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On Positive and Negative Attributes in Perceptions of Value

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ON POSITIVE AND NEGATIVE ATTRIBUTES IN PERCEPTIONS OF VALUE

Abigail B. Sussman

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OF DOCTOR OF PHILOSOPHY

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Abstract

Perceptions of wealth influence a range of financial decisions. A consumer who feels wealthy may be more likely to purchase an expensive car or take an exotic vacation, and may be more likely to borrow if she needs funds to do so. Net worth (a person's assets minus her debt) is generally accepted as a concrete measure of financial wealth. However, I demonstrate that perceptions of wealth can vary when both net worth and social context are held constant. The composition of net worth—assets and debt—can affect wealth perception. Holding total wealth constant, people with positive net worth feel and are seen as wealthier when they have lower debt (despite having fewer assets). In contrast, people with equal but negative net worth feel and are considered wealthier when they have greater assets (despite having larger debt). I demonstrate that these patterns can influence important financial behaviors: those who have favored allocations of assets and debt express a higher willingness to spend on a variety of goods and a higher willingness to borrow additional money to purchase items they could not otherwise afford. This suggests the counter-intuitive outcome that borrowing and spending can appear more attractive to those who can least afford it. Next, I provide support for a shift in attention from debt for those with negative net worth to assets for those with positive net worth contributing to this pattern, and I show that parallels to these preferences can be observed in other domains where positive and negative components net against each other. I conclude by discussing policy implications of these findings and methods for helping consumers avoid negative consequences of this pattern of preferences.

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Introduction[1]

The desire to increase wealth, and perceptions of wealth, is a central driver of many decisions. Financial prosperity is correlated not only with better health and education, but also with greater happiness and life satisfaction (e.g., Diener, 1984; Kahneman & Deaton, 2010; Larson, 1978; Mullis, 1992; Veenhoven, 1988; 1991). At the same time, it has long been recognized that not every dollar contributes equally to perceived wealth (Bernoulli, 1954).

Studies of relative wealth have found that people's standing relative to those around them often predicts well-being better than net worth does (e.g., Easterlin, 1974; Frank, 1999, 2007). Several factors can influence the perception of wealth, and both classical and behavioral accounts recognize that perceived wealth can influence behavior (e.g., Ando & Modigliani, 1963; Frank, 1999; Thaler, 1985; Veblen, 1899/1965). Still, other influences notwithstanding, a major component of perceived wealth is actual net worth. If you are worth $X, how wealthy you feel will in large part be determined by being worth $X, even if that is then tainted by your history, the wealth of the people around you, and so forth. And it seems reasonable to assume that the impact of your net worth is independent of whether it is in checking or savings accounts, or whether it is composed of debt-free assets or of larger assets combined with some debt. All else being equal, $1 million in assets (with no debt) constitutes the same wealth as $1.2 million in assets and $200,000 in debt.

Behavioral research, however, has found people's financial attitudes and decisions to be malleable, and often sensitive to normatively inconsequential factors. In an early study, Tversky and Kahneman (1986) asked respondents to assume themselves to be richer by $300 and invited them to choose between a sure $100 gain or an equal chance to win $200 or nothing; other respondents were to assume that they were $500 richer and were asked to choose between a sure

$100 loss and an equal chance to lose $200 or nothing. Although the financial prospects are identical in these two cases, people typically chose opposite outcomes (i.e., the sure gain in the first scenario and the risky loss in the second), apparently being driven by differing attitudes toward risk rather than by economic calculations.

In one instance demonstrating differential sensitivity to an equal amount of economic value, Shafir, Diamond, and Tversky (1997) showed that people think about money in nominal rather than real monetary terms. Interestingly, this can lead to situations where people prefer lower purchasing power when it is described as a higher number of dollars. For example, they showed that, when stated in nominal terms, people thought they would be happier receiving a 5% raise in an environment with 4% inflation (equivalent to a 1% raise given no inflation) than a 2% raise given no inflation, even though they understood that the latter was superior in economic terms. In another study, people spent more when large accounts (money in savings) were made mentally accessible than when small accounts (money in wallets) were made mentally accessible, thereby exhibiting differential consumption tendencies although net worth was kept constant (Morewedge, Holtzman, & Epley, 2007). In fact, one of the main lessons from research on mental accounting is that financial behaviors often align closely with current income and with active accounts, rather than with considerations of net worth (Thaler, 1999).

Partitioning Wealth

Literature in mental accounting has demonstrated that people often separate money into distinct accounts, and that the value of a dollar in one account may not be the same as the value of a dollar in another account, violating the economic notion of fungibility (e.g., Kahneman and Tversky, 1984; Thaler, 1985, 1999). In a canonical example of this behavior, Kahneman and

Tversky (1984) told participants to imagine that they had decided to see a play with a $10 ticket cost. Half of participants were then told that they had lost their ticket while the other half were told that they had lost a $10 bill. Although the economic consequence to a theatergoer is the same in either case, 88% of participants in the group that had lost $10 said that they would purchase a new ticket for the theater while only 46% of those in the group that had lost a ticket (also worth $10) said that they would. In another case, research in this area has shown that the source of cash can influence spending (O'Curry and Strahilevitz, 2001). If someone wins $200 in the lottery, they would be more likely to spend this money on a splurge item, such as a weekend in the Caribbean. If they were to earn $200 in their weekly paycheck, they would instead be more likely to spend the money on an ordinary expense, such as their weekly grocery bills. In each of these instances, people treat the value of gaining or losing a dollar differently based on the origin of the change, even though the economic worth is equal irrespective of this distinction.

Extant literature in mental accounting is silent on the topic of how people measure their complete financial portfolios. However, understanding that people frequently separate their money into different components has the potential to shed light on how people perceive their overall wealth. Specifically, it suggests that people may organize their financial portfolio by dividing it into different accounts. Rather than considering total net worth (the sum of assets minus debt), people may instead view the component pieces as distinct elements. Once these components have been separated, they may receive differential weighting in evaluations of overall wealth, an effect consistent with research on contingent weighting in judgment and decision making, which shows that inputs can receive more or less weight depending on their

compatibility with the output (e.g., Payne, 1982; Shafir, 1993; Tversky, Sattath, & Slovic, 1988; Tversky & Simonson, 1993; Tversky, Slovic, & Kahneman, 1990).

In an early examination of contingent weighting, Tversky, Sattath, and Slovic (1988) show that choices can be context sensitive. They demonstrate that different elicitation methods can highlight different aspects of a problem and lead to variations in preferences. In one problem, they ask participants about a decision to hire an engineer. Participants are told scores on technical skills and human relations for two different candidates. They are instructed that both skills are important, but that technical skills are more so. When making a binary choice between two candidates, 65% of participants select the candidate with a higher score on technical skills (86 vs. 78) and a lower score on human relations (76 vs. 91). In another instance, participants were instead given the same data with one of the scores missing and asked to choose the missing score that would make them indifferent between the two candidates (a "matching" task). The latter elicitation procedure yielded outcomes where only 34% of participants preferred the candidate with better technical skills. In this case, weighting of technical skills versus human relations varied as a function of how the question was asked, with the more important attribute looming larger in choice than in matching. In another example that is specific to a shift in decision weights across positive and negative dimensions, Shafir (1993) framed the same decision as one of choosing versus rejecting an option. He demonstrated that positive dimensions receive more weight when a person is deciding which option to choose; however, negative dimensions receive more weight when she is deciding which to reject. Consequently, an option that has more advantages and more disadvantages will be chosen more, but will also be rejected more, than one with fewer positive and fewer negative dimensions.

In the case of perceptions of wealth, I will show that assets and debt each contribute uniquely and that they receive differential weighting in evaluations of overall wealth. Considering evaluations of wealth broadly, there are a variety of factors that may be treated as non-fungible, for both economic and psychological reasons. For example, holding an asset in the form of a car versus a diamond ring versus cash could potentially alter weight in evaluations of wealth. Thus, holding wealth in a particular form could influence how wealthy someone feels. However, I am interested in cases where two components have opposite valence, such that they net to have a neutral impact on economic wealth. I will show that the valence of a particular component (assets or debt) plays a role in determining the weight it is given in an evaluation of overall wealth. Furthermore, the weighting of assets relative to debt varies based on the decision context (independent of question framing). Here, assets are the factor with positive valence, and debt is the factor with negative valence, each contributing to net worth.

To understand how this might be the case, consider two brothers, Joe and John Black, who each have $10,000 in net worth. Assume, for simplicity, that both Joe and John have the same preferences, and that both have equal access to credit which allows them to borrow and repay money at any point and to borrow and hold money at the same interest rate. However, Joe has decided to borrow $10,000, and now holds $20,000 in liquid assets and $10,000 in debt that can be repaid without penalty. His brother John has decided to borrow only $1,000, and now holds $11,000 in liquid assets and $1000 in debt that can be repaid without penalty. In this situation, Joe and John are in equivalent economic positions: In addition to having the same overall net worth, Joe has the ability to repay $9,000 to have identical asset and debt holdings to John's, and John has the ability to borrow an additional $9,000 to have identical asset and debt holdings to Joe's. Next, consider instead two brothers, Joe and John Red, who each have

negative $10,000 in net worth. In this case, Joe has borrowed $20,000 so he now holds $10,000 in assets and $20,000 in debt. John has borrowed only $11,000, so he now holds $1,000 in assets and $11,000 in debt.

Given differences in asset and debt balances, there are several possible predictions about which of the brothers will feel wealthier in each case. The most straightforward prediction would be that a person's overall net worth is the central factor contributing to perceptions of wealth, and its component pieces (asset and debt levels) do not influence how wealthy someone feels above and beyond their overall net worth, regardless of valence. If this were the case, then Joe and John Black would feel equally wealthy, as would Joe and John Red.

However, I will show that despite this economic equivalence, Joe and John are likely to feel differently about how wealthy they are, and their spending and borrowing behaviors are likely to vary as a result. Understanding that asset and debt levels do influence how wealthy someone feels, even holding net worth constant could still generate several different predictions. People may consider higher debt more detrimental than higher assets are beneficial and want to avoid debt at the cost of lower asset balances. If this were the case, Joe Black and Joe Red (who each have higher levels of assets and debt than their brothers) should feel *worse* off financially than John Black and John Red, respectively. Alternatively, additional assets may be considered more beneficial than additional debt is detrimental. This reasoning would suggest that Joe Black and Joe Red should feel *better* off financially than their brothers.

In contrast to each of these possibilities, I will show that context matters. More specifically, I will provide evidence that net worth serves as a background, and contrasting features become salient against this background. For those with positive net worth, the negative component of wealth (debt) gains salience against the positive background. Debt receives

additional weight relative to assets, implying that an additional dollar of debt is perceived to be more detrimental then the additional dollar of assets is beneficial and suggesting that, *ceteris paribus*, those with equal positive net worth would feel wealthier with lower levels of assets and debt. Correspondingly, for those with equal negative net worth, the positive component of wealth (assets) gains salience against the negative background. Assets receive additional weight relative to debt, implying that an additional dollar of assets is perceived to be more beneficial than the additional dollar of debt is detrimental and suggesting that, *ceteris paribus*, those with positive net worth would feel wealthier with higher levels of assets and debt.

My goal, first and foremost, is to present, and provide substantial evidence for, a new and important set of findings about the role of assets and debt in perceptions of wealth as described above. While I will discuss mechanisms, the overall pattern of results discovered warrant investigation in and of themselves.

Overview of Experiments

The present dissertation is organized into four parts. In the first part, I establish patterns around perceptions of wealth. I demonstrate that holding net worth constant, those with positive net worth feel, and others perceive them as, wealthier when they have lower levels of assets and lower levels of debt. In contrast, those with negative net worth feel, and others perceive them as, wealthier when they have higher levels of assets and higher levels of debt. I describe studies demonstrating these patterns in their most straightforward form (study 1) before detailing a range of additional studies to establish robustness to a variety of possible economic explanations and explore the pattern itself in additional detail (studies 2a-c). Next, I examine correlations between ratings of perceived wealth and asset or debt levels across a wider range of financial profiles

(study 3). I show that these patterns are strong enough to generate economic reversals where participants consider a person with lower net worth, who has a preferred distribution of assets and debt, to be better off than others with higher net worth (study 4). This section concludes by providing preliminary evidence that this pattern affects perceptions in people's everyday lives, through the examination of a large, nationally representative data set (study 5).

The second part extends findings to important financial decisions, and demonstrates that those with the preferred wealth distributions- as defined by earlier studies- are more likely to spend more on a variety of items (study 6), to borrow additional money (study 7), and to be evaluated as being in a better position to receive a loan (study 8).

The third part moves from demonstrating a new and robust pattern of preferences to gain insight into the mechanism that underlies that pattern. Specifically, it reveals a shift in attention from debt, for those with positive net worth, to assets, for those with negative net worth. This section includes studies that examine participant's first reactions when reading about others' financial positions (study 9), their deliberate search for information about assets and debt (study 10), and their recall of information about assets and debt (study 11). In each case, participants are more drawn to debt when considering the wealth of a person with positive net worth, but to assets when considering the wealth of a person with negative net worth. This section concludes by demonstrating that drawing attention to debt increases preferences for lower levels of assets and lower levels of debt for those with negative net worth (study 12a). Drawing attention to assets increases preferences for higher levels of assets and higher levels of debt for those with both positive and negative net worth (study 12b).

The fourth part of the dissertation provides examples of additional domains where preferences for positive and negative attributes mimic those for perceptions of wealth. I examine

domains where positive and negative attributes can be additively netted against each other to determine value. This section provides initial support for the hypothesis that those evaluating multiple situations with equal net positive features will prefer lower levels of both positive and negative attributes while those observing multiple situations with equal net negative features will prefer higher levels of both positive and negative attributes. I demonstrate that this pattern persists when receiving tokens in a game of roulette (study 13), when determining how to allocate time (study 14), and when choosing a candy bar (study 15). Each of these cases provides examples of outcomes with similar patterns. However, additional work is needed to learn the process underlying these patterns, to determine whether the process is the same as that for perceptions of wealth, and to understand whether findings in the domain of perceptions of wealth is generalizable across a broad range of domains.

Through a specific application to perceptions of wealth, the experiments in this dissertation demonstrate a strong pattern of preferences for lower asset and debt levels given positive net worth, but higher asset and debt levels given negative net worth. Concentrating on the financial arena, these preferences apply not only to perceptions of wealth, but are consequential for financial decision making as well, influencing borrowing and spending behaviors. Taken together, the experiments in this dissertation demonstrate a new, robust, and consequential pattern of weighting positive and negative attributes.

Part I: Evaluations of Wealth

In contrast to evaluations based on net worth, the first section explores whether levels of assets and debt influence perceived wealth when people are "in the black" (i.e., positive total net worth) or "in the red" (negative total net worth). Because asset and debt levels can fluctuate while net worth remains constant, an influence on perceived wealth could have non-trivial implications.

To establish basic patterns, I have run several studies that examine both first and third person perceptions of who is better off. I will begin by simplifying financial holdings to savings and loan accounts (study 1). I add and remove complexity to financial descriptions to determine that the patterns are robust to these differences and explore the pattern in additional detail (studies 2a-c). After demonstrating the basic pattern, I will examine the persistence of this pattern by examining correlations between asset and debt levels and perceived wealth across a broader range of profiles with equal net worth (study 3). Then, I will show that the preferences are strong enough to generate economic reversals, where people prefer profiles with lower net worth and the preferred distribution of assets and debt to profiles with higher net worth, but the dis-preferred distribution of these components (study 4). Finally, I will conclude the first part by providing evidence that this pattern is consequential enough to alter how people think about their wealth in their daily lives by examining a large, nationally representative data set (study 5).

Study 1: Savings and Loans

To ascertain how levels of assets and debt influence perceived wealth in positive versus negative wealth contexts, participants chose between hypothetical financial profiles, as follows. The first study aims to simplify the broad concepts of assets and debt to make these items as

similar as possible to each other with the exception of having opposite valence. To accomplish this goal, all financial holdings are represented as liquid savings and liquid loans held at the same interest rates. Controlling for liquidity in both asset and debt accounts and explicitly stating equal interest rates also rules out a variety of economic explanations based on real differences in assumptions about asset and debt holdings.

Method

Participants. Thirty-four US residents were recruited online from Amazon.com's Mechanical Turk platform for nominal compensation. Participants ranged in age from 20 to 60 years (M = 33), were 71% female, and had mean household incomes in the $35,000-50,000 range.

Design and procedure. Participants began by reading the following instructions:

> *In this survey, you will be presented with two sets of financial information and be asked which financial position you would rather be in. For each set of financial information, "Savings" includes money being held in a bank, earning 3% interest. This money can be accessed and used for any expense at any time. "Loans" includes money that has been borrowed, also at 3% interest. This money can be re-paid without penalty at any time. The information described here is a complete picture of possible finances, and includes all financial wealth and obligations. However, in each case you would have the ability to borrow additional money at 3% interest if desired.*

Next, participants read two financial profiles; each had different savings and loan holdings, but the absolute levels of net worth (savings minus loans) were equal. Participants selected whether they would rather have one financial profile or the other, or were indifferent between the two. In two questions, the net worth level was positive (i.e., the amount of savings

was greater than the amount of loans). For example, participants were presented with two financial profiles with $43,000 in positive net worth. They were asked:

"Which financial situation would you rather be in? I would rather have:"

- *$43,200 in savings, $200 in loans*
- *$90,400 in savings, $47,400 in loans*
- *I have no preference*

In two separate questions, the net worth level was negative (i.e., the amount of loans was greater than the amount of savings). For example, participants were presented with two financial profiles with $44,000 in negative net worth:

- *$200 in savings, $44,200 in loans*
- *$42,100 in savings, $86,100 in loans*
- *I have no preference*

In each case, one financial profile had substantially lower asset and debt balances (the "Low" profile) than the other (the "High" profile), as seen in the examples above (see Appendix A for details). All questions were presented in a random order. The order of savings and loan information was counterbalanced across participants.

Results and Discussion

Results supported the hypothesis that people prefer lower levels of debt (and correspondingly lower levels of assets) when contemplating financial profiles with positive net worth, and that they prefer higher levels of assets (and correspondingly higher levels of debt) when contemplating financial profiles with negative net worth, see Figure 1. When choosing between financial profiles with positive net worth (savings greater than loans), participants chose

the Low profile on 92.7% of trials (difference from 50%, Wilcoxon $Z = 5.11$, $p < .001$). In contrast, when choosing between profiles with negative net worth, participants chose the Low profile on only 16.7% of trials (difference from 50%, Wilcoxon $Z = 3.92$, $p < .001$; across positive and negative pairs, Wilcoxon $Z = 4.69$, $p < .001$; both). Participants reported indifference on only 2.9% of trials involving positive net worth profiles, and 14.7% of trials involving negative net worth profiles.

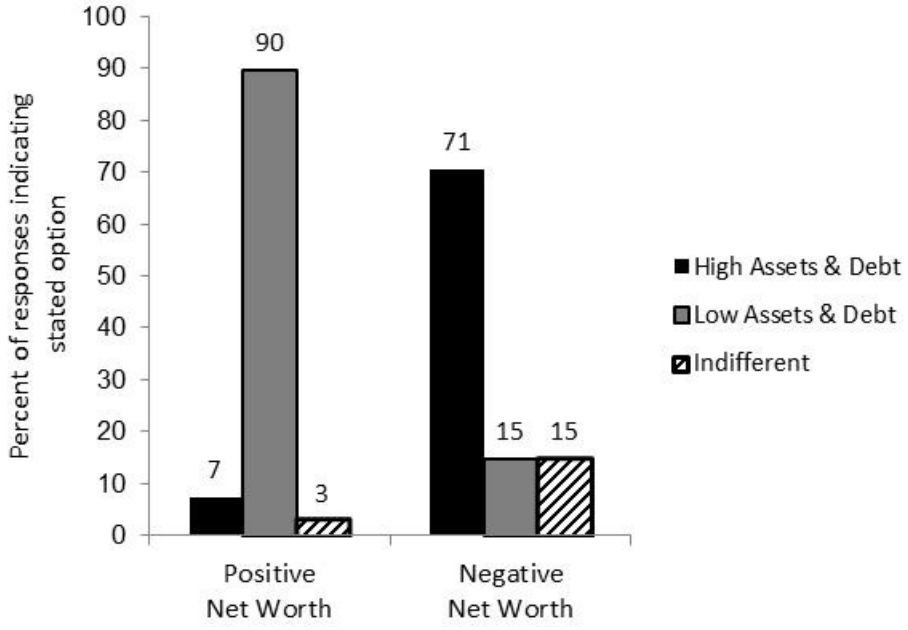


Figure 1. Percent of trials in which each wealth profile was preferred, as a function of whether participants were evaluating profiles with positive or negative net worth.

