant differences between conditions in positive emotions ( $t(1513) = -.57, p = .57$ ).

### **9.3 Conclusion.**

In Study 7, there was no significant effect of thinking about one's overall financial accounts on reducing spending or increasing saving. Unlike in Study 6, there was no significant difference between conditions for the windfall question and questions about budgeting in the next month and 12 months. Perhaps changing the questions in Study 7 by 1) separating the save it and pay off debt options for the windfall question and 2) removing the mandatory spending option contributed towards the null effects. Results from previous studies suggest that the overall financial accounts manipulation has a stronger effect on reducing hedonic spending, compared to non-hedonic spending. However, the dependent spending measures in Study 7 focused more on

whether participants will increase their savings at the expense of reducing discretionary spending.

While there was no significant main effect to mediate, the overall financial accounts had an effect on some of the mediator measures. Participants in the overall debt/asset conditions reported feeling more financial scarcity than participants in the small debt/asset conditions manipulation. They also reported more anxiety and regret compared to participants in the control and money priming conditions, and more negative emotions related to sadness and anger compared to the control. But in general, the negative emotion measures acted in ways opposite to the way a mediating measure might be hypothesized to behave: Namely, more negative emotions were associated with less saving and more spending in this study (though they were also positively associated with paying off debt).

So far, Studies 5 through 7 have not found a significant mediator for the effect of the overall financial accounts manipulation on spending. One last study (Study 8) was run to qualitatively ask participants what they were thinking and feeling after the manipulation.



Table 10. Study 7 Means

Dependent Measure	Overall Debt		Overall Assets		Control	
	M	<i>SD</i>	M	<i>SD</i>	M	<i>SD</i>
<b>Windfall Items</b>						
<i>Windfall Spend</i>	.05	(.78)	-.04	(.68)	.02	(.72)
<i>Windfall Save</i>	297.38	(271.63)	357.82	(312.52)	327.28	(291.06)
<i>Windfall Pay off Debts</i>	450.02	(344.23)	422.90	(349.08)	420.77	(335.12)
<b>% Budget Save</b>						
<i>Next Month</i>	45.09	(30.92)	46.62	(30.87)	46.41	(30.92)
<i>12 Months</i>	44.62	(29.77)	47.30	(29.12)	45.73	(28.54)
<b>% Budget Discretionary</b>						
<i>Next Month</i>	54.91	(30.92)	53.38	(30.87)	53.59	(30.92)
<i>12 Months</i>	55.38	(29.77)	52.70	(29.12)	54.27	(29.17)
<b>Total Discretionary</b>	.06	(.81)	-.06	(.72)	.03	(.80)
<b>Total Savings</b>	-.08	(.76)	.04	(.84)	-.02	(.80)

## CHAPTER 10: STUDY 8

To understand what participants are thinking and feeling after responding to the manipulation question, a short qualitative study was run on Amazon Mechanical Turk. Participants ( $n = 175$ ) were shown the overall debt/asset manipulation or the small debt/asset manipulation. After seeing the question, they are asked, “Think back to the last page. When you were answering the question, what were you thinking about? Describe your thought process as you were answering the question.” They were then asked, “How did you feel after you responded to the question?” and finally, “What do you think people are thinking and feeling during and after they answer the question?”

### 10.1 Results.

Answers to the questions about what participants were thinking and feeling were coded.

**What were you thinking about?.** Of the participants shown the overall debt question, 64% ( $n = 29$ ) reported thinking about the task, 9% ( $n = 4$ ) felt like they spent too much, 7% ( $n = 3$ ) felt depressed or sad, 7% ( $n = 3$ ) thought about how to pay bills or their debts, 4% ( $n = 2$ ) felt like they didn’t have enough money, and 4% ( $n = 2$ ) felt happy.

Of the participants shown the small debt question, 93% ( $n = 40$ ) reported thinking about the task, 5% ( $n = 2$ ) felt like they spent too much, and 2% ( $n = 2$ ) felt happy.

Of the participants shown the overall asset question, 79% ( $n = 33$ ) reported thinking about the task, 5% ( $n = 2$ ) felt depressed or sad, 5% ( $n = 2$ ) felt like they didn’t have enough money, 2% ( $n = 1$ ) felt happy, 2% ( $n = 1$ ) feel like they need to budget better, and 7% did not respond.

Of the participants shown the small asset question, 95% ( $n = 41$ ) reported thinking about the task and 5% ( $n = 2$ ) did not respond.

**How did you feel?.** Of the participants shown the overall debt question, 24% (n = 11) felt depressed or sad, 22% (n = 10) felt overwhelmed or stressed, 22% (n = 10) reported feeling happy or positive, 16% (n = 7) felt neutral, 7% (n = 3) report thinking about whether they can pay off their debts, 2% (n = 1) wants to pay off their debts, 2% (n = 1) thought about how others are better off, 2% (n = 1) thought about how others are worse off, 2% (n = 1) felt guilty, and 2% (n = 1) felt embarrassed.