This study provides initial support for the hypothesis that people prefer lower levels of assets and debt when net worth is positive, but higher levels of assets and debt when net worth is negative. The remainder of this section will continue to build support for this set of preferences. However, for ease of discussion, I will refer back to the preferences demonstrated in this study as "preferred" throughout. Specifically, the "preferred" profile will be the one with lower levels of

assets and debt when net worth is positive, and will be the one with higher levels of assets and debt when net worth is negative

Studies 2a-2c

Study 1 established a pattern of personal preferences when choosing a simplified financial profile involving savings and loan information. However, people hold many different types of assets and debt, and participants might respond differently when presented with someone who has more complex or varied financial circumstances. Studies 2a-c probe this pattern further to determine whether it is robust to (a) assets and debt, broadly defined and given third-person evaluation (b) detailed descriptions of specific asset and debt holdings (c) low and high magnitudes of wealth, and movement near and far from zero.

Study 2a: Broad Definition of Assets and Debt

Method

Participants. Forty-eight US residents were recruited online from Amazon.com's Mechanical Turk platform for nominal compensation. Participants ranged in age from 19 to 81 years (M = 40), were 65% female, and had mean household incomes in the $25,000-50,000 range.

Design and Procedure. Participants were initially presented with colloquial definitions of assets and debt:

> *In what follows, you will be presented with several people's hypothetical financial profiles, consisting of their debts and assets. "Assets" refer to the variety of sources that contribute to a person's positive wealth: savings accounts, retirement accounts, car and home ownership, etc. "Debt" includes any money the person owes, which can come in the form*

of student loans, mortgages, credit card debt, etc. A person's profile may also mention sources of credit, that is, money available for that individual to borrow, if s/he so wishes.

Participants then saw eight pairs of financial profiles, selected arbitrarily from a set of sixteen (see Appendix B for details). Each pair presented financial profiles for two individuals of equal net worth—half the pairs had positive net worth, half negative. As in Study 1,within each pair, one profile – the "Low" profile – had lower assets and lower debt; the other – "High" profile – consisted of higher assets and higher debt, keeping net worth equal. For example:

- *Mr. Green has $250 in assets, $65,250 in debt.*
- *Mr. Red has $65,000 in assets, $130,000 in debt.*

For each pair, participants indicated which individual they considered better off financially. To ensure that participants did not base their decisions on presumed liquidity constraints, each pair was accompanied by additional information to that effect. A third line in the text (below the financial profiles) indicated that both profiles either had "substantial access to credit", "access to an additional $[X] of credit", or "total available credit of $[X]." Finally, to ensure that judgments were not attributable to computational difficulty, one-quarter of pairs were accompanied instead by an explicit summary of the profiles' (equal) net worth, e.g., "Both men have $[X] in net worth". Presentation order of pairs and profiles was randomized.

Results and Discussion

Perceived wealth of high versus low profiles depended on whether these were in the red or the black. Averaged over all positive net worth pairs, a substantial majority (79%; one-sample Wilcoxon difference from 50% = 4.35, $p < .001$) of responses perceived the Low profile person – with lower assets and lower debt – as wealthier than the High profile counterpart. Conversely,

across all negative net worth pairs, a substantial majority (77%; one-sample Wilcoxon difference from 50% = 4.69, $p < .001$)) judged the High profile person – with greater assets despite greater debt – as wealthier than the low profile counterpart (Wilcoxon test, z = 5.45, p < .001). This pattern held across all credit access descriptions, and remained when total net worth was explicitly stated (see Table 1).

Information Provided	% Choosing High profile (with higher debt and higher assets) as better off		Wilcoxon Test *Z*	*p*
	Negative Net Worth	Positive Net Worth		
Substantial Access to Credit	76	24	4.81	<.001
Additional Credit Amount	73	22	4.35	<.001
Total Credit Amount	78	22	4.85	<.001
Equal Net Worth	80	16	5.24	<.001

Table 1. Profile choices in Study 2a

Study 2b

Wealth can be broken down into various components, like homeownership, retirement savings, and student loans, which can generally be categorized as either assets or debt. Much of the work presented here focuses on the latter two categories, to distill the perception of wealth to its fundamentals, avoiding more elaborate descriptions involving interest rates, investments, and other circumstances. In Study 2b, however, wealth is broken into narrower components, allowing us to ascertain that the patterns are robust and that a focus on debt and assets does not compromise our findings.

Method

Participants. Thirty US residents were recruited through Mechanical Turk for nominal compensation. Participants ranged in age from 20 to 75 years (M = 38), were 57% female, and had mean household incomes in the $25,000-50,000 range.

Design and Procedure. Participants saw financial profiles of real individuals, taken from the website networthiq.com. The profiles presented line-item data directly from the website, broken down in balance sheet form into assets, such as cash and real estate, and debt, such as mortgages and credit card debt (see Figure 2 for an example; see Appendix C for additional details). The profiles in each pair were of nearly equal net worth- one profile with high debt and high assets; the other with low debt and low assets[2]. After viewing each pair of profiles, participants indicated which financial situation they would rather be in.

Mr. Blue

Assets		Debts	
Cash	$ 891	Home Mortgage(s)	$ -
Stocks	$ -	Other Mortgage(s)	$ -
Bonds	$ -	Student Loans	$ 6,190
Annuities	$ -	Credit Card	$ 5,350
Retirement	$ 26	Car Loans	$ -
Home	$ -	Other	$ 6,935
Other Real Estate	$ -		
Cars	$ -		
Personal Property	$ 500		
Other	$ -		
Total Assets	**$ 1,417**	**Total Debts**	**$ 18,475**
Total Net Worth: $17,058 Debt			

Mr. Green

Assets		Debts	
Cash	$ 12,486	Home Mortgage(s)	$ 197,376
Stocks	$ 276	Other Mortgage(s)	$ -
Bonds	$ -	Student Loans	$ 44,557
Annuities	$ -	Credit Card	$ 4,691
Retirement	$ 18,471	Car Loans	$ -
Home	$ 182,103	Other	$ 8,127
Other Real Estate	$ -		
Cars	$ 18,595		
Personal Property	$ 5,350		
Other	$ -		
Total Assets	**$ 237,281**	**Total Debts**	**$ 254,751**
Total Net Worth: $17,470 Debt			

Figure 2. Sample profiles used in Study 2b.

Results and Discussion

The pattern observed in earlier studies persisted when debt and assets were broken down into more realistic subcategories. Overall, only 38% of comparisons between positive net worth

profiles favored the High profile compared to 71% of comparisons between negative net worth profiles (Wilcoxon test, $Z = 3.39$, $p = .001$).

Study 2c

The studies presented thus far have established a robust pattern of preferences by focusing on comparisons between individuals designed to have moderate amounts of wealth (i.e., absolute value of net worth between \$10k and \$100k). In the next study, I examine these patterns more closely, aiming to understand certain complexities more systematically. Specifically, the current study examines variations in the strength of preferences when (1) there are variations in the lowest value presented (asset levels for those with negative net worth and debt levels for those with positive net worth), near or far from zero (2) net worth takes on an extreme high or low absolute value, and (3) net worth is at zero, rather than being either positive or negative.

Method

Participants. Thirty-five US residents were recruited through Mechanical Turk for nominal compensation. Participants ranged in age from 18 to 62 years ($M = 31$), were 44% female, and had mean household incomes in the \$35,000-50,000 range.

Design and procedure. Participants received the same definitions of assets and debt as in Study 2a. They were asked to choose which of several financial profiles they would rather have, and to assume that they would be able to borrow easily at a market interest rate for all profiles. Participants then responded to 12 questions by choosing which financial profile they would rather have in a binary, forced choice task (see Table 2 for specific numbers used, and Appendix

D for additional details). These questions have been numbered for clarity of explanation here, but all questions were presented to participants unnumbered, in a random order.

Questions one through six held the absolute value of net worth constant at $50,000. For these questions, the "High" pair consisted of $100,000 in assets and $50,000 in debt (or $100,000 in debt and $50,000 in assets for the case of negative net worth pairs) while the lowest value in the competing financial profile moved systematically away from zero such that the "Low" pair was either $0 and $50,000; $500 and $50,500; or $10,000 and $60,000 (again, numbers were paired with either assets or debt based on whether profile had positive or negative net worth). Questions seven through 10 examined comparisons at very low magnitudes ($1,000 and -$1,000) and very high magnitudes ($1million and -$1 million) of net worth. And questions 11 and 12 examined preferences when net worth was zero.

Results and Discussion

Replicating earlier findings, participants were more likely to prefer the Low profile when choosing between two profiles with positive net worth than two profiles with equal and opposite levels of negative net worth across *all* questions (all Wilcoxon Zs >2.3, all ps < .025), see Table 2 for details.

	Pair	Net Worth	"Low" Profile		"High" Profile		% "High"	*p* (diff from 50%)
			Assets	*Debt*	*Assets*	*Debt*		
Zero vs. Near Zero (lower limit)	1	*$50,000*	$50,000	$0	$100,000	$50,000	6%	<.001
	2	*$50,000*	$50,500	$500	$100,000	$50,000	9%	<.001
	3	*$50,000*	$60,000	$10,000	$100,000	$50,000	26%	0.004
	4	*($50,000)*	$0	$50,000	$50,000	$100,000	83%	<.001
	5	*($50,000)*	$500	$50,500	$50,000	$100,000	86%	<.001
	6	*($50,000)*	$10,000	$60,000	$50,000	$100,000	49%	*ns*
Low and High Magnitudes	7	*$1,000*	$1,100	$100	$2,200	$1,200	23%	0.001
	8	*$1,000,000*	$1,100,000	$100,000	$2,200,000	$1,200,000	17%	<.001
	9	($1,000)	$100	$1,100	$1,200	$2,200	57%	ns
	10	($1,000,000)	$100,000	$1,100,000	$1,200,000	$2,200,000	74%	0.004
Zero Net Worth	11	*$0*	$500	$500	$2,000	$2,000	43%	*ns*
	12	*$0*	$100,000	$100,000	$500,000	$500,000	37%	*ns*

Table 2. Asset and debt values used to create wealth profiles in Experiment 2c, reported alongside participant responses.

Three specific patterns were examined in the current experiment. The first was how the strength of participant preferences varies given the presence of the number "0" in a profile, and to determine whether the presence of zero disproportionately drives responses. Six questions (three positive and three negative) keep the problem largely identical, but vary the lowest value (debt for positive pairs and assets for negative pairs), rotating among $0, $500, and $10,000. Responses to these representative questions provide evidence that participants did not distinguish between situations that include the number zero versus near zero values (e.g., $500; Wilcoxon *Z*s comparing pairs 1 to 2 and 4 to 5 < .60*, ns*). However, participants do have a stronger preference for situations that include zero (or near-zero) debt, and a stronger aversion to those that include

zero (or near-zero) assets relative to those that include much higher amounts (e.g., $10,000 in assets for those with negative net worth or $10,000 in debt for those with positive net worth; Wilcoxon *Z*s comparing pairs 1 to 3 and 4 to 6 > 2.10, *p*s < .040).

Second, this study examined how the strength of preferences would vary for very low or very high levels of net worth. The overall pattern of preference (for the Low profile when examining positive relative to negative net worth pairs) persisted in all cases examined. This pattern was directionally larger for net worth values of a high magnitude (+/- $1 million) than for net worth values of a small magnitude (+/- $1,000), and significantly stronger in the case of the negative net worth comparison (Wilcoxon *Z* comparing pair 7 to 8 = .62, *ns*; comparing pair 9 to 10 = 2.45, $p = .014$).

Third, this study examined pairs with net worth equal to zero. In this case, differences directionally favored the Low profiles (as might be expected based on loss aversion), although these differences were not significantly different from 50% (Wilcoxon *Z*s < 1.55, *ns*). Note that the current paradigm makes no predictions about what would happen in this case, with net worth *equal* to zero, since it involves neither positive nor negative net worth. While understanding perceptions of wealth given assets and debt in the case of zero net worth seems worthwhile for complete examination of the overall pattern and establishment of a neutral baseline, it neither confirms nor contradicts existing data.

Taken together, the results reported here provide additional insight into specific patterns and rule out several explanations of the effect. Specifically, the strength of responses when the lower bound is near rather that at zero, and the persistence of the pattern at higher values, suggests that this is not merely an artifact of the presence of zero. Additionally, although not the focus of this experiment, profiles 8 and 10 include a very large lower bound, at $100,000 for the

comparison at $1 million net worth. The persistence of the observed pattern in this case provides strong evidence against a possible liquidity constraint argument.

Study 3

While Studies 1 and 2 have examined comparisons between binary pairs, Study 3 extends the investigation to correlations between the amount of assets and debt that someone holds and her feeling of wealth across a wider range of comparisons. To better understand how preferences might evolve over a continuous set of financial profiles, I created a set of stimuli that held net worth constant, but varied assets and debt across a wide range. If participants continue to prefer increasingly higher asset and lower debt levels for those with negative and positive net worth respectively, then participants should rank profiles by the overall amount of assets or debt accordingly across a wider continuum of values, and profile ranking should be correlated with these sums.

Method

Participants. Thirty-two US residents were recruited online from Amazon.com's Mechanical Turk platform for nominal compensation. Participants ranged in age from 18 to 81 (M = 33.7), were 69% female, and had mean household income in the $25,000-$50,000 range.

Design and procedure. Participants were presented with two sets of 10 financial profiles, which they were asked to rank from most to least desirable. The profiles varied in amounts of assets and debt, but all profiles in a set had the same net worth: $36,000 in the positive net worth set, and -$36,000 in the negative set (see Appendix E for exact profiles). Order of set presentation, profile presentation, and presentation of assets and debt were randomized. The task was designed

so that participants used their mouse to drag and drop the profiles until they were ordered as intended, with the profile that they would most like to have at the top of the list. This procedure was intended to help with the processing challenge of interacting with so many numbers and allowed participants to view and adjust their most recent ordering until they were satisfied.

Results and Discussion

Participant responses were used to compute average profile ranks. As predicted, for the set of positive net worth profiles, perceived rank was inversely correlated with greater debt and assets ($r = -.91$, $p < .001$), see Figure 3. In contrast, for the negative net worth set, perceived rank was positively correlated with those same measures ($r = .73$, $p = .017$). Interestingly, sub-dividing the profile sets into those with the five highest and five lowest debt levels within positive and negative pairs, shows the same patterns. Examining only those profiles with positive net worth and debt and asset levels closer to zero (debt levels ranging from $0 to $35,000) or only those further from zero (debt levels ranging from $41,000 to $118,000), perceived rank remained correlated with debt levels ($r = .82$, $p = .089$ and $r = .96$, $p = .009$ respectively). Similarly, examining only those profiles with negative net worth and debt and asset levels closer to zero (debt levels ranging from $0 to $51,000) or only those further from zero (debt levels ranging from $56,000 to $99,000), perceived rank remained correlated with debt levels ($r = .92$, $p = .029$ and $r = .95$, $p = .015$ respectively), see Appendix E for all values.

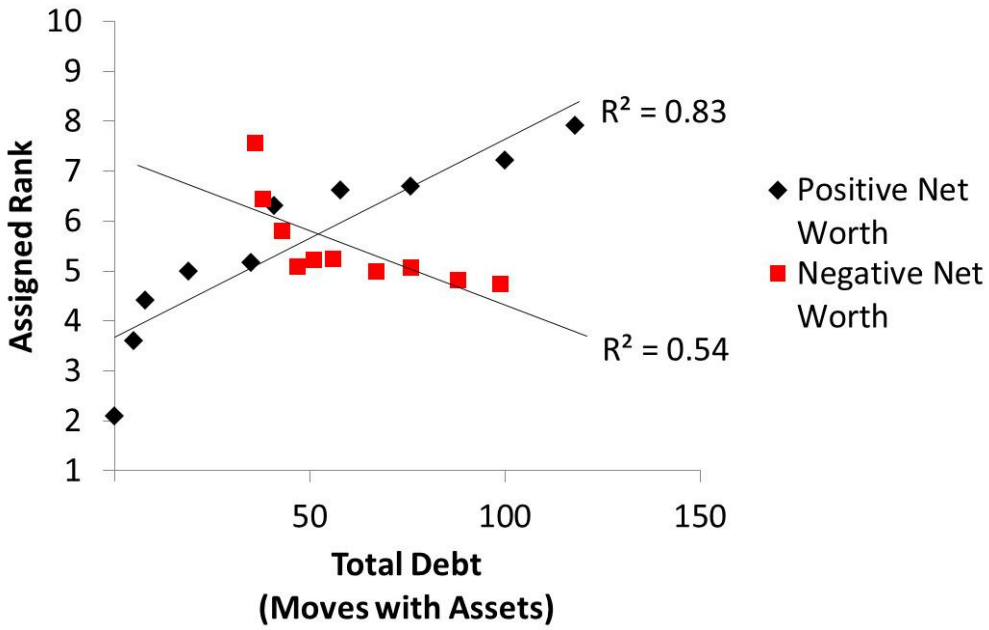


Figure 3. Average participants rankings of who is best off financially in study 3 (1 is best, 10 is worst) as a function of total debt held and whether net worth is positive (+36,000) or negative (-36,000). Note that, since net worth is held constant for those with positive and those with negative net worth, higher debt also indicates an equal amount of higher assets.

Across the full range of profiles, perceived wealth correlated highly (and negatively) with debt when net worth was positive, and it correlated highly (and positively) with assets when net worth was negative. This data provides initial evidence that the contrasting attribute (assets for those with negative net worth and debt for those with positive net worth) plays a greater role in judgments of wealth. Additionally, it contributes to defining the observed pattern by demonstrating that participants continue to desire (or to avoid) additional assets and debt as the level of assets and debt increases away from zero.

Study 4

The data presented thus far has provided strong support for a particular pattern of preferences around assets and debt given positive or negative net worth. In each case examined,

participants were choosing between profiles with equal net worth. However, a person in the black who carries a high debt load may be wealthier than another individual when measured in total net worth if they have disproportionally higher assets, but be poorer when measured in perceived financial position (e.g., $4,000 of net worth consisting of $4,000 in assets and $0 in debt may be preferred to $5,000 of net worth consisting of $10,000 in assets and $5,000 in debt). The opposite may occur in the case of two people in the red. The current study investigates this possibility using a similar methodology to Study 3, and asking participants to rank several financial profiles by their perceived financial position.

Method

Participants. Forty-eight US residents were recruited online from Amazon.com's Mechanical Turk platform for nominal compensation. Participants ranged in age from 19 to 81 (M = 40), were 64.6% female, and had mean household incomes in the $25,000-50,000 range.

Design and Procedure. Participants were given the same basic definitions of assets and debt as in the previous studies (see Appendix F for details). They were shown four different ranking questions, and each question contained five financial profiles. The order of the questions and the profiles in each question were randomized. Participants' task was to rank the financial profiles based on who they viewed as the best off financially, where 1 indicated that the person was best off and 5 indicated that the person was worst off. They expressed their choice by writing the number rank next to each profile. Each question included at least one financial profile with assets or debt equal to zero (in the case of those in the red or in the black respectively), and another financial profile with the same level of net worth, but with higher levels of both assets

and debt. Additionally, the each question included three other profiles of individuals with similar, but not identical, levels of net worth.

Results and Discussion.

Results from Study 4 further demonstrated the positive weight given to being debt-free for evaluating those in the black and the disadvantage of being asset-free for evaluating those in the red. As shown in Table 3, each of the questions demonstrated strong reversals. For example, based on the net positive Comparison 1, the only profile carrying debt that was ranked as well as one that had $34,000 and had no debt (mean rank = 2.9) in the black had a net worth of $41,000, 20% higher in absolute terms (mean rank = 3.0, Wilcoxon test, *ns*). For the net positive Comparison 2, the profile carrying no debt (mean rank = 1.8) was ranked as significantly better than every other profile considered, including a profile with net worth values 27% higher than the profile with no debt (mean rank = 3.0, Wilcoxon test, $Z = 3.13$, $p = .002$). The opposite occurred for those in the red. Examining net negative Comparison 3, the only profile that was as poorly rated as one with no assets and $29,000 in debt (mean rank = 3.6) was a profile that carried a net debt of $35,000, 20% lower in absolute terms (mean rank =2.8, Wilcoxon test, *ns*). Finally, in net negative Comparison 4, the profile that contained no assets was judged worse (mean rank = 4.4) than every other profile considered, including one profile that had a net worth that was 10% lower (mean rank = 3.2, Wilcoxon test, $Z = 3.31$, $p = .001$).

Rank by Net Worth	Net worth ($000)	Assets ($000)	Debt ($000)	Perceived Rank (1- Best to 5- Worst)
Comparison 1: versus +$34,000 assets and $0 debt				
4	**34**	**34**	**0**	**2.9**
1	41	153	112	3.0
2	37	37	0	1.7*
3	36	77	41	3.4*
4	34	163	129	4.1*
Comparison 2: versus +$130,000 assets and $0 debt				
3	**130**	**130**	**0**	**1.8**
1	165	790	625	3.0*
2	140	845	705	3.2*
3	130	540	410	3.6*
3	130	230	100	3.3*
Comparison 3: versus $0 assets and -$29,000 debt				
1	**-29**	**0**	**29**	**3.6**
1	-29	54	83	1.9*
2	-31	0	31	4.3*
3	-32	35	67	2.4*
4	-35	61	96	2.8
Comparison 4: versus $0 assets and $145,000 debt				
1	**-145**	**0**	**145**	**4.4**
1	-145	600	745	2.2*
1	-145	120	265	2.2*
2	-155	805	960	3.0*
3	-160	715	875	3.2*

* Wilcoxon Test pairwise comparison to profiles with zero debt (Comparisons 1 & 2) or zero assets (Comparisons 3 & 4), $p < .03$

Table 3. Wealth profiles used in Experiment 4 and average participant rankings.

Study 5

Participants in each study presented have demonstrated a robust preference for lower levels of debt (and corresponding lower levels of assets) when imagining themselves, or evaluating others, in the black, and when making a direct comparison across other, equal wealth profiles. This pattern reversed when participants were imagining themselves, or evaluating

others, in the red. These patterns persisted strongly across a range of studies that have added and removed complexity in carefully controlled, experimental settings aimed at isolating the influence of asset and debt levels apart from a broader context. However, given the potential for application of these findings to more complex, real world, situations, it is important to provide evidence that asset and debt levels affect perceptions outside of this simplified environment. To support the claim that asset and debt levels alter people's perceptions in their daily lives, I turned to a large, nationally representative sample.

Data set

The National Longitudinal Survey of Youth '97 (NLSY) is a nationally representative survey conducted by the US Bureau of Labor Statistics through annual interviews with approximately 8,000 people beginning in 1997 (see Table 4 for demographics). When respondents reach age 25, they are asked a specific battery of questions about their financial position. The survey identifies respondents' asset and debt holdings through a series of targeted interview questions. Importantly for my research hypothesis, one unique feature of this data set is that it also contains a question asking respondents to report a subjective measure of their financial wealth, namely: "Which of the following best describes [yours/yours and your spouse's/yours and your partner's] financial condition?" Participants respond on the following scale:

(1) very comfortable and secure

(2) able to make ends meet without much difficulty

(3) occasionally have some difficulty making ends meet

(4) tough to make ends meet but keeping your head above water

(5) in over your head

For clarity of analysis, these responses have been reverse-coded so that a higher number implies greater financial security. Available data for this question is provided for only a subset of respondents (N = 4,981), between the years 2007 through 2009. All respondents with available answers to this question were included in the following analyses.

	Mean	Std. Dev
Gender (0- Female; 1- Male)	0.51	--
Race (0- Caucasian; 1- Other)	0.51	--
Holds student loans (0- No; 1- Yes)	0.28	--
Holds mortgage (0- No; 1- Yes)	0.13	--
Net Worth	$25,900	$73,383
Total Assets	$53,900	$101,522
Total Debt	$28,100	$57,831
Gross Family Income	$50,075	$58,228

Table 4. Demographic characteristics of NLSY '97 population

Analysis

To examine this data, I first compiled aggregate measures of Total Assets, Total Debt, and Net Worth from the variables reported. Total Assets was comprised of the "Financial Assets at Age 25", the "Non-Financial Assets at Age 25", and the "House Value at Age 25" variables. Total Debt was comprised of the "Debt at Age 25" and the "House Debt at Age 25" variables. Net Worth was the sum of Total Assets minus Total Debt.

Next, I wanted to determine whether those with greater assets and greater debt would have different perceptions of their wealth given constant net worth, and whether these differences would vary across those with positive versus negative net worth. To examine this question, I entered as predictors: a binary measure of net worth (0 = negative, 1 = positive), debt (in $10,000s), an interaction term for binary net worth crossed with debt, and a continuous

measure of net worth (in $10,000s). Note that by including net worth, debt and assets essentially move together where debt appears in the model (both independently, and in the interaction term). As mentioned earlier, perceived financial condition was reverse coded for more sensible interpretation (so a higher number indicated a better financial condition) and entered as the outcome variable.

As expected, I found that when net worth is positive instead of negative, people report feeling better off financially (at zero debt; $\beta = 0.33$, $se = .04$, $p < .001$). Additionally, people with negative net worth who held greater debt reported feeling better off financially ($\beta = 0.03$, $se = .01$, $p < .001$). Note that they effectively have additional assets of the same magnitude since the model controls for net worth. Presumably it is the higher assets rather than higher debt that drives this improved perception of wealth.

Importantly for the hypothesis under investigation, I find a significant, negative interaction between the binary measure of net worth and the continuous measure of debt ($\beta = -0.02$, $se = .01$, $p = .013$). This indicates that, although the relationship between higher debt (and asset) levels and subjective financial wealth is positive overall, the relationship is significantly stronger for those with negative net worth. The additional debt and assets are more strongly correlated with higher perceptions of financial well-being for people who have negative net worth than those who have positive net worth, suggesting that this additional debt is processed differently for those in the red versus the black.

	(1)	(2)	(3)
Positive Net Worth (Binary)	0.333 ***	0.356 ***	0.361 ***
	(0.043)	(0.054)	(0.054)
Debt (10k)	0.026 ***	0.023 ***	0.024 ***
	(0.005)	(0.006)	(0.006)
Debt (10k) X Net Worth (Binary)	-0.015 *	-0.017 *	-0.019 **
	(0.006)	(0.007)	(.007)
Net Worth (10k, Continuous)	0.023 ***	0.020 ***	0.019 ***
	(0.002)	(0.003)	(0.003)
White		0.021	0.023
		(0.040)	(0.040)
Female		-0.048	-0.045
		(0.037)	(0.037)
Father's Education		0.004	0.004
		(0.005)	(0.005)
Mother's Education		0.012 *	0.012 *
		(0.006)	(0.006)
Gross Family Income (10k)		0.016 ***	0.016 ***
		(0.003)	(0.003)
Year (2007)			0.182 ***
			(0.045)
Year (2008)			0.064
			(0.044)

R-squared (1) 0.06 (2) 0.07 (3) 0.08 | N (1) 4,759 (2) 2,872 (3) 2,872
B reported with standard errors in parentheses
* p < .05; ** p < .01; p ***< .001
Results are qualitatively the same using a binary split of the DV

Table 5. Results from linear regression models examining the effect of additional debt on perceptions of financial wealth for those with positive and negative net worth and controlling for net worth in model 1, race, gender, parent's education, and gross family income in model 2, and year of survey (with 2009 as the reference year) in model 3. Subjective financial well-being is the dependent variable, coded from (1) "in over your head" to (5) "very comfortable and secure".

In addition to the basic model described above, additional models were run controlling for a variety of demographic characteristics as well as for year fixed effects, see Table 5. Model 2 includes controls for race, gender, parent's education, and gross family income, while model 3 adds controls for the year the survey took place, with 2009 as the reference year. In each case, the interaction between the binary measure of net worth and the continuous amount of debt (in

$10,000s) remains significant (β = -0.02, *se* = .01, *p* = .015 for model 2; β = -0.02, *se* = .01, *p* = .008 for model 3). This demonstrates that the relationship between higher asset and debt levels and increased perceptions of wealth (holding net worth constant) remains stronger for those in the negative than those in the positive, and is robust to personal characteristics in the real world.

This study takes the hypothesis out of a controlled experimental setting to understand better whether the robust pattern of preferences around asset and debt holdings observed in prior studies would be strong enough to influence people in a noisy setting, as they go about their daily lives. It provides initial evidence that taking on additional debt to acquire additional assets differentially affects day to day perceptions of wealth for those in the red versus the black. Furthermore, it supports the more general hypothesis that additional assets and debt (at the same level of net worth) increase perceptions of wealth more for those in the red than those in the black.

Across five studies, I have demonstrated a strong preference for lower levels of assets and lower levels of debt for those with positive net worth, but for higher asset and debt levels for those with negative net worth. This pattern was robust to simple and complex definitions of assets and debt, explicit statements of liquidity and statements of equal net worth, and high and low magnitudes of wealth. Furthermore, it extended in a continuous manner away from zero and was strong enough to induce participants to favor lower levels of net worth when they were accompanied by the preferred balance of assets and debt. Finally, I have provided evidence that these findings persist outside of a controlled survey design and influence how people think about their wealth in their daily lives. In the next section, I examine whether these patterns go beyond altering perceptions of wealth to affect important financial decisions.

Part II: Financial Decision Making

How wealthy someone feels may influence not only her own happiness, but also important financial decisions that she makes. For example, feeling wealthier or poorer can alter the budget setting process, and have consequences for how much someone chooses to spend on a range of large purchases. It can also affect a person's decision to take on additional debt. And, how wealthy someone is perceived to be could influence how likely they are to receive a loan, as well as the loan's terms. In the current section, I examine how previously observed patterns around assets and debt may extend to these important financial decisions.

Study 6

Perhaps the most frequent financial decision people face is how much to spend on a given item. Here, I propose that those with preferred wealth profiles will express a greater willingness to spend on the same items than their counterparts with equal net worth, but disfavored levels of assets and debt. In the current study, I asked participants to imagine that they held a particular amount of assets and debt and to state the most they would be willing to spend on a set of items.

Method

Participants. Forty-one US residents were recruited online from Amazon.com's Mechanical Turk platform for nominal compensation. Participants ranged in age from 20 to 81 years (M = 38), were 61.0% female, and had mean household incomes in the.$25,000-50,000 range.

Design and Procedure. Participants were first told:

> *In this survey, you will be presented with a series of financial profiles and asked how much you would be willing to pay for certain items. Imagine that you find yourself in the*

financial situations described, in addition to an income accounting for your current lifestyle. You are financially responsible and arrived at this distribution as a result of various life circumstances. Please state the maximum amount that you would be willing to pay for the following items. Remember to imagine that you personally have found yourself in the financial state described and consider this when making your response. For each profile, "assets" include all positive wealth, which can come in the form of savings accounts, home ownership, retirement accounts, etc. "Debt" includes any money owed, which can come in the form of student loans, mortgages, credit card debt, etc. You also have access to market rate credit if necessary. .

Following this set up, participants saw 21 questions that took the form: Imagine that you have $X in savings and $Y in debt (see Appendix G for details). What is the most you would pay for [insert item here]? The questions asked about five different items- a week-long vacation, a television, a car, a computer, and a dishwasher. Each item had four related questions- one each for someone with positive net worth who had a relatively high level of assets and high level of debt, for someone with equal positive net worth who had a relatively low level of assets and low level of debt, someone with negative net worth who had a relatively high level of assets and high level of debt, and someone with equal negative net worth who had a relatively low level of assets and low level of debt. For example, four different questions asked participants about their willingness to pay for a television:

(1) Imagine you have $27,100 in assets and $100 in debt. What is the most you would pay for a television?

(2) Imagine you have $53,300 in assets and $26,300 in debt. What is the most you would pay for a television?

(3) Imagine you have $100 in assets and $24,100 in debt. What is the most you would pay for a television?

(4) Imagine you have $25,500 in assets and $49,500 in debt. What is the most you would pay for a television?

In this case, questions 1 and 2 each have $27,000 in positive net worth while pairs 3 and 4 each have $24,000 in negative net worth. One additional question carried the same basic format and asked about willingness to pay for a one dollar bill. This question was intended as an attentional manipulation check, to ensure that participants were reading the questions. The 21 questions were presented in a random order to participants.

Results and Discussion

Before analyzing the data, two participants were omitted for responding to fewer than 10% of the survey questions and an additional two participants were omitted for failing the manipulation check, stating that they would pay $0 and $100 respectively for a $1 bill. To allow for comparisons across items, willingness to pay estimates were transformed to Z-scores for each item, within positive and within negative net worth profiles. For example, the maximum amount participants stated they would be willing to pay for a television when they imagined that they had $27,000 of positive net worth (questions 1 and 2 above) was standardized. Separately, the maximum amount participants stated they would be willing to pay for a television when they imagined that they had $24,000 of negative net worth (questions 3 and 4 above) was standardized.

Data was then screened for outliers, defined as greater than three standard deviations above the mean response for a given question. In these cases, the outlier was omitted along with

the subject's corresponding data point. For example, if someone responded that they would pay $1 million for a vacation given one financial profile with negative net worth, then their responses to the vacation question were omitted for both asset/ debt breakdowns given negative net worth. This was intended to maintain the within subjects design and led to the omission of an additional 32 data points (3.8%). Data were averaged across items and re-standardized to allow for comparison around the mean.

Results were in-line with predictions, with participants stating a higher willingness to pay across items when they imagined themselves as having the wealth profiles deemed better off by earlier studies, see Table 6 for details on each item. In the case of questions with negative net worth, participants were willing to spend significantly more money averaged across items when they had higher assets and higher debt than when they had much lower assets and lower debt (M = .45 vs. -.45 respectively, paired samples $t = 7.42$, $p < .001$). This directional relationship held across all items. For questions about those with positive net worth, the opposite relationship held such that participants were willing to spend significantly more money averaged across items when they had lower assets and lower debt than when they had higher assets and higher debt (M = -.11 vs. .11 respectively, paired samples $t = 2.59$, $p = .013$). This directional relationship held for four of the five items considered, excluding the television set, which showed no significant difference across conditions.

While not central to the hypothesis at hand, it is worth noting that these patterns appear to be much stronger for those imagining themselves with negative net worth than with positive net worth. One possible explanation for this difference would be anchoring around the amount of available assets that is greater for those in the red. In cases of positive net worth, both profiles generally contain substantially more assets than would be needed to purchase the suggested

items. Thus, participants may not anchor on this specific asset amount when determining their willingness to pay regardless of the specific financial situation described. In contrast, for cases of negative net worth, the low profiles often contain lower amounts of assets than would be needed to purchase the stated items comfortably. Although participants are explicitly told that they can borrow money to make the purchase (and their stated willingness to pay suggests that they do understand this), they may still be more inclined to anchor on the lower asset amount in these cases. Anchoring on this amount for cases in the red but not in the black could lead to the observed discrepancy in magnitude.

Item	*Net Worth*	*WTP- High Assets, High Debt*	*WTP- Low Assets, Low Debt*	*t*	*p*
Vacation	positive	$2,233	$2,439	1.24	.221
	negative	$725	$225	4.66	<.001
Television	positive	$996	$903	1.05	.301
	negative	$337	$124	5.142	<.001
Car	positive	$25,763	$29,947	3.70	<.001
	negative	$13,317	$5,445	4.94	.001
Computer	positive	$1,443	$1,565	1.04	.304
	negative	$731	$257	5.32	<.001
Dishwasher	positive	$570	$617	2.26	.030
	negative	$297	$129	4.34	<.001
Overall (*z*-scored)	positive	-.11	.11	2.59	.013
	negative	.45	-.45	7.42	<.001

Table 6. Average willingness to pay for each item as a function of whether net worth was positive or negative, and whether the wealth profile imagined had high or low asset and debt levels.

Results of this study extend findings from perceptions of wealth to basic spending behaviors. They demonstrate that people not only perceive the same level of wealth differently based on the composition of assets and debt, but they alter spending decisions based on those

compositions. Those with positive net worth and low levels of debt feel as though they are in a better position to spend despite the lower amount of assets on hand. However, among those with negative net worth, the presence of additional assets seems to empower increased spending, despite the fact that people are effectively incurring additional debt in order to do make these purchases. I explore this willingness to take on debt in the next study.

Study 7

Although spending money may be the most frequent consumer behavior, people do not always have money on hand. The choice to take on additional debt to fund a discretionary purchase can be critical for spending decisions as well as consequential for a person's economic situation- especially given subsequent interest costs incurred. The current study examined how asset and debt levels affect borrowing behavior. All else being equal, I hypothesized that willingness to borrow would be higher when people feel better off. In line with prior results, I expected those in the red with higher assets to be more likely to take on additional debt than those with equal net worth but lower assets. Conversely, for those in the black, I expected borrowing to be less attractive when debt was high than when it was low. Although someone in the black may feel worse off *after* borrowing money (which could have consequences for debt repayment), this hypothesis is based on the prediction that she would feel wealthier initially, and this feeling of financial security would make her more comfortable with taking on debt at the outset. In contrast, someone in the black who begins with a higher level of debt would feel less comfortable taking on additional debt at any point.

Method

Participants. Sixty-two US residents were recruited online from Amazon.com's Mechanical Turk platform for nominal compensation. Participants ranged in age from 18 to 70 (M = 36), were 66% female, and had mean household incomes in the $25,000-$50,000 range.

Design and procedure. Participants considered hypothetical scenarios involving a tempting purchase that required borrowing money. They were given the same descriptions of assets and debt as in study 2a, and then they read:

> *Imagine that you found yourself in either of the financial situations described below. In each case, you are considering purchasing an item that you cannot afford unless you borrow additional money. Even though your total assets may be more than the amount required, they are presumably held in ways (such as home equity) that are not easy to access for this purchase.*

Participants saw two pairs of financial profiles of equal net worth- one positive and one negative, constructed as before. They were told, "Each person has the ability to borrow at the same, market interest rate," and were asked under which profile they would be more inclined to borrow to make the purchase. For example, participants read:

> *Imagine that your TV is getting old. Although it is still working fine, you would really like a new, flat screen TV and have your mind set on a particular model. However, since you don't have the money to purchase it outright, you would need to borrow $2,000 in order to buy it. In which case would you be more likely to borrow to buy the new TV?*

In two different questions, on separate pages, participants chose between sets of financial profiles given the question above:

(1a) If I had $17,500 in assets and no debt

(1b) If I had $22,000 in assets and $4,500 in debt

and

(2a) If I had no assets and $19,000 in debt

(2b) If I had $5,000 in assets and $24,000 in debt

One half contemplated the purchase of a luxury item (TV or motorcycle); the others a non-luxury item (work computer or bathroom repairs). Question order was randomized, see Appendix G for additional details.

Results and Discussion

No significant differences were observed across items (see Table 7), and results were collapsed. Observed willingness to borrow mirrored the wealth judgments, with greater willingness shown by those with profile types previously identified as preferred (despite equal net worth!). Across questions, 82% (significantly greater than 50%; $t = 7.8$, $p < .001$) favored borrowing under the low profile (lower debt and assets) when net worth was positive, whereas 64% (significantly greater than 50%; $t = 2.5$, $p < .02$) favored borrowing under the high profile (greater assets and debt) when net worth was negative (Wilcoxon test, $z = 5.41$, $p < .001$).

		Negative net Worth	Positive net Worth	Wilcoxon *Z*	*p*
Non-Luxury	Computer	55	16	3.46	.001
	Bathroom Repair	61	10	3.77	<.001
Luxury	Television	68	19	3.87	<.001
	Motorcycle	71	29	3.50	<.001

Table 7. Percentage of participants in Study 7 more likely to borrow in order to purchase an item under high- versus low profiles, as a function of positive or negative net worth, and whether or not the item is a luxury.

These findings suggest that perceptions of wealth may influence consequential financial behaviors such as take-up of additional debt. Those with positive net worth, who feel wealthier with lower levels of debt, may avoid even financially beneficial, low interest-rate loans. For example, someone with positive net worth may be more likely to forego a tax-incentivized loan, or the opportunity to take on a student loan to fund a critical investment in her future wealth. On the other hand, those with negative net worth, who feel wealthier when they have more assets, may take on financially detrimental debt in order to feel financially better off. For example, someone with negative net worth may be more likely to take on high interest-rate credit card debt, or even turn to a predatory lender, and the findings reported here suggest she may feel wealthier in the moment for doing so. Note that the act of borrowing additional money is dynamic, which has the potential to complicate predictions and implications. For example, in the positive case, someone who has lower levels of assets and debt who borrows additional money may then be in a situation where she considers herself worse off than she did before, which could discourage future borrowing. The reverse would be true for those with negative net worth.

Study 8

People's financial health influences not only their own decisions, but also the decisions made about them by others. The current study explored whether perceived wealth (keeping actual wealth constant) can influence others' willingness to give a loan. It examined whether someone would be more willing to lend money to another person when the latter person's wealth profile was preferred.

Method

Participants. Fifty-four US residents were recruited online from Amazon.com's Mechanical Turk platform for nominal compensation. Participants ranged in age from 18 to 58 (M = 34), were 64.8% female, and had mean household incomes in the $25,000-50,000 range.