Of the participants shown the small debt question, 56% (n = 24) felt neutral, 23% (n = 10) reported feeling happy or positive, 5% (n = 2) felt like they spent too much, 2% (n = 1) felt depressed or sad, 2% (n = 1) felt guilty, and 12% did not respond.

Of the participants shown the overall asset question, 17% (n = 7) felt depressed or sad, 29% (n = 12) reported feeling happy or positive, 17% (n = 7) felt neutral, 12% (n = 5) felt like they need more money, 5% (n = 2) felt like others are better off, 5% (n = 2) felt like others are worse off, and 15% did not respond.

Of the participants shown the small asset question, 67% (n = 20) felt neutral, 16% (n = 7) reported feeling happy or positive, 5% (n = 2) felt like they spent too much, 2% (n = 1) felt like needed more money, 1% (n = 1) felt embarrassed, and 9% did not respond.

**What do you think other people are thinking and feeling?.** Of the participants shown the overall debt question, 33% (n = 15) thought others would feel stressed, 27% (n = 12) thought others would feel upset, 16% (n = 7) thought others would feel poor, 11% (n = 5) thought others would feel guilty, 9% (n = 4) thought others would think about the task, 2% (n = 2) thought others would feel happy, and 2% (n = 2) thought others would feel silly.

Of the participants shown the small debt question, 43% (n = 10) thought others would feel guilty, 17% (n = 4) thought others would feel happy , 17% (n = 4) thought others would feel

neutral, stressed, 13% (n = 3) thought others would feel upset, and 9% (n = 2) thought others would think about the task. (Note: Due to a mistaken omission in the survey, sample sizes are smaller for this question and those below).

Of the participants shown the overall assets question, 36% (n = 8) thought others would be stressed, 14% (n = 3) thought others would feel happy, 18% (n = 4) thought others would think about the task, 9% (n = 2) thought others would feel embarrassed, 9% (n = 2) thought others would feel poor, 5% (n = 1) thought others would be upset or sad, 5% (n = 1) thought others would feel neutral, and 5% (n = 1) thought others would be thinking about the future.

Of the participants shown the small assets question, 38% (n = 15) thought others would be thinking about the task, 23% (n = 9) thought others would be questioning the purpose of the task, 15% (n = 6) thought others would be happy, 8% (n = 3) thought others would be neutral, 5% (n = 2) thought others would be frustrated, 5% (n = 2) thought others feel embarrassed, 2% (n = 1) thought others would be upset or sad, 2% (n = 1) thought others would feel poor.

## **10.2. Conclusion.**

A short qualitative study suggests that about half of participants (48%) in the overall debt condition feel anxiety, stress, or concern for their financial situation. A smaller percentage in the overall assets condition (17%) felt depressed or upset because of the question, and about 29% of people reported feeling happy or positive. A majority of participants in the small debt and small asset conditions reported feeling neutral after the manipulation. However, overall, the data from Studies 2, 3, and 7 are inconsistent with the debt/asset questions affecting spending through the mediating pathway of negative emotions.

## CHAPTER 11: DISCUSSION

Seven experiments tested the hypothesis that reminding people of their financial accounts (i.e., how much they have in debts, assets, or net worth) would decrease their willingness to spend and increase their propensity to save or pay off their debts. Four of the seven experiments (Studies 1, 2, 3, and 6) found evidence that reminding people of these large financial accounts decreased participants' willingness to spend; however, 3 of 7 experiments (Studies 4, 5, and 7) found null results. When results were meta-analyzed across the 7 studies, there was an overall significant difference between the overall debt condition compared to the control condition (fixed effects  $d = .23$  [.15, .30],  $z = 5.89$ ,  $p < .0001$ ), overall assets vs. control condition (fixed effects  $d = .15$  [.07, .22],  $z = 3.87$ ,  $p = .0001$ ), and overall net worth condition compared to the control condition (fixed effects  $d = .24$  [.13, .34],  $z = 4.25$ ,  $p < .0001$ ).

Four experiments tested possible mechanisms to explain why priming people to think of large financial accounts would decrease spending. The studies suggested against possibilities that the manipulation is 1) generating thoughts of opportunity costs or 2) inducing an abstract mindset. In Study 7, there was some evidence that the manipulation increases participants' negative emotions; however, in Study 7, negative emotions positively correlated with spending and negatively correlated with saving – meaning the correlations were in the opposite direction of what would be expected if negative emotions were playing a mediating role. Negative emotions did, however, positively correlate with intentions to pay off debt.

### 11.1. Limitations

There are some limitations of the research that could have contributed to the inconsistent effects found in the studies. First, the dependent measures changed from study to study and were not always consistent in measuring spending or saving. Studies 1 through 5 presented consumer

goods to participants at a fixed price and asked them on a scale from 0 to 100 (0 = definitely don't want to buy, 100 = definitely want to buy), how willing they were to buy the product. Across studies, there were some changes in which items were shown to participants or how consumer goods were described. There are also some limitations to this measure because there could be variability among participants in how much they desire the consumer goods and whether they think the price is fair. Attempting to reduce this variability, Study 6 had participants name a suggested price for different consumer goods and also included a windfall measure and a budgeting measure for the next month and 12 months. Study 7 just contained the windfall measure and budgeting measure but made small changes to the questions.

Another limitation is the sample and where the participants were recruited from - participants were recruited from Amazon Mechanical Turk and were paid a nominal fee (less than \$.50) to complete a 5 to 10-minute long survey. There are slightly more self-identified working class and lower-class participants in the Mturk samples compared to national polls (Gallup, 2016). Analyses were conducted to see if being below or above median income or net worth moderated the effect, but no significant moderation was found – at least within this population. Gathering data outside the MTurk population, however, is necessary to see if results generalize outside of this participant pool.

A further limitation in these studies is the fact that the dependent measures usually come immediately after the financial accounts question. Studies 4 and 5 randomized the order in which the mediator measures and dependent measures were shown, and there was no significant effect on the dependent spending measures. In Studies 1, 2, 3, and 6, the dependent spending measures were presented to participants immediately after the financial account manipulation, which may in part, explain the significant main effects found in these studies. This raises the possibility that

the effect is short-lived and may not extend much past the time in which overall asset/debt/net worth data is called to mind. This limitation will have to be addressed with future research to test if consistently reminding people of their overall assets, debt, or net worth can create a habitual frame of reference for thinking about spending decisions and affect such decisions in the real world where there are lots of competing demands for attention.

### **11.2. Future Directions**

One possible future direction is to explore why the effect is stronger for hedonic spending compared to non-hedonic spending. The meta-analyzed effect on hedonic spending was significant ( $d = .20$  [.09, .31],  $z = 3.66$ ,  $p = .0003$ ), but the meta-analyzed effect on non-hedonic spending was only marginally significant (fixed effects  $d = .10$  [.00, .21],  $z = 1.85$ ,  $p = .06$ ). Also, results from Study 6 were significant for the windfall measure and budgeting measure, both of which were driven more by decreases in hedonic spending. For the windfall measure, people who received the financial accounts question put less money towards discretionary spending and more money towards saving/paying off debts. For the budgeting measure, participants who received the financial accounts question indicated putting less of their money towards discretionary spending and more towards mandatory spending, but not toward saving. It's possible that reminding people of their debts, assets, or net worth changes people's views of their discretionary or "pleasure" spending, and either makes them more aware of ways they could cut back or of recent purchases they shouldn't have consumed. Perhaps further consideration of the hedonics of spending will suggest other possible factors that may act as mediators for our effects.

Future studies could also test the longevity of the effect and whether it extends to long-term behavior, if participants were induced to habitually think of their overall financial situation.

There are two possible studies that could be run. A relatively feasible study would recruit students in the subject pool or people in the community to participate in a diary study and report their daily spending for a week. The goal would be to get people to habitually think about their financial situation and to measure the effect on spending. Participants would be randomly assigned to receive periodic texts (1-2x per day) asking them questions about their financial situation. The overall debt condition would be asked to report how much they owe across all debt accounts, whereas the overall asset condition would be asked to report their total assets. A small debt condition could also be added where participants would be asked to report their last credit card purchase; a small asset condition could ask participants to report the last deposit into their account. A control condition would not receive any texts. Participants would also fill out attitudinal or emotion measures after receiving the text to test for any significant mediators.

A more ambitious study would involve creating an application or partnering with a budgeting app (e.g., Mint). This would be subject to IRB approval, but participants could share access to their financial accounts (such as how apps like Mint gain access to users' accounts) to allow tracking of spending behavior and amounts in their financial accounts. The application would be used to send notifications or reminders 1-2 times per day reminding people of: 1) how much money they owe across all debt accounts, 2) how much money they have across all asset accounts, 3) how much money they owe on one credit card, or 4) how much money they have in a checking account. The control condition would not receive any notifications. Spending across all financial accounts would be monitored to see if the notifications decrease how much people spend for hedonic goods and non-hedonic goods. Every day or every other day, participants would fill attitudinal or emotion measures to identify significant mediators. Given previous findings, my hypothesis is that the debt and asset conditions, regardless of overall or small,



would reduce hedonic spending compared to the control. Mediators would have to be identified to determine if the small vs. overall conditions are driven by separate mechanisms

### **11.3 Conclusion**

While previous research has demonstrated that small resource accounts or tight mental budgets reduce consumption, the present studies suggest that activating large resource accounts may also be beneficial. These studies attempted to identify whether priming large resource accounts cues considerations of trade-offs or induces an abstract mindset. While these studies ruled out these possibilities, future research will be conducted to identify possible mechanisms. It'll also be important to identify under which circumstances small vs. larger resource accounts are activated and how these two mindsets might differ.

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