Design and Procedure. Participants were told:

> *Imagine you are in the role of a loan officer who needs to approve people's requests for loans. Presented with pairs of people below, you must decide which of the two is in a better financial position to receive the loan. In each case, "assets" refer to the variety of sources that contribute to a person's positive wealth: savings accounts, retirement accounts, car and home ownership, etc. "Debt" includes any money the person owes, which can come in the form of student loans, mortgages, credit card debt, etc.*

Participants were told that the men wanted to borrow money either to buy a reliable car to commute to work or to fund a family vacation in the Caribbean. For example, participants read:

> *Mr. Green and Mr. Blue each ask to borrow $7,000 to buy a reliable car that they need to commute to work. Mr. Green has $33,400 in assets and $200 in debt. Mr. Blue has $67,000 in assets and $34,000 in debt. Which person would you feel more confident giving the loan to?*

Since distinctions between making decisions about necessity versus luxury items have been made in the past (e.g., Dhar and Wertenbroch 2000; Rottenstreich and Hsee 2001), I wanted to demonstrate that neither type of item was independently driving results in this case. Each scenario was presented twice. Once, participants were given a choice between two financial profiles with equal positive net worth (one High and one Low) and once, they were given a

choice between two financial profiles with equal negative net worth (one High and one Low, see Appendix H for details).

Results and Discussion

Participant responses were consistent with what could be expected from previous studies, see Table 8. They were more willing to lend money to the person whose wealth profile was preferred. In the case of positive net worth, 75.0% of participants elected to give the loan to the person who held low assets and close to zero debt, significantly more than the 25.9% of participants who made the same choice in the case of negative net worth (Wilcoxon test, $Z = 4.82$, $p < .001$). These responses broke down consistently by question type. For the essential car loan and the luxury vacation, significantly more than half of people chose to give the loan to the person in the black who held lower assets and lower debt (75.0% and 75.0%, Binomial test, *p*s<.001). As expected, the choice reverses when the hypothetical loan applicant is in the red. In this case, significantly fewer than half of the people chose to give the loan to the person with lower assets and lower debt (25.0% - car and 26.8% - vacation, Binomial test, *p*s <.002).

Net Wealth	*Luxury (vacation)*	*Necessity (car)*	*Overall*
Negative	75.0%	75.0%	75.0%
Positive	26.8%	25.0%	25.9%

*Binomial test compared to 50%, *p*s <.002 for all cells

Table 8. Percent of responses favoring lending money to the person with higher debt and higher assets as a function of whether their net worth is positive or negative, and whether the item that money is being borrowed for is a luxury or a necessity in Study 7.

Although in the case of a real loan, a loan officer may be more financially sophisticated than the respondents to this survey, or they may be following specific lending guidelines, these

hypothetical results remain suggestive. First, if someone is considering making a loan to a friend or acquaintance in need, these intuitions about who is in a better financial situation overall may impact whether or not they make the loan. For other informal loan markets, this reasoning may also influence the terms of a loan. Finally, even a formal bank lender deciding whether or not to extend a loan could be biased by this type of reasoning. Lenders may form intuitive and automatic first impressions of their potential borrowers consistent with the patterns for preferred wealth profiles described here, similar to System 1 processing in other domains (e.g., Kahneman, 2003; Payne, 2001; Willis & Todorov, 2006). Depending on controls and procedures in place at a formal or informal lender, this first reaction could potentially influence a process that should rely instead exclusively on deliberate, calculated, System 2 processing (c.f., Todorov et al., 2005). Additional studies are needed to investigate the real world applicability of this finding.

This study provides important insights about the pattern of results observed more broadly. In particular, it rules out alternative possible economic explanations. For example, one story might be that all people prefer to reduce debt. But, a person with negative net worth and high levels of debt would continue to collect additional debt because she had the ultimate intention of declaring personal bankruptcy and wiping out all debt incurred. If participants in the studies held this belief, though, they should not express willingness to lend money to another person who they thought would declare bankruptcy rather than repaying the loan. Additionally, results observed here provide evidence against pure motivational accounts, since these are not decisions made for oneself, but about another person. Motivational accounts apply to personal preferences formed by an individual over a set of possible outcomes. For example, it is unclear whether motivations would be the same for the decision maker to achieve a specific outcome for herself versus for someone else (e.g., level of emotional involvement would vary).

The data presented in the current section provide insight into how varied levels of assets and debt may alter consequential financial decisions and subsequent economic outcomes. They suggest that those with positive net worth who begin with higher levels of debt may spend less overall, and avoid taking on additional debt than their counterparts with equal net worth, but lower levels of debt. Perhaps more troubling are implications for those with negative net worth. Among this group, the findings suggest that those who begin with high levels of debt may feel wealthier, be most likely to spend more money and most likely to take on greater debt. Furthermore, they are likely to be seen as wealthier by others, and thus may be more likely to have access to this additional debt, even if it comes at a high interest rate. Taken as a whole, these studies suggest that financial decisions that people make may increase their perceptions of wealth in the moment but have real, and negative, consequences for their long term economic wealth.

Part III: Understanding the Role of Attention

The first two sections have been dedicated to demonstrating a new and robust pattern of preferences around perceptions of wealth and providing evidence that these patterns have the potential to influence important financial behaviors. In the current section, I explore the role that attention (broadly defined) plays as one factor in bringing about these patterns. Understanding factors that contribute to these patterns is essential both for helping improve financial decisions and for considering whether and to where these patterns may generalize.

Specifically, I hypothesize that the net worth context alters the focus of people's attention. Generally speaking, if people are more focused on assets than on debt, they should give this attribute additional weight in their decision process; consequently, they should choose to accept additional debt if it means they can acquire an equal amount of additional assets. Conversely, if people are more focused on debt than assets and give this attribute additional weight in their decision process, they should choose to repay debt, even if it means sacrificing an equal amount of assets.

I suggest that net worth serves as a background, and contrasting features become salient against this background. For those with positive net worth, the negative component of wealth (debt) gains salience against the positive background, illustrated using a visual parallel in Figure 4a. Debt receives additional weight relative to assets, implying that an additional dollar of debt is perceived to be more detrimental then the additional dollar of assets is beneficial and suggesting that, *ceteris paribus*, those with positive net worth would feel wealthier with lower levels of assets and debt. For those with negative net worth, the positive component of wealth (assets) gains salience against the negative background, see Figure 4b. Assets receive additional weight relative to debt, implying that an additional dollar of assets is perceived to be more

beneficial than the additional dollar of debt is detrimental and suggesting that, all else equal, those with positive net worth would feel wealthier with higher levels of assets and debt.

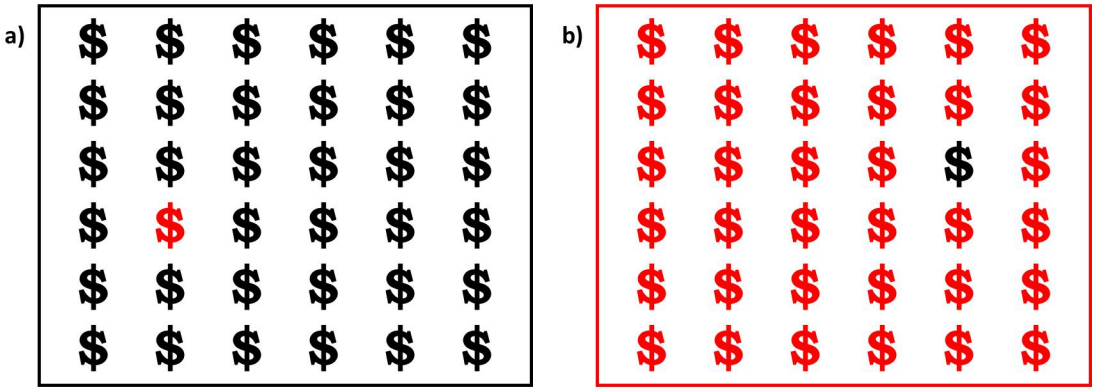


Figure 4. A visual illustration of the salience of a small amount of debt (red dollar sign) against a background of assets (black dollar signs), in the case of positive net worth (a), versus the salience of a small amount of assets against a background of debt, in the case of negative net worth (b).

The studies in this section provide evidence that attention shifts between assets and debt in negative and positive net worth contexts respectively. However, they do not converge on attention as the cause of the observed pattern to the exclusion of other mechanisms. They explore the role of attention from several different angles. Study 9 examines whether people's attention is initially drawn to assets or debt when reading financial information, measured by participant's first reactions. Study 10 examines an explicit, directed information search, asking participants whether they prefer to learn information about assets or debt when collecting financial information about others. Moving to an implicit measure of attention, study 11 investigates whether people are more likely to recall information about assets or debt. Finally, studies 12a and 12b examine how knowledge about the role of attention can be used to shift preferences towards lower or higher levels of assets and debt.

Study 9

The current study examines a direct measure of attention by presenting participants with financial information about asset and debt levels and determining whether their first reactions are more focused on assets or on debt. I hypothesize that participants reading about others with positive net worth would be more likely to report first reactions about the amount of debt held while those reading about others with negative net worth would be more likely to report first reactions focused on the amount of assets held. The intuition is that people will react with greater interest at the initial information that someone with positive net worth holds debt, and that someone with negative net worth holds assets, and thus be drawn to this component of wealth.

Method

Participants[3]. Two-hundred, sixty-three participants were recruited through Mechanical Turk, and they completed the study for nominal compensation. Participants ranged in age from 19 to 81 (M = 37), were 57% female, and had mean household incomes in the $25,000-$50,000 range.

Design and Procedure. Participants saw two pairs of paragraph-long descriptions of similar individuals, including summaries of these individuals' net worth, broken down by assets and debt. For example:

> *Jeff has worked as an electrician for the past 15 years. His wife is a substitute teacher. They live in a rented apartment outside of Boston, Massachusetts, with their two children. Their household has a total of $9,000 in assets and $34,000 in debt.*

Ben has worked as a police officer for the past 12 years. His wife works part time as a nurse. They live in a rented apartment in Buffalo, NY with two children. Their household has a total of $72,000 in assets and $97,000 in debt.

Following each profile pair, participants were asked to "indicate the first thoughts that come to mind when considering which household is in a [better/worse] financial situation." Two-thirds of participants were later also asked to indicate whether assets or debt figured more prominently in their response. Finally, all participants were asked: "Who do you think is more [satisfied with/ troubled by] her financial position?" Wording was altered to allow for sensitivity to positive versus negative wealth: Half the participants saw the first term in brackets; others saw the second. Personality descriptions were counterbalanced within pairs, as were asset/debt levels and positive/negative net worth, see Appendix J for additional details.

Results and Discussion

Free responses were analyzed to determine relative attention to assets versus debt. Two independent raters—blind to the hypothesis—coded whether each response focused on assets or debt. Raters agreed on 82% of responses (Chronbach's $\alpha = .82$), and resolved discrepancies by consensus. There was a directional effect of question wording, where those asked who was "worse off" were somewhat more likely to focus on debt than those asked who was "better off", but this was not statistically significant ($p > .25$), and data were combined in ensuing analyses. Consistent with the attentional hypothesis, participants' explanations focused more on assets than on debt when net worth was negative than when it was positive (48% versus 15%, Mann-Whitney test, $Z = 6.51$, $p < .001$). Furthermore, participants' self-reports indicated a greater

focus on assets when evaluating negative rather than positive net worth profiles (57% versus 22%, Mann-Whitney test, $Z = 7.24$, $p < .001$), see Figure 5.

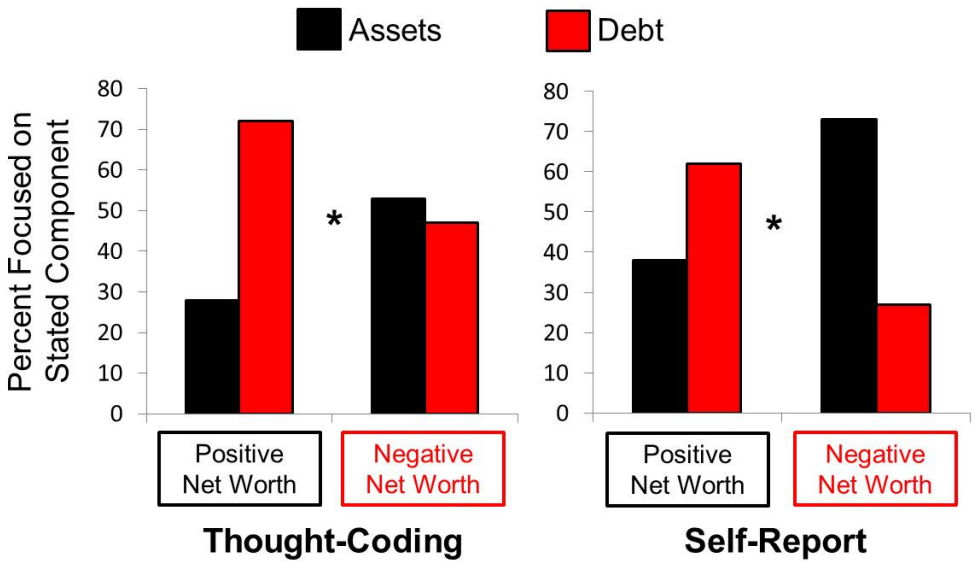


Figure 5. Proportion of participants in Study 9 who focused on assets and debt when considering positive and negative wealth profile pairs, with both rater coded free-responses and self-reports. Responses are averaged across questions framed in positive terms ("Who do you think is more satisfied with her financial position?" and "Who do you think will be in a better financial situation in 10 years?") and those framed in negative terms ("Who do you think is less satisfied with her financial position?" and "Who do you think will be in a worse financial situation in 10 years?"). * indicates $p < .01$.

Indeed, in contexts of negative net worth, participants perceived high-profile individuals as more likely to be satisfied with their financial situation than their low-profile counterparts (76%), but this reversed in contexts of positive net worth, where only 27% of high profile individuals were judged more satisfied (Mann-Whitney test, $Z = 7.57$, $p < .001$). Similarly, under negative question wording ("worse off" instead of "better off"), those with low- rather than high profiles were deemed more troubled by their financial situation in the negative but not the positive net worth contexts (64% versus 15%; Mann-Whitney test, $Z = 8.52$, $p < .001$). Thus, the

same patterns found earlier persisted and proved to be robust to framing the question in positive versus negative terms.

Participants' explanations as coded by independent judges, as well as their self-reports, provided additional support for a greater reliance on "discrepant" features in wealth perception: a greater focus on debt when evaluating those in the black, and a greater reliance on assets when evaluating those in the red. While this evidence does not show that reliance on discrepant features fully accounts for the observed patterns on its own, the current study demonstrated that participants were more likely to focus on these discrepant features. Furthermore, this shift in focus occurred absent (i.e., prior to) a judgment of perceived wealth, suggesting that it is a cause, rather than a reflection, of the observed pattern.

Study 10

In some cases, such as the one described in Study 9, the information that initially draws attention may or may not be tied to deliberate intentions. To understand the broad role that attention plays in the patterns observed in this dissertation, it is worthwhile to examine what information people choose to focus on when given the opportunity. The current study examines a case of directed information search where participants are asked which information they consider most important when learning about another's financial profile for the purpose of a decision. If people's attention is more focused on assets for those with negative net worth and on debt for those with positive net worth, then they should be more interested in seeking out this information.

Method

Participants. Seventy-two participants were recruited online through Mechanical Turk, and they completed the study for nominal compensation. Participants ranged in age from 18 to 59 (M = 31), were 50% female, and had mean household income in the $35,000-$50,000 range.

Design and procedure. Participants were initially provided with brief descriptions of assets and debt, and told that their task would make choices, imagining themselves in the situations described. Participants then responded to two questions in a random order.

One question asked participants to imagine they were choosing who should receive a loan. For half of participants, the possible candidates all had about $100,000 in net worth, and for the other half of participants, the possible candidates all had about negative $100,000 in net worth. However, the amount of assets and debt making up the net worth amount varied. As an example, participants were told (in the positive case), "if one person has $200,000 in assets and owes $100,000 in debt while another has $100,000 in assets and owes no debt—both would have $100,000 in net worth." Participants were then asked: "When choosing who to lend money to, which piece of information would be more important to you?" and responded by choosing either "the amount of assets each person has," or "the amount of debt each person has."

The other question asked participants to imagine they were looking for someone in a solid financial position to be their business partner. Half of the participants, randomly assigned, were choosing among candidates who each had about $250,000 of net worth, the other half of participants were instead choosing among candidates with negative $250,000 of net worth. Participants were asked to choose whether assets or debt was more important to them when choosing a business partner, see Appendix K for additional details.

To ensure that participants understood the concept of net worth, an additional question was included at the end of the study, asking "If a person has $100 in a savings account and owes $25 in credit card debt, and that is all they have or owe, what is that person's net worth?" and included values ranging from positive $100 to negative $100 in $25 intervals as options in a multiple-choice response.

Results and Discussion

All but one participant gave the correct response to the final question that required a calculation of net worth, indicating that the participants generally understood a central aspect of the task. In both of the target questions presented, participants were more interested in information about debt held when contemplating a financial action involving someone with positive net worth than with negative net worth, but they were more interested in information about assets held when contemplating a financial action involving someone with negative net worth than with positive net worth.

When choosing who they would prefer to give a loan to, participants considered information about the candidates' assets to be more important 54.1% of the time when faced with a decision among those with negative net worth compared to only 14.3% of the time when faced with a decision among those with positive net worth (Mann-Whitney U test, $Z = 3.52$, $p < .001$). The same pattern persisted when stating which information was more important for choosing a business partner. 70% of participants stated that information about the candidates' assets was more important when faced with a choice among those with negative net worth compared to only 26% when faced with a choice among those with positive net worth (Mann-Whitney U test, $Z = 3.75$, $p < .001$).

In this study, participants expressed a strong preference for information about the contrasting financial component: assets when considering those with negative net worth, and debt when considering those with positive net worth. This explicit focus on the contrasting attribute is particularly striking since additional information about the amount of assets versus the amount of debt held is logically equivalent. Once someone has information about assets and net worth, they can calculate debt and vice versa. Nonetheless, participants expressed greater interest in the contrasting component.

Study 11

This section has examined attention in multiple ways. The current study moves from a measure that explicitly measures the intended focus of attention to one that implicitly measures attention- irrespective of the desired focus – by examining recall for assets and debt. If people are more attuned to contrasting components, it seems probable that this underlying focus would translate into superior recall for these components.

Method

Participants. Two-hundred ten participants were recruited online through Mechanical Turk, and they completed the study for nominal compensation. Participants ranged in age from 18 to 72 (*M* = 33), were 41% female, and had mean household income in the $35,000-$50,000 range.

Design and Procedure. Participants were told to read the passage that followed carefully, and to pay attention to important details. They then read one of two descriptions[4] about a person, including information about his financial state. For example, they read:

Joe has worked as an electrician for the bulk of his career, and his wife has worked as a substitute teacher. Joe's family has a total of $34,000 in debt and $9,000 in savings. They live in a rented apartment outside of Boston, Massachusetts, with their two children.

Joe is an avid Red Sox fan. He owns 17 books about the Red Sox, and has been to 54 Red Sox games at Fenway Park. Joe also loves coaching his kids' baseball teams. When he isn't working or involved with baseball, Joe loves to go for long runs, and he is currently training to run in the Chicago marathon this fall. Joe's favorite movie is the Godfather.

After reading this description, participants completed an unrelated task for approximately three minutes before being asked a series of follow up questions. Central to the investigation at hand, participants were asked: "Please recall the total amount [Joe's] family has in savings (in dollars) from the first passage you read, " and "Please recall the total amount [Joe's] family has in debt (in dollars) from the first passage you read." Additionally, participants were asked to recall whether the total amount that the character's family had in savings was more, less, or the same as the amount that they owed in debt, and also had the option to state that they did not remember, see Appendix L for additional details.

Results and Discussion

Overall, 94% of participants correctly recalled whether the person they read about held positive or negative net worth, suggesting that people were processing this background information. Across conditions, participants were better at recalling both asset and debt information after reading about a person given one set of experimental values ($9,000 and $34,000) than the other

($34,000 and $82,000), correctly recalling 81% of assets and 82% of debt information given the lower values and 66% of assets and 68% of debt values given the higher values (Mann-Whitney U test, *Z*s = 2.53 and 2.54, *p*s = .011 and .017 for differences in recall for assets and debt respectively). However, there was no interaction between the numbers presented and the ability to recall assets relative to debt either across questions, or within positive and within negative scenarios (Mann-Whitney U test of the difference between correct recall of assets and debt, all *Z*s < .60), and so results were combined for subsequent analysis.

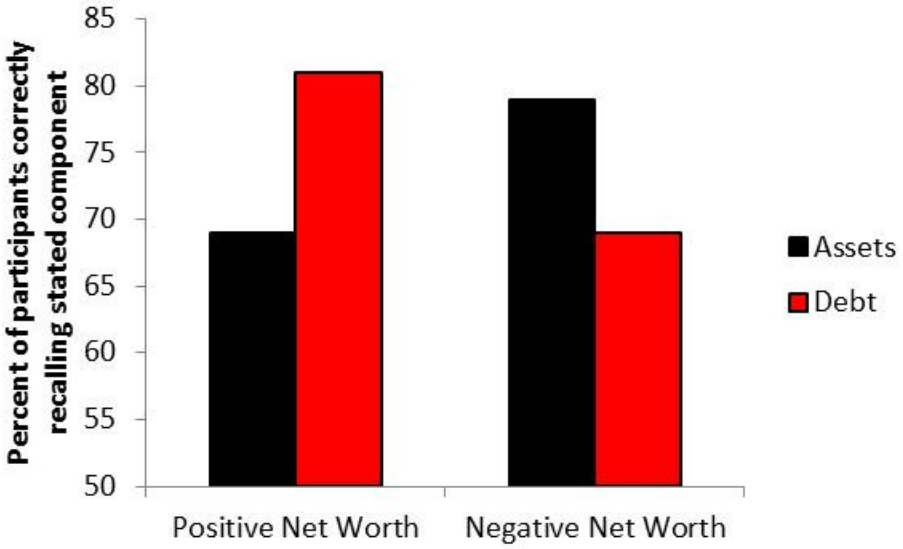


Figure 6. Percent of participants correctly recalling the stated component as a function of whether the person in the passage they read had positive or negative net worth in study 11.

Across questions, participants were more likely to correctly recall debt than assets after reading a passage about someone with positive net worth (81% vs. 69% respectively, Wilcoxon $Z = 2.98$, $p = .003$), but more likely to recall assets than debt correctly after reading a passage about someone with negative net worth (79% vs. 69% respectively, Wilcoxon $Z = 2.04$, $p = .041$), see Figure 6. These results provide additional support for the hypothesis that participants

implicitly attend more to the contrasting component of wealth (i.e., debt when net worth is positive, assets when net worth is negative), and that this difference in attention is strong enough to generate downstream consequences in the case of memory.

It is worth noting that the contrasting component is mathematically equivalent to the smaller number, so it is also true that recall in each case is better for the smaller value. The current experiment aimed to control for this to the extent possible by including different number combinations to demonstrate that recall for a specific number, or for a single-digit over a double-digit number was not driving the difference in memory. Since the smaller number is also the contrasting component, it is impossible to separate the results here from increased recall for smaller over larger numbers. However, it seems reasonable to suggest that attention to one would be consistent with attention to the other (greater attention to the contrasting component and greater attention to the smaller value), rather than requiring an either-or account.

Study 12a

Through first reactions (study 9), directed information search (study 10), and recall (study 11), I have provided evidence that people are more likely to attend to assets when contemplating the finances of someone with positive net worth and debt when contemplating the finances of someone with negative net worth. If a shift in attention causes the difference in preferences across positive and negative net worth contexts, then altering the focus of people's attention should change subsequent preferences. Understanding ways to shift preferences has additional benefits in the form of potential importance for policy.

Here, I aim to reduce a preference for higher debt and higher asset profiles among those with negative net worth by drawing attention to debt. Since attention examined in this paper is

beyond a strictly perceptual level, and instead includes higher order cognitive and semantic content, the manipulation in the current study goes beyond perceptual highlighting and instead aims to shift focus by emphasizing the importance of debt in a meaningful way. Specifically, the experimental manipulation aims to draw participants' attention to what it means to hold debt, namely how much time they would need to spend working to repay it.

Method

Participants. Eighty-two participants were recruited online through Mechanical Turk, and they completed the study for nominal compensation. Participants ranged in age from 19 to 62 (M = 38)[5], and had mean household income in the $35,000-$50,000 range.

Design and procedure. Participants were initially instructed: "On the following pages, you will be presented with information about pairs of people. Imagine that the two people are in similar financial situations, but that they differ in the ways described." Then, they were presented with six questions, on consecutive pages that took the form of a grid containing financial information about two men that included the amount of assets and debt that they each held, along with their hourly wage. For the target question, placed first in the survey, the total amount of net worth and hourly wages were equal for both men although the amount of assets and debt held varied within the question, as in earlier studies. Participants selected which of the two men they thought was better off financially. The next five questions were formatted similarly with financial profiles about different characters and the same question about who was better off financially. These questions were included to distract participants from the values used in the initial question. The valence of net worth (positive or negative) was held constant within participants, and randomly assigned across participants.

Next, as the seventh question, participants saw the same financial information as in the initial target question and again chose who they thought was in a better financial position. This time, the values were tied to new profile names, and an additional column was included that calculated the number of working hours needed to repay debt for each profile, see Figure 7 for an example; see Appendix M for details. Note that this column equaled the total debt divided by hourly wage, each of which had been provided to participants in the first question. Participants did not receive any new information, and they could have made the same calculation given values contained in prior studies. However, the additional column drew participants focus to what it means to hold debt; namely, the amount of time someone would have to spend working to repay it.

	Total Assets	Total Debt	Hourly Wage	# of working hours needed to repay debt
John	$20,000	$15,000	$15/hr	1,000
Larry	$5,100	$100	$15/hr	7

Figure 7. An example of the financial information provided to participants in a question that included the calculation of the number of working hours needed to repay debt in Study 12a. Participants saw the same table as part of the first question in the survey, but with profile names and orders changed, and the final (rightmost) column omitted.

Results and Discussion

In the initial target question, when no calculation was provided, the basic pattern from earlier studies persisted, see Figure 8. Participants considering profiles of those with equal positive net worth were more likely to judge the person with lower assets and lower debt to be better off than those considering profiles of those with equal negative net worth (85.7% vs. 47.5% for positive and negative judgments respectively, Mann-Whitney U test, $Z = 3.66$, $p < .001$). However, once

the calculation was provided for participants, this difference disappeared entirely. Participants considering profiles with positive net worth and those considering profiles with negative net worth both expressed a preference for the profile with lower levels of assets and lower levels of debt (83.3% and 84.6% respectively; one-sample Wilcoxon *Z*s compared to 50% = 4.63 and 4.32, *p*s < .001). Furthermore, there was no longer a difference in judgments across positive and negative net worth questions (Mann-Whitney U, $Z = .16$).

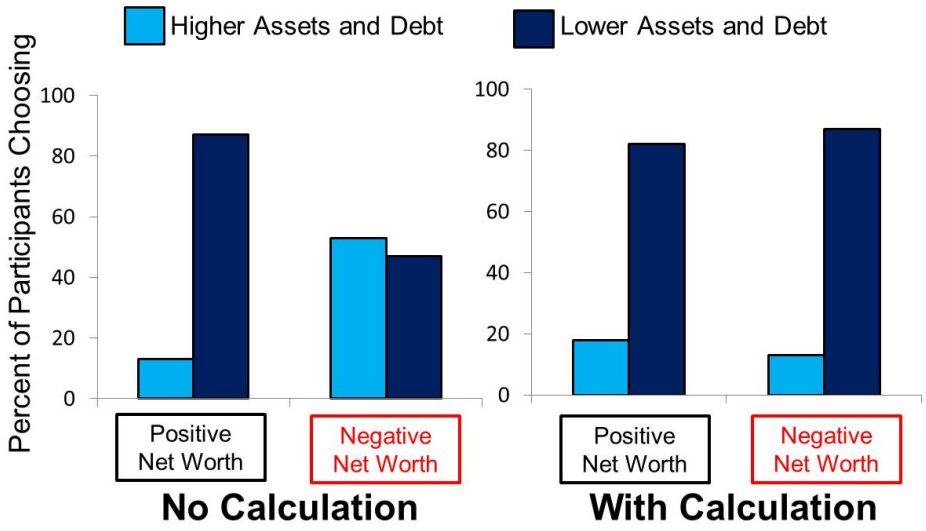


Figure 8. Percent of participants choosing the profile with higher asset and debt levels versus lower asset and debt levels as better off financially in Study 12a as a function of whether net worth was positive or negative and whether a calculation of the number of hours required to repay debt was provided to participants.

These findings provide additional support for the hypothesis that increased attention to assets relative to debt among those in the red accounts for at least some of the preference for higher asset and higher debt profiles. Drawing attention to debt by encouraging participants to focus on the number of working hours they would need to repay it reversed the preference for additional assets among those with negative net worth. This intervention provides insight for

policy-makers aiming to help those struggling with high levels of debt. It suggests that disclosures emphasizing consequences of additional debt (e.g., through regulation such as minimum payment disclosure requirements in the Credit CARD Act of 2009 or through voluntary reports of similar information) could be effective in reducing debt, and may be especially helpful for low income populations.

While potential consequences for debt repayment are robust, factors other than attention could also have been contributing to the shift in preferences. One possibility is that pragmatic demand characteristics could have differentiated participant responses in the two cases. This would be the case if participants concluded that the addition of a column with a calculation related to debt implied that the experimenters intended them to place additional weight on this factor in their decision. Importantly, a different version of this study included a similar design, but with a column calculating the number of working hours needed to earn assets, rather than to repay debt. This study should have elicited parallel demand characteristics causing participant to favor assets over debt in their responses. However, this version was not effective in shifting patterns towards higher debt and higher asset profiles, providing evidence that pragmatic demand characteristics were unlikely to have caused the change in observed patterns in Study 12a. Instead, this manipulation seems to involve a shift in higher-order attention that makes the asset or debt information more meaningful.

Separately, it is possible that this manipulation increases the perceived meaningfulness of debt by altering perceptions of the magnitude of debt. However, if this were the case, it would operate to some degree through additional weighting of debt in the decision, and serve as evidence that differential weighting of assets and debt does influence perceptions of wealth. The next study relies on a different calculation entirely to shift attention towards assets, the number

of months' spending that assets would pay for. Thus, while it does not rule out a change in meaning as a partial explanation for the observed shift in patterns, it does provide variation in the meaning conveyed through the experimental manipulation and evidence that the results observed in Study 12a are not specific to the wording used to convey the meaning of debt.

Study 12b

If shifting attention to debt reduces the preference for higher asset and debt profiles in cases of negative net worth, then shifting attention to assets should have the reverse effect, increasing the preference for higher asset and debt profiles in cases of positive net worth. While reminding people of the number of working hours needed to repay debt has meaning in the context of drawing attention to debt, reminding people of how long their assets will be able to pay for regular living expenses has meaning in the context of drawing attention to assets.

Method

Participants. Eighty-one participants were recruited online through Mechanical Turk, and they completed the study for nominal compensation. Participants ranged in age from 19 to 66 (M = 29), and had mean household income in the $35,000-$50,000 range.

Design and procedure. The design of this study paralleled the design of study 12a with two central distinctions. First, rather than including a column equating hourly wage, the current study included a column stating monthly expenses; these expenses were stated as equal for both profiles presented in the target questions, see Appendix N for details. Additionally, in place of the column that calculated the number of working hours needed to repay debt, this study included a calculation of the number of months that assets would pay for, which could be

computed by dividing the total amount of assets held by monthly living expenses, see Figure 9 below. The two studies were identical in all other respects.

	Total Assets	Total Debt	Monthly Expenses	Number of Months Assets Would Pay For
John	$20,000	$15,000	$3,300	6.1
Larry	$5,100	$100	$3,300	1.5

Figure 9. An example of the financial information provided to participants in a question that included the calculation of the number of months assets would pay for in Study 12b. Participants saw the same table as part of the first question in the survey, but with profile names and orders changed, and the final (rightmost) column omitted.

Results and discussion. In the initial target question, when no calculation was provided, the basic pattern from earlier studies persisted, see Figure 10. Participants considering profiles of those with equal positive net worth were more likely to judge the person with lower assets and lower debt to be better off than those considering profiles of those with equal negative net worth (82.5% vs. 39.0% for positive and negative judgments respectively, Mann-Whitney U test, $Z = 3.98$, $p < .001$). This overall pattern persisted after explicitly providing the calculation for participants (39.0% vs. 14.6% choosing the lower asset and debt profile for positive and negative judgments respectively, Mann-Whitney U test, $Z = 2.55$, $p = .011$).

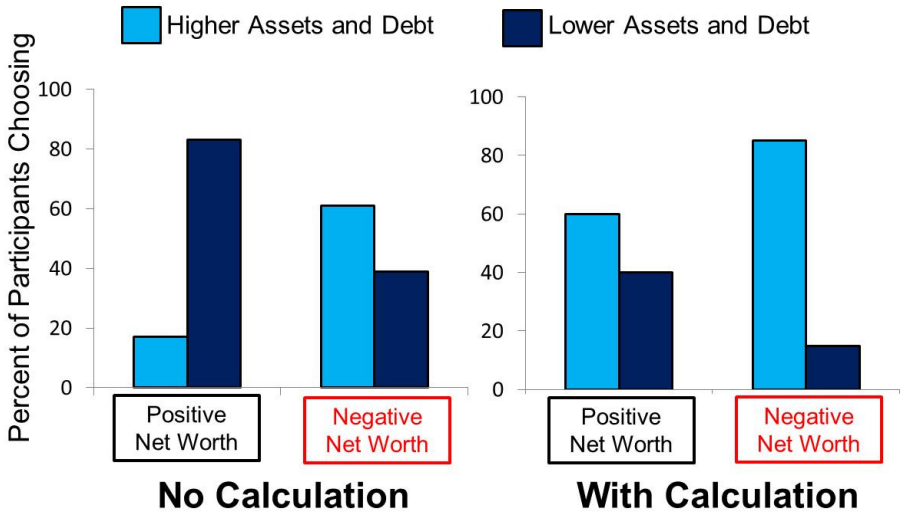


Figure 10. Percent of participants choosing the profile with higher asset and debt levels versus lower asset and debt levels as better off financially in Study 13b as a function of whether net worth was positive or negative and whether a calculation of the number of hours required to repay debt was provided to participants.

However, the overall preference for profiles with higher assets (and correspondingly higher debt) increased significantly both for those evaluating positive and for those evaluating negative net worth profiles (Wilcoxon *Z*s = 3.90 and 2.89, *p*s <.001 and =.004, for evaluations of positive and negative profiles respectively). Although the difference across preferences in cases of positive versus negative net worth persists, this change demonstrates that calling attention to what it means to have assets can shift preferences towards higher asset and debt profiles with equal levels of net worth. Furthermore, these results build on findings from Study 12a to show that different methods for drawing attention to the components of net worth at a high level have the ability to shift preferences. This change is not tied to one specific instantiation of meaning for debt, but to various methods of increasing prominence and importance of individual components.

This section has provided evidence that attention plays a role in altering perceptions of wealth when net worth is held constant, but asset and debt levels vary. The data presented here

suggests that both automatic (e.g., recall – study 11) and deliberate (e.g., directed information search – study 10) processes draw people's attention to the contrasting component of wealth: debt (the negative component) when net worth is positive and assets (the positive component) when net worth is negative. This shift in attention can account for preferences for lower levels of assets among those with positive net worth—given greater attention to the corresponding debt levels—and for preferences for higher levels of debt among those with negative net worth—given greater attention to the corresponding asset levels.

While this section does not isolate attention to the exclusion of other mechanisms, it does demonstrate that attention shifts across contexts and that directing higher-order attention towards assets or debt has the potential to alter people's preferences. Thus, by determining situations where people may be inclined to avoid financially beneficial debt (e.g., student loans, tax incentivized mortgages) or to take on financially detrimental debt (e.g., credit card debt, payday loans) and highlighting the value of additional assets or the pain of additional debt respectively, policymakers can help counteract poor decisions that result from the natural pattern of focus.

Part IV: Beyond Wealth

In the domain of finances, evidence suggests that people prefer lower assets (a positive attribute) and lower debt (a negative attribute) when net worth is held constant and positive. But, they prefer higher assets and higher debt when net worth is held constant and negative. Part I of this dissertation aimed to rule out any possible normative economic explanation the patterns observed, and Part III has provided a shift in attention as one plausible account underlying some of the change in preferences. If these statements are correct and psychological rather than economic explanations underlie the observed patterns, then it seems possible that the same reasoning would extend beyond assets and debt to other domains where positive and negative components should net against each other.

It would follow that positive attributes receive additional weight when the overall background of the item being considered (positive attributes minus negative attributes) is negative. In contrast, negative attributes receive additional weight when the overall background is positive. The current section explores extensions to additional domains. Specifically, I extend findings to an experimental context where participants are presented with tokens representing wins and losses (study 13), to a task allocating time between pleasant and unpleasant activities (study 14), and finally to the selection of snack bar based on experts' positive and negative attribute ratings (study 15).

The focus of this dissertation is on perceptions of wealth. As such, the current set of studies examining other domains is largely exploratory. At this stage, the goal is to identify patterns of preferences in a variety of areas that mimic those found here for assets and debt.

Additional research will be needed to determine whether the underlying mechanisms leading to these patterns are the same across domains.

Study 13: Roulette

The first extension away from assets and debt maintains a clear mapping to a financial context. Specifically, participants play a game where they win tokens that correspond to financial gains or losses. This game is sufficiently removed from complexities of assets and debt to make broad economic explanations nonsensical, and to provide insight into the pattern's ability to generalize. However, it has the benefit of retaining an uncontroversial, "rational" calculation of worth (dollars won minus dollars lost). Additionally, the current study elicits personal judgments based on personal outcomes experienced during the course of the experiment.

Method

Participants. One-hundred sixty-eight participants were recruited online through Mechanical Turk, and they completed the study for nominal compensation. Participants ranged in age from 18 to 69 (M = 28.8), and 40% were female.

Design and procedure. Participants were told that they would be playing two games, and read the following instructions

> *On the following pages, you will be playing two different games of chance. You will be playing for real money in each of the games. Along the way, you will receive tokens to help you keep track of how much you are winning and losing. You will get one green token for every 10 cents that you win (this money is yours to keep at the end of the game)*

and one red token for every 10 cents that you lose (this is money you will owe at the end of the game).

You will earn $1 for participating in the experiment, and you cannot lose more than $1 in total throughout (so you won't walk away with less than you started with, but you can make more than the base amount).

Participants then played two different versions of a roulette game, the Variable game and the Even-Odd game[6], one after the other, presented in a random order, see Appendix O for additional details. The game was designed so that participants would be randomly assigned to the "high" condition for one game and the "low" condition for the other.

In the Variable Game, participants would see a wheel, similar to a roulette wheel, with sections stating values ranging from 0.50 to -0.50, see Figure 11a. Participants moved a lever to choose a speed for the wheel to spin. Then, they received the amount stated on the wheel when it stopped (in pennies) if the number was positive, and they would owe the amount stated on the wheel when it stopped if the number was negative. For each $0.10 that they won, a green token would appear on the side of the screen and for each $0.10 that they lost a red token would appear. These remained visible on the screen throughout the game. Participants played 10 rounds of this game.

Half of participants were randomly assigned to the condition with positive payouts, and half to the condition with negative payouts[7]. Payouts were randomized throughout the 10 rounds of the game subject to the following, predetermined outcome: in the high condition with positive payouts, the sum of participant wins would equal 12 green tokens ($1.20) and the sum of participant losses would equal eight red tokens ($0.80), for a net four token ($0.40) gain. These numbers were reversed in the case of the high condition with negative payouts (win eight

tokens/$0.80, lose 12 tokens/$1.20). In the low condition with positive payouts, the sum of participant wins would instead equal only $0.50 and the sum of participant losses would equal $0.10 for a total of a $0.40 gain. Again, these numbers were reversed in the case of the low condition with negative payouts (win one token/$0.10, lose five tokens/$0.50). Thus, the study was designed so that participants would always gain or lose $0.40 at the end of the game, but this outcome would be composed of a higher or lower number of wins and losses.

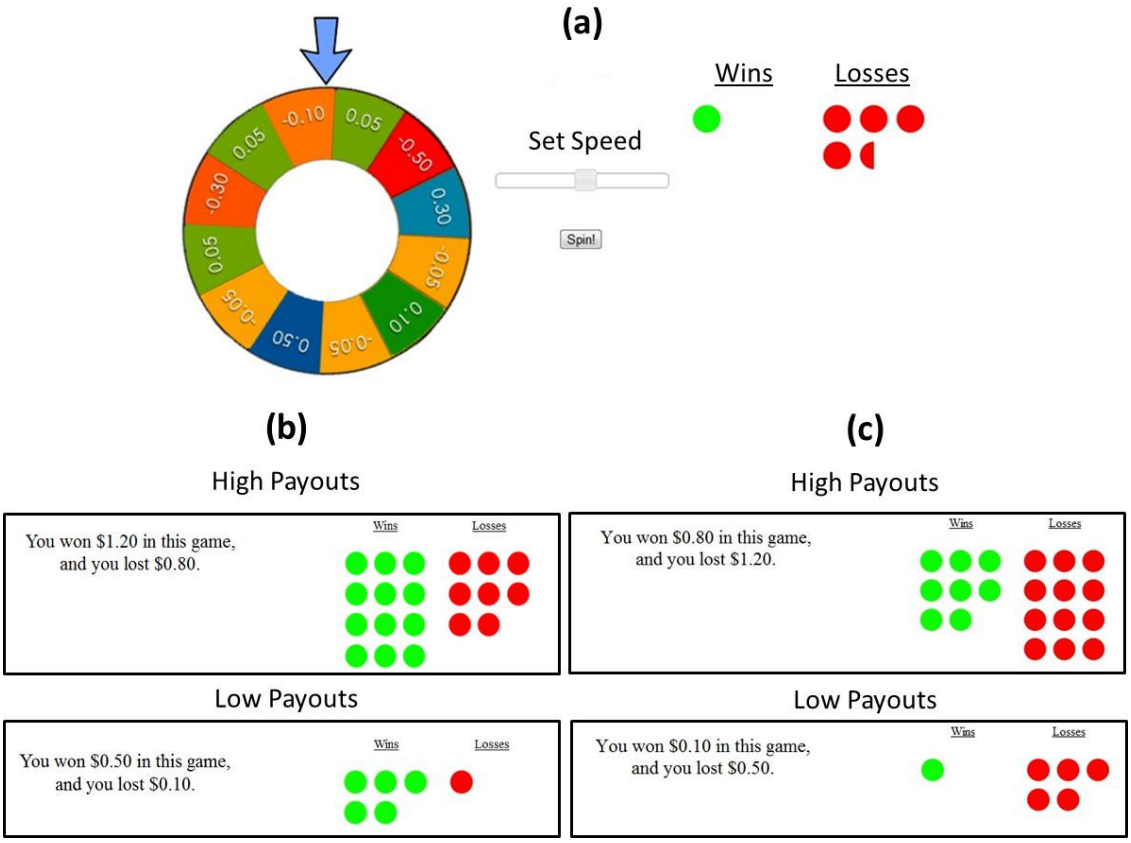


Figure 11. Images taken from the Variable Game in study 13 (a) an image of a participants' screen while completing the game (b) an example of the final screenshot shown to participants in the positive payout cases, as a function of whether they played the high or the low payout condition (c) an example of the final screenshot shown to participants in the positive payout cases, as a function of whether they played the high or the low payout condition. Note that (b) and (c) were identical across the Variable and Even-Odd roulette games. Participants played both versions of the game and saw the high payout screen after one game and the low payout screen after another (after receiving high and low payout outcomes respectively).

After playing this game, a screen would appear that stated their final payouts, both verbally, including amount earned and lost as well as visually, indicating the total number of green and red tokens earned, see Figures 11b and 11c. Participants were then asked to rate their satisfaction with their experience in the game as well as their satisfaction with the final outcomes, each on a scale from one to six, with one indicating "not at all satisfied" and six indicating "completely satisfied".

In the Even-Odd game, participants saw a different wheel similar to a roulette wheel, this time with odd and even numbers on alternating sections. Participants selected whether they thought that the wheel would land on an even or an odd section of the wheel when it stopped, and then set the wheel into motion. If they guessed correctly, a green token would appear on the screen representing a $0.10 win, and would stay on the screen through the remainder of the game. If they guessed incorrectly, a red token would appear on the screen representing a $0.10 loss.

Again, half of participants were randomly assigned to the "high" or "low" condition with positive payouts, and half to the "high" or "low" condition with negative payouts. In the high conditions, participants played 20 rounds of the game. Outcomes of the game with positive payouts were designed to register 12 wins and eight losses in a random order, equivalent to $1.20 of positive payouts and $0.80 of negative payouts, for a net positive payout of $0.40 at the games completion. These numbers were reversed in the case of the game with negative payouts, where participants instead lost 12 rounds ($1.20) and won eight rounds ($0.80), for a net negative payout of $0.40.

Participants in the low conditions played only six rounds of the game, which was designed to register five wins and one loss in a random order, equivalent to $0.50 of positive

payouts and $0.10 of negative payouts, again totaling $0.40 for cases with the positive payout. In the case of the game with negative payouts, this pattern was reversed and participants instead lost five rounds ($0.50) and won one ($0.10), for the same net negative payout again of $0.40. Again, participants always gained or lost $0.40 at the end of the game, but this outcome was composed of a higher or lower number of wins and losses. After playing this game, participants were again asked to rate their satisfaction with their experience as well as with the outcomes of the game. After completing both games, participants indicated which of the two games they thought they did better in.

To summarize, participants played two different games, the Variable game and the Even-Odd game, presented in a random order. One game (randomly assigned for each participant to be either the Variable or the Even-Odd game) had high payouts (±1.20/±0.80) and the other had low payouts (±0.50/±0.10). Within participants, both games had equal net payouts, either net positive (+0.40) or net negative (-0.40). After playing each game, participants rated their satisfaction with various aspects of the game.

Results and Discussion

Within-subject comparisons revealed that participants netting equal positive outcomes were more likely to consider their performance in the game with lower payouts to be better than in the game with higher payouts (76% vs. 24%; one-sample Wilcoxon difference from 50% $Z = 4.80$, $p < .001$). But, participants netting equal negative outcomes were more likely to consider their performance in the game with higher payouts to be better than in the game with lower payouts (81% vs. 19%; one-sample Wilcoxon difference from 50% $Z = 5.67$, $p < .001$).

Additionally, participants netting a $0.40 gain reported being significantly more satisfied with both the experience and the outcome when they received lower positive and negative payouts ($M_{experience}$ = 5.00, $M_{outcome}$ = 5.17) than when they received higher positive and negative payouts ($M_{experience}$ = 4.27, $M_{outcome}$ = 4.02; paired-sample *t*s = 6.44 and 9.35 respectively, *p*s < .001) , see Figure 10. However, this pattern reversed for participants netting a $0.40 loss. These participants instead reported being significantly more satisfied with both the experience and the outcome when they received higher positive and negative payouts ($M_{experience}$ = 1.96, $M_{outcome}$ = 1.68) than when they received lower positive and negative payouts ($M_{experience}$ = 1.40, $M_{outcome}$ = 1.24; paired-sample *t*s = 4.28 and 3.65 respectively, *p*s < .001).

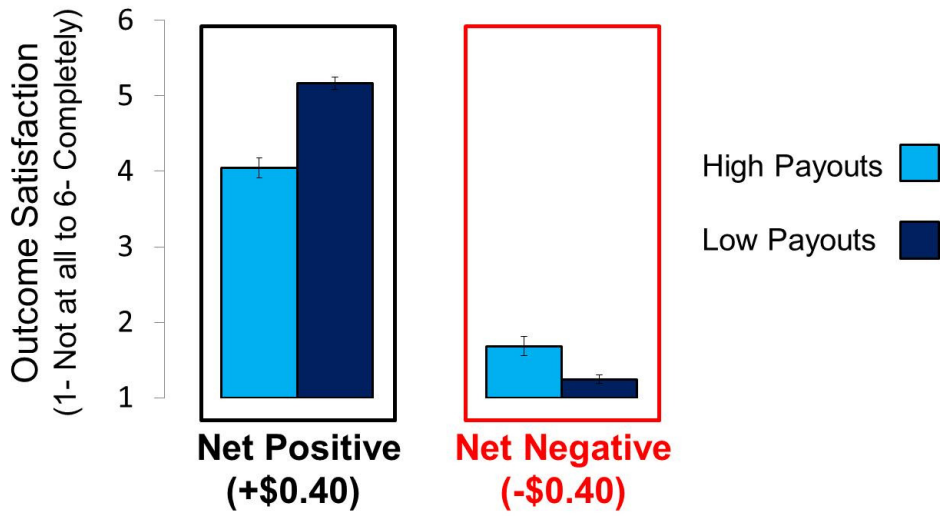


Figure 12. Average participant ratings of satisfaction with the game's outcome collapsed across game type as a function of whether participants received high (±1.20/±0.80) or low (±0.50/±0.10) payouts, and whether the overall payout was positive (+0.40) or negative (-0.40).

Similar patterns emerge when comparing responses from participants playing the same game with different outcomes, see Table 9 for details. A two-way analysis of variance with experience satisfaction in the Variable game as the dependent variable reveals a preference for

positive versus negative outcomes (F= 303.46, $p < .001$, η^2= .65), as expected, and also reveals an overall preference for low versus high payouts (F= 5.12, p = .025, η^2= .03). Importantly, there is a significant interaction between outcome valence and preference for high versus low payouts (F= 20.29, $p < .001$, η^2= .11). A two-way analysis of variance with outcome satisfaction in the Variable game shows the same preference for positive versus negative outcomes (F= 489.45, $p < .001$, η^2= .75), reveals an overall preference for low versus high payouts (F= 18.02, $p < .001$, η^2= .03), and a significant interaction between outcome valence and preference for high versus low payouts (F= 31.91, $p < .001$, η^2= .17).

Examining the Even-Odd game yields similar results. A two-way analysis of variance with experience satisfaction in the Even-Odd game as the dependent variable reveals a preference for positive versus negative outcomes (F= 343.53, $p < .001$, η^2= .69) but no overall preference for low versus high payouts (F= 1.86, *ns*). Importantly, the significant interaction between outcome valence and preference for high versus low payouts persists (F= 12.61, p = .001, η^2= .07). Examination of outcome satisfaction in the Even-Odd game shows the same preference for positive versus negative outcomes (F= 412.95, $p < .001$, η^2= .72), no preference for low versus high payouts (F= .60, *ns*), and a significant interaction between outcome valence and preference for high versus low payouts (F= 28.22, $p < .001$, η^2= .15).

(a)

	Better Performance		**Outcome Satisfaction**		**Experience Satisfaction**	
	High	*Low*	*High*	*Low*	*High*	*Low*
Negative	81%	19%	1.68 (0.12)	1.24 (0.06)	1.96 (0.15)	1.40 (0.08)
Positive	24%	76%	4.02 (0.13)	5.17 (0.08)	4.27 (0.13)	5.00 (0.09)

(b)

	Variable Game				Even-Odd Game			
	Outcome Satisfaction		Experience Satisfaction		Outcome Satisfaction		Experience Satisfaction	
	High	*Low*	*High*	*Low*	*High*	*Low*	*High*	*Low*
Negative	1.49 (.10)	1.30 (0.06)	1.78 (0.13)	1.41 (0.08)	1.92 (0.16)	1.20 (0.09)	2.19 (0.15)	1.40 (0.05)
Positive	3.74 (0.12)	5.09 (0.10)	3.92 (0.14)	5.04 (0.11)	4.30 (0.11)	5.26 (0.07	4.60 (0.14)	4.95 (0.07)

Table 9. Average participant responses in study 13. Panel (a) within-subject participant responses across both games as a function of whether their condition was high versus low payouts, collapsing across game type; the leftmost columns indicate the percent of participants who stated thinking that they did better in each game (b) between-subject participant responses for those randomly assigned to the high versus low payout conditions for each game. Satisfaction was rated on a one to six scale where one indicated "not at all satisfied" and six indicated "completely satisfied. Standard errors are stated in parenthesis.

Overall, patterns of preferences for games with varied positive and negative outcomes, but equal net payouts, paralleled those found for assets and debt in perceptions of wealth. Across a variety of measurements, the preference for lower positive and negative payouts for those with equal net positive outcomes but higher positive and negative outcomes for those with equal net negative outcomes persists. This study begins to generalize the pattern of judgments observed earlier in this dissertation beyond a complex financial setting. It demonstrates that the pattern of preferences found earlier for perceptions of wealth can be found independent of assets and debt. However, it does not explore the underlying reasons for this pattern or suggest that the fundamental mechanisms are the same as for the patterns found in perceptions of global wealth. To the extent that the underlying mechanisms are the same, this examination excludes possible alternative explanations such as attributions to individual characteristics or circumstances responsible for causing a particular financial state, motivational accounts, or economically rational accounts about future behavior, which seem unlikely in the context of this controlled and isolated game.

Study 14: Allocating Time

Study 13 provided evidence that the pattern of preferences initially demonstrated around perceptions of wealth can be found with respect to positive and negative payouts in a game of chance. That examination benefitted from a controlled setting with explicit scoring systems in which positive and negative attributes were defined with purely equal valence and netted against each other for a normatively clear outcome. These controls were critical for establishing the robustness of the pattern beyond assets and debt and have parallels to real world situations such as gambling.

However, many decisions that people make involve tradeoffs between positive and negative attributes that are more complex and less clearly aligned. In the current study, I examine how participants choose to spend their time across pleasant and unpleasant activities. I recognize that there are many possible ways of valuing time spent on individual activities as well as aggregating the value of time spent on a range of activities. The current study begins investigation of this topic by equating time in an additive fashion, irrespective of normative claims. Within questions, the choice sets equate the total number of time spent on pleasant minus unpleasant activities, but vary the total amount of time spent on each. A person who chooses between options allowing for more time overall on pleasant versus unpleasant activities can be considered as net positive and vice versa.

Method

Participants. Forty participants were recruited online through Mechanical Turk, and they completed the study for nominal compensation. Participants ranged in age from 18 to 60 (M = 34.1), and 48% were female.

Design and procedure. Participants were initially instructed: "In the upcoming days, the people listed below will be spending time doing the following activities. Based only on these activities, please indicate which person you would rather trade schedules with." Participants then saw six different pairs of people presented in a random order, and chose which person they would rather trade schedules with for each one. Each question was designed so that the difference between time spent on pleasant and unpleasant activities was equal for both options within a given question. The difference was positive for half of the questions, and negative for the other half, and each of three different sets of items appeared twice, once with more time on the pleasant than unpleasant activity, and once with more time on the unpleasant than pleasant activity.

The pleasant activities included were (1) a massage (2) catching up with friends and (3) a fancy dinner out, and their paired unpleasant activities were (1) spending time in traffic (2) cleaning and (3) working over the weekend, see Appendix P for additional details. For example, participants would choose between: Jane, who gets to enjoy a 40 minute massage, and has to spend 60 minutes stuck in traffic and Samantha, who gets to enjoy a 10 minute massage, and has to spend 30 minutes stuck in traffic. In another question, they would choose between Sarah, who gets to enjoy a 60 minute massage, and has to spend 40 minutes stuck in traffic and Mary, who gets to enjoy a 30 minute massage, and has to spend 10 minutes stuck in traffic.

Results

Patterns for preferences around spending time on pleasant and unpleasant activities were consistent with those found for positive and negative attributes generally in earlier studies. For each question presented, participants were more likely to state that they would trade places with the person spending more time on both pleasant and unpleasant activities when the net amount of time spent on pleasant activities was negative than when it was positive, see Table 10. Across questions, 57% of participants selected the higher pleasant and higher unpleasant profile when considering net pleasant profiles (i.e., profiles with positive net worth) compared to only 23% when considering net pleasant profiles (i.e., profiles with negative net worth; Wilcoxon $Z = 4.26$, $p < .001$).

Activities	Net Pleasant	Net Unpleasant	Wilcoxon *Z*	*P*
Massage/Traffic	15	40	2.67	0.008
Friends/Cleaning	28	65	3.27	0.001
Dinner/Work	25	65	3.41	0.001
Overall	23	57	4.26	<0.001

Table 10. Percent of participants stating that they would trade places with the person spending more time on both pleasant and unpleasant and unpleasant activities for each question in study 15 as a function of whether the net amount of time spent on the pleasant minus the unpleasant activity is positive (net pleasant) or negative (net unpleasant).

This study extends findings away from finances entirely, to show the same pattern of preferences in cases that are relevant for daily decisions about spending time. It demonstrates that the pattern observed earlier can be found in situations divorced from assets and debt. While this extension is an interesting demonstration of a parallel pattern, normative principles around measurement of spending time are unclear. However, this study generalizes the pattern of results beyond cases with features that can be cleanly aligned and shows that the patterns can persist

even when the positive and negative features (i.e., time spent on each activity) are less strictly comparable.

Study 16: Product Choice

In addition to choices about how to spend time, people often choose which products to purchase, which restaurant to dine in, or which movie to watch, based on ratings on a range of relevant attributes. Each attribute may be given a positive, negative, or neutral rating by experts or prior customers (e.g., Consumer Reports). The current experiment was designed to examine whether the patterns found throughout this paper would be found in cases where people are choosing products based on expert ratings. Using an incentive compatible design, the experiment presented people with the option to choose a snack bar that had equal net ratings (i.e., number of positive attributes minus number of negative attributes), but varied in the total number of positive and negative attributes stated. As payment for completing the survey, participants were given the snack bar that they selected to keep. Consistent with previous findings, I hypothesized that participants would be more likely to select the snack bar with more positive and more negative attributes when the net ratings were negative than when they were positive. As in Study 15, normative evaluations are again unclear in this case. The examination begins here using an additive measure, although future studies may investigate variations on this.

Method

Participants. Ninety-four participants (58% female; age range = 18-82 years, mean = 34, *SD* = 18) were recruited as they were walking by a table in the student center at Princeton University[8].

Participants approached the table with two baskets of snack bars displayed and agreed to take a short survey in exchange for the snack bar of their choice.

Design and procedure. The survey consisted of one question relevant to an unrelated experiment, followed by the question of interest. Participants read: "The bars on the table have been rated by 3 expert judges on a variety of positive and negative features, ranging from flavor to nutritional value. Their overall ratings are shown beside each bar. Please take a moment to decide which bar you would rather try based on the ratings displayed. Circle the label of the one you'd like below, and return this page in exchange for the bar you've marked." Participants marked their response, indicated basic demographic information, and returned the survey. They were then given the bar they selected to keep, see Appendix Q for details.

The bars in each of two baskets on the table were very similar in appearance and kind (two varieties of generic brand chocolate chip granola bars), but differed in the color of their packaging. A chart displaying ratings for the bars was displayed in front of each basket, as shown in Figure 13. The ratings were listed in terms of positive and negative features (labeled as "plusses" indicated by checkmarks and "minuses" indicated by crosses respectively). They were designed so that the total number of positive features minus the total number of negative features was equivalent across the two bars displayed. However, one bar (the high attribute bar), had a higher number of both positive and negative features than the other (the low attribute bar). In the positive condition, the bars each had more positive features than negative features. In the negative condition, the bars each had more negative features than positive features. The two conditions were displayed one at a time, with the rating displays rotating every 30 minutes over a five hour period from 10am to 3pm. The labeling of Bar A and Bar B and the order of ratings (whether plusses or minuses appeared on the top of the display), was counterbalanced.



Figure 13. Example of ratings displayed in front of each basket of bars. In this example, Bar A is the high attribute bar, with 8 plusses and 4 minuses while B is the low attribute bar, with 5 plusses and 1 minus. Each bar nets 4 positive attributes.

Results and Discussion

Participants were significantly more likely to choose the high attribute bar (more positive and more negative features) in the negative condition (60%) than in the positive condition (27%; Mann-Whitney U test, $Z = 3.21$, $p = .001$), consistent with our hypothesis. In the negative condition, although directionally more than half of participants chose the high attribute bar, this difference was not reliably different from 50% (binomial test, $p = .222$). In the positive condition, significantly fewer than half chose this bar ($p = .002$). Throughout this section, I have provided examples of additional cases where patterns of preferences for positive and negative attributes mimic those for assets and debt in perceptions of wealth. While additional research will be needed to determine underlying mechanisms and continuity of mechanisms across domains, the observed patterns manifest in a variety of contexts.

General Discussion

Although net worth is generally accepted as a concrete measure of financial wealth, I have provided substantial evidence that this value is an imperfect marker of perceived wealth. The first section of this dissertation demonstrated that people with equal positive net worth feel, and others perceive them as, wealthier when they have lower levels of debt, despite correspondingly lower levels of assets. In contrast, people with equal negative net worth feel, and others perceive them as, wealthier when they have higher assets, despite correspondingly higher levels of debt. This section focused on a series of experiments designed to isolate and investigate the pattern in a controlled setting involving various dependent variables and various definitions of assets and debt. It also called upon a large, nationally representative survey to provide evidence that this pattern can also influence how people think about their wealth in their daily lives. The second section demonstrated that this pattern influences not only how people feel about their wealth, but also how they behave and are treated by others. Specifically, these patterns can influence important financial behaviors including spending, borrowing, and lending. Through a series of studies including first reactions, recall, and directed information search, the third section provided evidence that a shift in attention towards the contrasting attribute (debt in the case of positive net worth and assets in the case of negative net worth) contributes to the observed pattern. Finally, the fourth section extended patterns found in perceptions of wealth to a broader range of domains that encompass positive and negative features that can net against each other, including gains and losses in a game, allocating time between pleasant and unpleasant activities, and choosing a product based on positive and negative attribute ratings.

Contrasting Features

I have provided evidence that a shift in attention from debt for those with positive net worth to assets for those with negative net worth, contributes to the observed pattern of preferences for asset and debt levels. While not necessarily calling upon attention, research from a variety of perspectives within cognitive and social psychology are consistent with the intuition that the contrasting attribute would gain additional weight in judgments and decisions. Specifically, prior research in psychophysics, information processing, models of assimilation and contrast effects, and norm theory are all consistent with the outcome that people weight negative aspects of wealth more against an overall positive background, but weight positive aspects of wealth more against an overall negative background.

First, the pattern of preferences for varied levels of assets and debt described above is consistent with the psychophysical phenomenon of diminishing marginal sensitivity, in which the noticeable difference between two stimuli is proportional to the magnitude of the stimuli (i.e., Weber's law). For example, lighting a match in a dark room (where the proportional addition of light is high) would provide a highly noticeable difference in the room's brightness. In contrast, lighting a match in an already bright room (where the proportional addition of light is low) might not provide any noticeable difference in the room's brightness. In the case of judgments about wealth, this could be extended to imply that an additional dollar of assets should be less perceptible when it is added to a higher base of assets, and similarly, an additional dollar of debt should be less perceptible when it is added to a higher base of debt. Those who have positive net worth have more assets than debt by definition. Thus, an additional dollar for someone with positive net worth would be less perceptible (and receive less attention) than an additional dollar of debt (which would receive more attention). The reverse would hold for someone with

negative net worth. Diminishing marginal sensitivity is a well-established, fundamental psychological principal that is likely to play a role contributing to a shift in attention as well as the overall patterns of preferences observed across many settings.

A different avenue of research consistent with a similar set of preferences comes from research on the effect of extremity biases in information processing (e.g., Helson, 1964; Sherif & Sherif 1967; Skowronski & Carlston, 1987, 1989). For example, in adaptation theory, prior experience influences the neutral reference point. When a new piece of information is encountered, the magnitude of the new information is encoded relative to that updated reference point. Applying this reasoning to the case at hand, the anchor may move towards the "positive" end of the spectrum for someone with positive net worth, but to the "negative" end of the spectrum for someone with negative net worth. If later judgments of wealth are made in relation to the adapted anchor, the negative debt component may be perceived as more negative while a positive component may be perceived as less positive when the anchor has been updated to a positive value (in cases of positive net worth). In contrast, the positive asset component may be perceived as more positive, and the negative debt component may be perceived as less negative when the anchor has been updated to a negative value (in cases of negative net worth).

Other work in assimilation and contrast, such as the inclusion/exclusion model posited by Schwarz and Bless (1992), is also consistent with a similar pattern of overweighting the contrasting feature. In this model, information's perceived representativeness for the target item under consideration serves as one central component determining how this information is used. While information that is used in forming a representation of the target leads to assimilation, contrast effects are expected to emerge whenever the information that comes to mind is excluded from the target category. Again, applying this logic to the current situation, if people's initial

representation of a person is as someone with net positive wealth, additional information about assets (more positive wealth) should lead to assimilation. However, additional information about debt should lead to contrast and subsequently greater weighting of the feature. The same logic would also apply in the reverse, to cases where the initial representation is of those with negative net worth.

Finally, research on norm theory (Kahneman & Miller, 1986) is also consistent with the notion that the contrasting feature would receive disproportionate weight in a judgment. According to this theory, people generate ad hoc norms by calling upon specific representations of similar items. New information is then compared to these norms, and information that is inconsistent with these norms will be evaluated as more surprising. In the context of perceptions of wealth, someone with positive net worth might bring forth a broad category of "people who have assets" as the norm for comparison. Learning that this specific person with positive net worth has assets would be unlikely to elicit a strong additional reaction relative to learning that the same person has debt. Thus, because possession of debt would be outside of the norm evoked for the group of "people who have assets", this information would be likely to receive additional weight.

Similarly, without operating through contrast or differential weighting, many of the patterns observed in this paper would also be consistent with those resulting from a strategy that maximizes the asset to debt ratio (e.g, Bartels, 2006; DeLanghe and Puntoni, unpublished; Kahneman and Tversky, 1984). This would potentially involve people processing information at the multiplicative level of the ratio of positive to negative (or negative to positive) attributes rather than at the additive level of assets minus debt. This is a function of the specific stimuli examined here, rather than a testament to the power of processing ratios. Specifically, the

numbers examined in this paper were explicitly designed to maintain net worth levels at or near equality across profiles to provide interesting analysis of asset and debt levels. Holding net worth constant, a ratio account yields predictions that are mathematically indistinguishable from those predicted by a shift in attention. However, it seems implausible that people are generating their responses solely by relying on a ratio metric. A simple thought experiment shows that people are likely to have a strong preference for a financial profile with $2,000 in assets and $1,000 in debt over one with $200 in assets and $100 in debt, despite their equal asset to debt ratios. In this example, neither an attentional account nor a ratio account can predict the expected pattern. I do not claim that computations based on ratios play no role in the observed pattern, but that ratios cannot fully account for the data observed throughout this paper. In particular, a ratio account does not explain why people would have more interest in learning additional information about the contrasting component, or have better recall for the contrasting component absent any possibility for comparison of ratios. Nor does a ratio account explain why people would change their preferences from the high to the low profile (or vice versa) when the ratio of assets to debt stays the same but the calculation of time needed to repay debt (or the amount of time assets would last). In each of these cases, a shift in attention provides a better explanation of the observed data than a pure ratio account.

As described, several different lines of research are consistent with the patterns reported here. Many observable patterns are likely to be multiply determined. I believe that several of the accounts described here are interrelated phenomenon, examined at different levels of analysis, and applied to different domains. Given the complexity of the issue at hand (e.g., involving both social elements and numeric calculations), each might play an independent role in contributing to the observed pattern, an area that I consider important for future investigation.

However, in this dissertation, I have focused on a shift in attention (broadly defined) to account for the phenomenon I have enumerated here. This mechanism can be separated from the underlying mathematics that define the questions at hand. Importantly, understanding this mechanism may enable shifts preferences in ways that can be beneficial for people and policy.

Additional Explanations

In addition to attention or other accounts built around contrasting features, a range of content-specific explanations could be raised as alternatives that account for this pattern in perceptions of wealth. If studies in Part IV, extending patterns beyond assets and debt, are driven by the same underlying mechanisms as those for perceptions of wealth, this would make this argument an incomplete explanation of the findings. However, I will briefly review the possibilities here as they apply to perceptions of wealth. First, through intricate accounting schemes, one could contrive situations in which the obtained patterns—preference for higher assets in contexts of negative net worth and for lower debt in contexts of positive net worth—are somehow economically justified. For example, a potential borrower with negative net worth may view greater debt (to afford greater assets) as worthwhile if the borrower expects to declare bankruptcy and never repay the debt. However, the prospects of bankruptcy, high transaction costs, and assorted other financial considerations were never mentioned in these studies, by the experimenters or the participants, and are unlikely to have played a significant role. In reality, people in the red would likely face higher interest-rate debt and lower-return investment opportunities, which make additional debt financially unappealing, whereas those in the black would have access to lower interest rates and better investments, which might encourage additional debt. Instead, we found the opposite pattern. Furthermore, these explanations are

inconsistent with participants' judgments of who was best equipped to receive a loan, and with preference reversals that occur when net worth shifts from slightly positive to slightly negative, situations that, financially, are quite comparable.

Alternatively, differences in forms of assets and debt (mortgage, credit card, etc.), economic conditions, and personal characteristics, among others, can all influence the perception of wealth. Nonetheless, these studies controlled for many of these factors and obtained a persistent pattern that seems to capture an important aspect of the perception of wealth.

Behavioral research has also documented several patterns of differential accounting for negative and positive contexts reminiscent of those shown here. Prospect theory (Kahneman & Tversky, 1979), for example, famously distinguishes between gains and losses. However, prospect theory is not about wealth, but rather about departures from current reference points, and it is consequently difficult to apply this theory's insights to the current setup. Assets and debt would need to be coded as gains and losses, a problematic move in which incurring a debt would amount to choosing a loss. Furthermore, loss aversion would suggest that there should often be a preference for smaller amounts of assets and debt over larger amounts (because each unit of loss weighs more than a unit of gain), which would be consistent with half the observed pattern, but inconsistent with the other half.

Along similar lines, Prelec and Loewenstein (1998) have provided an account of debt-averse and debt-seeking mental accounting preferences. This research also provides valuable insights, but differs in focus and applicability from the current work. Notably, Prelec and Loewenstein's theorizing and findings are at the level of specific purchases, and are motivated by the tension between the pain of payment and the pleasure of consumption.

Future Directions

My goal in this dissertation has been first and foremost to present a new and important set of findings around perceptions of wealth. While I have begun to explore mechanisms, the findings themselves have been of central concern. Future research should investigate the role of attention in additional detail as well as explore other mechanisms that may be acting in concert. For example, it seems highly likely that related factors, including perceptual aspects of diminishing marginal sensitivity and heuristic aspects of maximizing asset to debt or minimizing debt to asset ratios plays important roles independent of and interacting with attention. It will be worthwhile to gain a better understanding of each of these accounts. Examining attention more closely, it will be worthwhile to investigate the extent to which this effect is driven by automatic versus deliberate processing, for example by examining the patterns after imposing time pressure or cognitive load. Determining the specific role of a more traditional definition of perceptual attention may also be useful in shifting patterns.

Additionally, future research should continue to investigate the relevance and strength of this pattern in people's everyday lives, for example by examining how asset and debt holdings correlate with real borrowing and spending decisions. Since decisions in people's lives are made in sequence rather than in isolation, additional laboratory experiments involving multi-stage investment and borrowing decisions will be helpful in understanding dynamic aspects of the pattern, and how it might vary when people's net worth moves from positive to negative, or when their asset and debt holdings change.

Finally, this paper has only begun to examine how, when, and why these patterns extend to non-financial domains. While I have provided demonstrative examples of the pattern, additional research will be needed to determine whether these are driven by the same

mechanisms as the financial pattern, specific contexts when the pattern might or might not emerge, as well as methods for shifting the pattern.

Implications

People's net worth carries information about their economic health and capabilities. Particular asset and debt levels, however, can fluctuate liberally without changing net worth. The fact that such fluctuations can influence perceived wealth has nontrivial implications. Along with mental accounting (Thaler, 1985, 1999), the present findings show how the appeal of a loan may depend on one's perceived financial state. For a person who is in the red, a loan may provide an appealing infusion of cash, whereas for a person in the black, it might present an aversive incursion into debt. Conversely, people who are in the black may be tempted to diminish their debt, whereas it may prove unappealing for those in the red to lower their debt at the expense of their few assets.

Remarkably, the same striving for financial wealth and stability can trigger opposing behaviors: preference for greater assets in some circumstances, and for lower debt in others. Such impulses may not always be aligned with what is best financially. People who are in the red and eager to borrow will sometimes have access only to high-interest loans. And people who are eager to clear their debt will sometimes do so even when their debt (e.g., tax-incentivized mortgages) is financially beneficial. Such psychology may be of great consequence. A remarkable 25% of U.S. households had zero or negative net worth in 2009 (for Black households, the figure was about 40%; Allegretto, 2011). Better insight into the determinants of perceived financial wealth and financial decision making could help shape behaviorally informed policy.

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Footnotes

1. Short excerpts and selected studies throughout this paper have been adapted from Sussman & Shafir, 2012. Portions of this work have also been presented, and benefited from feedback from audiences, at the Boulder Summer Conference on Consumer Financial Decision Making, annual meetings of the Association for Consumer Research, the Society for Consumer Psychology, and the Society for Judgment and Decision Making, and seminars at Carnegie Mellon, Columbia, Duke, Harvard, NYU, Northwestern, Princeton, Stanford, UCLA, UCSD, the University of Chicago, the University of Colorado, and the University of Toronto.

2. Since numbers belonged to actual profiles, net worth was matched as closely as possible, erring in the direction counter to the hypothesis.

3. Note that a similar study was carried out among passersby at a local mall in Princeton, with both male and females included as stimuli, and results were qualitatively the same. A higher number of participants were recruited for this study than for many of the others to account for the high number of variations (e.g., positive and negative framing).

4. The first set of participants (N = 111) read the passage described here, with numbers for assets and debt randomized. The second set of participants (N = 99) read a similar passage with different numbers ($34,000 and $82,000) and a different personal narrative, see Appendix L for details. This second set was added to ensure that there was nothing about the specific numbers or description used leading to the pattern of results observed. Running two waves of data in a

between-subjects design led to a greater number of participants in this study relative to many of the others, which had only one wave of data collection and relied on within-subject designs.

5. Information about gender was not collected in this study as a result of experimental error.

6. These names are used for explanatory purposes here only; participants did not see these labels in the experiment.

7. Data was first collected with the high and low positive payout conditions followed by the high and low negative payout conditions, with equal numbers (n =84) in each condition.

8. The study took place over a weekend when college reunions were being held, accounting for the diversity in age among participants on a college campus.

Appendix A
Materials from Study 1
Savings and Loans

Instructions:
In this survey, you will be presented with two sets of financial information and be asked which financial position you would rather be in. For each set of financial information, "Savings" includes money being held in a bank, earning 3% interest. This money can be accessed and used for any expense at any time. "Loans" includes money that has been borrowed, also at 3% interest. This money can be re-payed without penalty at any time. The information described here is a complete picture of possible finances, and includes all financial wealth and obligations. However, in each case you would have the ability to borrow additional money at 3% interest if desired.

Example:
Which financial situation would you rather be in? I would rather have:

- $200 in savings, $44,200 in loans
- $42,100 in savings, $86,100 in loans
- I have no preference

Numbers used:

Order 1:

- $200 in savings, $44,200 in loans vs. $42,100 in savings, $86,100 in loans
- $100 in savings, $24,100 in loans vs. $25,500 in savings, $49,500 in loans
- $27,100 in savings, $100 in loans vs. $53,300 in savings, $26,300 in loans
- $43,200 in savings, $200 in loans vs. $90,400 in savings, $47,400 in loans
-

Order 2:

- $44,200 in loans, $200 in savings vs. $86,100 in loans, $42,100 in savings
- $24,100 in loans, $100 in savings vs. $49,500 in loans, $25,500 in savings
- $100 in loans, $27,100 in savings vs. $26,300 in loans, $53,300 in savings
- $200 in loans, $43,200 in savings vs. $47,400 in loans, $90,400 in savings

Appendix B
Materials from Study 2a
Broad Definition of Assets and Debt

Instructions:
In what follows, you will be presented with several people's hypothetical financial profiles, consisting of their debts and assets. "Assets" refer to the variety of sources that contribute to a person's positive wealth: savings accounts, retirement accounts, car and home ownership, etc. "Debt" includes any money the person owes, which can come in the form of student loans, mortgages, credit card debt, etc. A person's profile may also mention sources of credit, that is, money available for that individual to borrow, if s/he so wishes.

Problem form:
Mr. Green has $A in assets, $B in debt.
Mr. Red has $X in assets, $Y in debt.
They both have [insert additional statement about credit or net worth here]

For each pair of individuals below, please indicate which of the two you would consider better off financially.

Wealth profiles:

Substantial access to credit when needed	
Comparison 1: -$44,000 net worth	
Person 1	$200 in assets, $44,200 in debt
Person 2	$42,100 in assets, $86,100 in debt
Comparison 2: -$24,000 net worth	
Person 1	$100 in assets, $24,100 in debt
Person 2	$25,500 in assets, $49,500 in debt
Comparison 3: +$27,000 net worth	
Person 1	$27,100 in assets, $100 in debt
Person 2	$53,300 in assets, $26,300 in debt
Comparison 4: +$43,000 net worth	
Person 1	$43,200 in assets, $200 in debt
Person 2	$90,400 in assets, $47,400 in debt
Access to an additional $X credit if needed	
Comparison 1: -$34,000 net worth, access to an additional $25,000 credit	
Person 1	$200 in assets, $34,200 in debt
Person 2	$35,300 in assets, $69,300 in debt
Comparison 2: -$16,000 net worth, access to an additional $10,000 credit	
Person 1	$100 in assets, $16,100 in debt
Person 2	$15,500 in assets, $31,500 in debt
Comparison 3: +$14,500 net worth, access to an additional $10,000 credit	
Person 1	$14,600 in assets, $100 in debt

Person 2	$29,000 in assets, $14,500 in debt
Comparison 4: +$33,200 net worth, access to an additional $25,000 credit	
Person 1	$33,400 in assets, $200 in debt
Person 2	$67,200 in assets, $34,000 in debt
Debt withdrawn out of a total credit line	
Comparison 1: -$18,000 net worth, total available credit of $100,000	
Person 1	$100 in assets,$18,100 in debt
Person 2	$19,300 in assets, $37,300 in debt
Comparison 2: -$3,100 net worth, total available credit of $20,000	
Person 1	$50 in assets, $3,150 in debt
Person 2	$3,250 in assets, $6,350 in debt
Comparison 3: +$3,250 net worth, total available credit of $20,000	
Person 1	$3,300 in assets, $50 in debt
Person 2	$6,500 in assets, $3,250 in debt
Comparison 4: +$17,750 net worth, total available credit of $100,000	
Person 1	$17,850 in assets, $100 in debt
Person 2	$39,550 in assets, $21,800 in debt
Total net worth stated	
Comparison 1: -$65,000 net worth	
Person 1	$250 in assets and $65,250 in debt
Person 2	$65,000 in assets, $130,000 in debt
Comparison 2: -$14,000 net worth	
Person 1	$100 in assets and $14,100 in debt
Person 2	$14,150 in assets and $150 in debt
Comparison 3: +$12,500 net worth	
Person 1	$12,600 in assets and $100 in debt
Person 2	$26,000 in assets $13,500 in debt
Comparison 4: +$72,000 net worth	
Person 1	$73,000 in assets, $1,000 in debt
Person 2	$149,000 in assets, 77,000 in debt

Appendix C
Materials for Study 2b
Balance Sheet Details

$17,000 debt

Low

Assets	
Cash	$891
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$26
Home	$0
Other Real Estate	$0
Cars	$0
Personal Property	$500
Other	$0
Total Assets	**$1,417**

Debts	
Home Mortgage(s)	$0
Other Mortgage(s)	$0
Student Loans	$6,190
Credit Card	$5,350
Car Loans	$0
Other	$6,935
Total Debts	**$18,475**
Net Worth	**($17,058)**

High

Assets	
Cash	$12,486
Stocks	$276
Bonds	$0
Annuities	$0
Retirement	$18,471
Home	$182,103
Other Real Estate	$0
Cars	$18,595
Personal Property	$5,350
Other	$0
Total Assets	**$237,281**

Debts	
Home Mortgage(s)	$197,376
Other Mortgage(s)	$0
Student Loans	$44,557
Credit Card	$4,691
Car Loans	$0
Other	$8,127
Total Debts	**$254,751**
Net Worth	**($17,470)**

$17,000 assets-

Low

Assets	
Cash	$0
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$0
Home	$0
Other Real Estate	$0
Cars	$0
Personal Property	$0
Other	$17,659
Total Assets	**$17,659**

Debts	
Home Mortgage(s)	$0
Other Mortgage(s)	$0
Student Loans	$0
Credit Card	$0
Car Loans	$0
Other	$0
Total Debts	**$0**
Net Worth	**$17,659**

High

Assets	
Cash	$5,850
Stocks	$1,900
Bonds	$0
Annuities	$0
Retirement	$20,722
Home	$203,000
Other Real Estate	$15,000
Cars	$12,850
Personal Property	$15,000
Other	$2,972
Total Assets	**$277,294**

Debts	
Home Mortgage(s)	$216,726
Other Mortgage(s)	$0
Student Loans	$7,350
Credit Card	$25,410
Car Loans	$7,577
Other	$2,525
Total Debts	**$259,588**
Net Worth	**$17,706**

$100,000 debt-

Low

Assets	
Cash	$600
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$5,000
Home	$80,000
Other Real Estate	$0
Cars	$15,000
Personal Property	$10,000
Other	$2,400
Total Assets	**$113,000**

Debts	
Home Mortgage(s)	$77,190
Other Mortgage(s)	$0
Student Loans	$122,000
Credit Card	$2,145
Car Loans	$15,961
Other	$13,569
Total Debts	**$230,865**
Net Worth	**($117,865)**

High

Assets	
Cash	$3,038
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$0
Home	$0
Other Real Estate	$0
Cars	$0
Personal Property	$0
Other	$0
Total Assets	**$3,038**

Debts	
Home Mortgage(s)	$0
Other Mortgage(s)	$0
Student Loans	$114,359
Credit Card	$2,114
Car Loans	$0
Other	$0
Total Debts	**$116,473**
Net Worth	**($113,435)**

$100,000 assets-

Low

Assets	
Cash	$77
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$0
Home	$0
Other Real Estate	$0
Cars	$0
Personal Property	$0
Other	$100,000
Total Assets	**$100,077**

Debts	
Home Mortgage(s)	$0
Other Mortgage(s)	$0
Student Loans	$143
Credit Card	$306
Car Loans	$0
Other	$152
Total Debts	**$601**
Net Worth	**$99,476**

High

Assets	
Cash	$1,000
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$21,257
Home	$120,000
Other Real Estate	$0
Cars	$70,000
Personal Property	$0
Other	$0
Total Assets	**$212,257**

Debts	
Home Mortgage(s)	$90,377
Other Mortgage(s)	$19,958
Student Loans	$0
Credit Card	$0
Car Loans	$0
Other	$1,133
Total Debts	**$111,468**
Net Worth	**$100,789**

$5,000 debt

Low

Assets	
Cash	$1,100
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$3,258
Home	$0
Other Real Estate	$875
Cars	$2,000
Personal Property	$0
Other	$0
Total Assets	**$7,233**

Debts	
Home Mortgage(s)	$0
Other Mortgage(s)	$0
Student Loans	$12,551
Credit Card	$0
Car Loans	$0
Other	$0
Total Debts	**$12,551**
Net Worth	**($5,318)**

High

Assets	
Cash	$2,000
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$900
Home	$0
Other Real Estate	$0
Cars	$21,000
Personal Property	$0
Other	$0
Total Assets	**$23,900**

Debts	
Home Mortgage(s)	$0
Other Mortgage(s)	$0
Student Loans	$0
Credit Card	$14,000
Car Loans	$15,400
Other	$0
Total Debts	**$29,400**
Net Worth	**($5,500)**

$5,000 assets

Low

Assets	
Cash	$5,156
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$0
Home	$250
Other Real Estate	$0
Cars	$0
Personal Property	$0
Other	$0
Total Assets	**$5,406**

Debts	
Home Mortgage(s)	$0
Other Mortgage(s)	$210
Student Loans	$0
Credit Card	$0
Car Loans	$0
Other	$500
Total Debts	**$710**
Net Worth	**$4,696**

High

Assets	
Cash	$4,050
Stocks	$0
Bonds	$0
Annuities	$0
Retirement	$14,499
Home	$0
Other Real Estate	$0
Cars	$0
Personal Property	$0
Other	$0
Total Assets	**$18,549**

Debts	
Home Mortgage(s)	$0
Other Mortgage(s)	$0
Student Loans	$13,140
Credit Card	$445
Car Loans	$0
Other	$0
Total Debts	**$13,585**
Net Worth	**$4,964**

$50,000 debt

Low

Assets		Debts	
Cash	$5,298	Home Mortgage(s)	$0
Stocks	$201	Other Mortgage(s)	$0
Bonds	$0	Student Loans	$50,114
Annuities	$0	Credit Card	$10,000
Retirement	$6,770	Car Loans	$0
Home	$0	Other	$0
Other Real Estate	$0	**Total Debts**	**$60,114**
Cars	$0		
Personal Property	$0	**Net Worth**	**($47,845)**
Other	$0		
Total Assets	**$12,269**		

High

Assets		Debts	
Cash	$1,550	Home Mortgage(s)	$0
Stocks	$11,497	Other Mortgage(s)	$0
Bonds	$0	Student Loans	$0
Annuities	$0	Credit Card	$96,709
Retirement	$45,305	Car Loans	$0
Home	$0	Other	$15,000
Other Real Estate	$0	**Total Debts**	**$111,709**
Cars	$5,000		
Personal Property	$0	**Net Worth**	**($48,357)**
Other	$0		
Total Assets	**$63,352**		

$50,000 assets

Low

Assets		Debts	
Cash	$14,379	Home Mortgage(s)	$0
Stocks	$7,583	Other Mortgage(s)	$0
Bonds	$0	Student Loans	$6,379
Annuities	$0	Credit Card	$0
Retirement	$12,703	Car Loans	$0
Home	$0	Other	$0
Other Real Estate	$0	**Total Debts**	**$6,379**
Cars	$19,000		
Personal Property	$1,200	**Net Worth**	**$49,992**
Other	$1,506		
Total Assets	**$56,371**		

High

Assets		Debts	
Cash	$14,456	Home Mortgage(s)	$0
Stocks	$0	Other Mortgage(s)	$0
Bonds	$0	Student Loans	$40,964
Annuities	$0	Credit Card	$1,369
Retirement	$88,179	Car Loans	$0
Home	$0	Other	$10,000
Other Real Estate	$0	**Total Debts**	**$52,333**
Cars	$0		
Personal Property	$0	**Net Worth**	**$50,302**
Other	$0		
Total Assets	**$102,635**		

Appendix D
Materials for Study 2c
Detailed Comparisons

Instructions: You will be presented several financial profiles, and must choose which you would rather have. For each profile, "assets" include all positive wealth, which can come in the form of savings accounts, home ownership, retirement accounts, etc. "Debt" includes any money owed, which can come in the form of student loans, mortgages, credit card debt, etc. In each case, assume that you would be able to borrow easily at a market interest rate. On the following pages, you will see several different pairs that may appear similar. Please pay close attention to the specific financial information as you go through.

Task: Which financial situation would you rather be in?

Problems: (each of the problems below was presented to participants in a random order)

- Comparison of zero vs. near zero as lowest value
    1. $50,000 in assets, $0 in debt vs. $100,000 in assets, $50,000 in debt
    2. $50,500 in assets, $500 in debt vs. $100,000 in assets, $50,000 in debt
    3. $60,000 in assets, $10,000 in debt vs. $100,000 in assets, $50,000 in debt
    4. $0 in assets, $50,000 in debt vs. $50,000 in assets, $100,000 in debt
    5. $500 in assets, $50,500 in debt vs. $50,000 in assets, $100,000 in debt
    6. $10,000 in assets, $60,000 in debt vs. $50,000 in assets, $100,000 in debt
- Comparison of low and high magnitudes of the absolute value of net worth:
    1. $1,100 in assets, $100 in debt vs. $2,200 in assets, $1,200 in debt
    2. $1,100,000 in assets, $100,000 in debt vs. $2,200,000 in assets, $1,200,000 in debt
    3. $1,000 in assets, $11,000 in debt vs. $12,000 in assets, $22,000 in debt
    4. $100,000 in assets, $1,100,000 in debt vs. $1,200,000 in assets, $2,200,000 in debt
- Comparison of high and low asset levels when net worth *equals* zero.
    1. $500 in assets and $500 in debt vs. $2,000 in assets and $2,000 in debt
    2. $100,000 in assets and $100,000 in debt vs. $500,000 in assets and $500,000 in debt

Appendix E
Materials used and observed ranks in Study 3
Correlations

Positive net worth profiles ranked

Predicted Rank	Observed Rank	Net Worth	Assets	Debt
1	2.09	36	36	0
2	3.59	36	41	5
3	4.41	36	44	8
4	5.00	36	55	19
5	5.16	36	71	35
6	6.31	36	77	41
7	6.63	36	94	58
8	6.69	36	112	76
9	7.22	36	136	100
10	7.91	36	154	118

Negative net worth profiles ranked

Predicted Rank	Observed Rank	Net Worth	Assets	Debt
1	4.75	-36	63	99
2	4.81	-36	52	88
3	5.06	-36	40	76
4	5.00	-36	31	67
5	5.25	-36	20	56
6	5.22	-36	15	51
7	5.09	-36	11	47
8	5.81	-36	7	43
9	6.44	-36	2	38
10	7.56	-36	0	36

Appendix F
Materials used in Experiment 4
Lower net worth, higher perceived wealth

Instructions
In what follows, you will be presented with several people's hypothetical financial profiles, consisting of their debts and assets. "Assets" refer to the variety of sources that contribute to a person's positive wealth: savings accounts, retirement accounts, car and home ownership, etc. "Debt" includes any money the person owes, which can come in the form of student loans, mortgages, credit card debt, etc. Each person has the ability to borrow at the same, market interest rate. For each set, please rank the 5 profiles based on who you see as the best off financially, where 1 indicates that the person is best off and 5 indicates that the person is worst off."

Wealth profiles

Profile	**Net worth ($000)**	**Assets ($000)**	**Debt ($000)**
Comparison 1: versus +$34,000 assets and $0 debt			
1	34	34	0
2	36	77	41
3	34	163	129
4	41	154	113
5	37	37	0
Comparison 2: versus +$130,000 assets and $0 debt			
1	130	130	0
2	140	845	705
3	130	540	410
4	165	790	625
5	130	230	100
Comparison 3: versus $0 assets and -$29,000 debt			
1	-29	0	29
2	-32	35	67
3	-29	54	83
4	-35	61	96
5	-31	0	31
Comparison 4: versus $0 assets and $145,000 debt			
1	-145	0	145
2	-155	805	960
3	-145	600	745
4	-160	715	875
5	-145	120	265

Appendix G
Materials used in Study 6
Willingness to Pay

Study Introduction
In this survey, you will be presented with a series of financial profiles and asked how much you would be willing to pay for certain items. Imagine that you find yourself in the financial situations described, in addition to an income accounting for your current lifestyle. You are financially responsible and arrived at this distribution as a result of various life circumstances. Please state the maximum amount that you would be willing to pay for the following items. Remember to imagine that you personally have found yourself in the financial state described and consider this when making your response.

For each profile, "assets" include all positive wealth, which can come in the form of savings accounts, home ownership, retirement accounts, etc. "Debt" includes any money owed, which can come in the form of student loans, mortgages, credit card debt, etc. You also have access to market rate credit if necessary.

Items considered and wealth profile amounts.
Items listed as Comparisons here were compared for analysis, but all items were presented individually, in a random order.

A new car	
Comparison 1: -$137,000 net worth	
Person 1	$0 in assets, $137,000 in debt
Person 2	$141,000 in assets, $278,000 in debt
Comparison 2: +$139,200 net worth	
Person 1	$139,200 in assets, $0 in debt
Person 2	$274,700 in assets, $135,500 in debt
A new computer	
Comparison 1: -$91,000 net worth	
Person 1	$100 in assets, $91,100 in debt
Person 2	$60,300 in assets, $150,300 in debt
Comparison 2: +$93,000 net worth	
Person 1	$93,200 in assets, $200 in debt
Person 2	$187,400 in assets, $94,400 in debt
A dishwasher	
Comparison 1: -$53,000 net worth	
Person 1	$0 in assets, $53,000 in debt
Person 2	$44,000 in assets, $97,000 in debt
Comparison 2: +$55,000 net worth	
Person 1	$55,000 in assets, $0 in debt
Person 2	$113,000 in assets, $58,000 in debt
A week-long vacation	
Comparison 1: -$44,000 net worth	

Person 1	$200 in assets, $44,200 in debt
Person 2	$42,100 in assets, $86,100 in debt
Comparison 2: +$43,200 net worth	
Person 1	$43,200 in assets, $200 in debt
Person 2	$90,400 in assets, $47,400 in debt
A television	
Comparison 1: -$24,000 net worth	
Person 1	$100 in assets, $24,100 in debt
Person 2	$25,500 in assets, $49,500 in debt
Comparison 2: +$27,000 net worth	
Person 1	$27,100 in assets, $100 in debt
Person 2	$53,300 in assets, $26,300 in debt

Appendix H
Materials from Study 7
Willingness to Borrow

Overall Instructions:
In what follows, you will be presented with several people's hypothetical financial profiles, consisting of their debts and assets. "Assets" refer to the variety of sources that contribute to a person's positive wealth: savings accounts, retirement accounts, car and home ownership, etc. "Debt" includes any money the person owes, which can come in the form of student loans, mortgages, credit card debt, etc. Each person has the ability to borrow at the same, market interest rate.

Imagine that you found yourself in either of the financial situations described below. In each case, you are considering purchasing an item that you cannot afford unless you borrow additional money. Even though your total assets may be more than the amount required, they are presumably held in ways (such as home equity) that are not easy to access for this purchase. Please indicate in which situation you would be more likely to borrow money.

Questions-

1. Imagine that your TV is getting old. Although it is still working fine, you would really like a new, flat screen TV and have your mind set on a particular model. However, since you don't have the money to purchase it outright, you would need to borrow $2,000 in order to buy it. In which case would you be more likely to borrow to buy the new TV?
    a. Net Negative wealth: No assets and $19,000 debt vs. $5,000 assets and $24,000 debt
    b. Net Positive wealth: $17,500 in assets and no debt v $22,000 in assets and $4,500
2. Imagine that you have relied on your computer for work for several years now and that it is getting dated and slow. You would like to replace it with a new, faster model. However, you would need to borrow $1,500 to replace the computer and required accessories. In which situation would you be more likely to borrow to buy the new computer?
    a. Net Negative wealth: No assets and $8,000 in debt v $4,000 in assets and $12,000
    b. Net Positive wealth: $9,000 in assets and no debt v $14,000 in assets and $5,000

Appendix I
Materials used in Study 8
Willingness to Lend

Introduction, question wording, and numbers used in Experiment 6

Introduction: Imagine you are in the role of a loan officer who needs to approve people's requests for loans. Presented with pairs of people below, you must decide which of the two is in a better financial position to receive the loan. In each case, "assets" refer to the variety of sources that contribute to a person's positive wealth: savings accounts, retirement accounts, car and home ownership, etc. "Debt" includes any money the person owes, which can come in the form of student loans, mortgages, credit card debt, etc.

Question: Mr. Green and Mr. Blue each ask to borrow [$7,000 to buy a reliable car that they need to commute to work/ $2,000 to go on vacation in the Caribbean with their family]. Mr. Green has $X in assets and $Y in debt. Mr. Blue has $X in assets and $Y in debt. Which person would you feel more confident giving the loan to?

Borrow $7,000 for a car	
Comparison 1: -$29,000 net worth	
Person 1	$200 in assets, $29,200 in debt
Person 2	$27,900 in assets, $56,900 in debt
Comparison 2: +$33,200 net worth	
Person 1	$33,400 in assets, $200 in debt
Person 2	$67,200 in assets, $34,000 in debt
Borrow $2,000 for a vacation	
Comparison 1: -$11,000 net worth	
Person 1	$100 in assets, $11,100 in debt
Person 2	$10,750 in assets, $21,750 in debt
Comparison 2: +$14,500 net worth	
Person 1	$14,600 in assets, $100 in debt
Person 2	$29,000 in assets, $14,500 in debt

Appendix J
Materials used in Study 9
First Reactions

Comparison 1: Jeff and Ben

Jeff has worked as an electrician for the past 15 years. His wife is a substitute teacher. They live in a rented apartment outside of Boston, Massachusetts, with their two children. Their household has a total of $9,000 in assets and $34,000 in debt.*

Ben has worked as a police officer for the past 12 years. His wife works part time as a nurse. They live in a rented apartment in Buffalo, NY with [two children/ one child]**. Their household has a total of $72,000 in assets and $97,000 in debt.

Comparison 2: Eric and Matt

Eric has worked as an artist for the past 7 years. He lives alone in an apartment in New York City where he is constantly working on his paintings, and he is considering opening his own art gallery. He has a total of $45,000 in assets and $25,000 in debt.

Matt has worked in the fashion industry for the past 9 years. He lives alone in an apartment in San Francisco. He loves his job and is now considering starting his own line of clothing. He has a total of $21,000 in assets and $1,000 in debt.

Questions:
1. Taking into account the information above, including assets and debt, please use the space below to indicate the first thoughts that come to mind when considering which household is in a [better/ worse] financial position.
2. In your response above, if you had to choose one, what mattered more? [assets, debt]***
3. Who is more [satisfied with/ troubled by] his financial position?

* The numbers used were consistent across conditions within pairs, but their placement was counterbalanced across profiles. In the case of the negative net worth comparisons, asset and debt amounts were reversed so that debt became higher than assets while the absolute value of the amount remained unchanged.

** For the first two-thirds of data collection, this section read "one child". This was changed to "two children" in the final round of data collection to further equate the two profiles being compared. This change appeared to have no effect on responses.

*** This question was omitted for one-third of participants, which did not appear to effect responses

Appendix K
Materials used in Study 10
Directed Information Search

Introduction:
On the next few pages, you will be presented with different situations where you will have to make a choice. Please imagine that you are in the situation and think about what factors would be most important when making the choice.

In the passages that follow, ASSETS refer to the variety of sources that contribute to a person's positive wealth: savings accounts, retirement accounts, car and home ownership, etc. DEBT includes any money the person owes, which can come in the form of student loans, mortgages, credit card debt, etc. NET WORTH is the total of ASSETS minus DEBT. Please assume that the people described can also borrow additional money if necessary.

Some of the questions may appear similar. Please pay close attention to the specific details as you go through.

LOAN- $100,000 positive

Imagine that three different people approach you, each asking for a loan. You only have enough money to lend to one of them and want to choose the person who would be most capable of repaying you. The three people have similar incomes, jobs, and financial obligations.

They each have about $100,000 in overall net worth (assets minus debt), but the amount of assets and debt that each one has varies. For example, if one person has $200,000 in assets and owes $100,000 in debt while another has $100,000 in assets and owes no debt—both would have $100,000 in net worth.

When choosing who to lend money to, which piece of information would be more important to you?

The amount of assets each person has
The amount of debt each person has

LOAN- $100,000 negative

Imagine that three different people approach you, each asking for a loan. You only have enough money to lend to one of them and want to choose the person who would be most capable of repaying you. The three people have similar incomes, jobs, and financial obligations.

They each have about negative $100,000 in overall net worth (assets minus debt), but the amount of assets and debt that each one has varies. For example, if one person has $100,000 in assets and owes $200,000 in debt while another person has no assets and owes $100,000 in debt—both would have negative $100,000 in net worth.

When choosing who to lend money to, which piece of information would be more important to you?

The amount of assets each person has
The amount of debt each person has

==========

BUSINESS- $250,000 positive

Imagine that you have a great idea for a business and are looking for someone who is in a solid financial position to be your business partner. You are choosing between a few different people with similar incomes and financial obligations.

While each of the people you are considering have about $250,000 in net worth (assets minus debt), the amount of assets and debt that each one has varies. For example, if one person has about $750,000 in assets and owes $500,000 in debt while another person has about $250,000 in assets and owes no debt, both would have $250,000 in net worth.

When choosing which person to have as your business partner, which piece of information would be more important to you?

The amount of assets each person has
The amount of debt each person has

BUSINESS- $250,000 negative

Imagine that you have a great idea for a business and are looking for someone who is in a solid financial position to be your business partner. You are choosing between a few different people with similar incomes and financial obligations.

While each of the people you are considering have about negative $250,000 in net worth (assets minus debt), the amount of assets and debt that each one has varies. For example, if one person has $500,000 in assets and owes $750,000 in debt while another person has no assets and owes $250,000 in debt, both would have negative $250,000 in net worth.

When choosing which person to have as your business partner, which piece of information would be more important to you?

The amount of assets each person has
The amount of debt each person has

Appendix L
Materials used in Study 11
Recall

Version 1:
Please read the following passage closely and pay attention to important details.

Joe has worked as an electrician for the bulk of his career, and his wife has worked as a substitute teacher. Joe's family has a total of $9,000 in savings and $34,000 in debt. They live in a rented apartment outside of Boston, Massachusetts, with their two children.

Joe is an avid Red Sox fan. He owns 17 books about the Red Sox, and has been to 54 Red Sox games at Fenway Park. Joe also loves coaching his kids' baseball teams. When he isn't working or involved with baseball, Joe loves to go for long runs, and he is currently training to run in the Chicago marathon this fall. Joe's favorite movie is the Godfather.

Conditions:

- $9,000 in savings and $34,000 in debt (order randomized; ½ saw $34,000 in debt and $9,000 in savings)
- $34,000 in savings and $9,000 in debt (order randomized; ½ saw $9,000 in debt and $34,000 in savings)

Additional Questions:
Please recall Joe's occupation from the first passage you read.
Please recall the total amount Joe's family has in savings (in dollars) from the first passage you read.
Please recall the total amount Joe's family has in debt (in dollars) from the first passage you read.
Please recall whether the total amount that Joe's family has in savings is more or less than the amount that they owe in debt from the first passage you read.

- Their savings is more than their debt
- Their debt is more than their savings
- Their savings is equal to their debt
- I do not remember

==========

Version 2:

Please read the following passage closely and pay attention to important details:

Ben has worked as a police officer for the bulk of his career. His wife works part time as a nurse. Their household has a total of $34,000 in savings and $82,000 in debt. They live in a rented apartment in Buffalo, NY, with two children, Jennifer and Samantha.

Ben loves to fish in his spare time, and is an expert at fly fishing. He has been on 9 separate fishing trips over the last two months. His wife bought him a new fishing rod for his last birthday. Ben also loves to watch movies and relax with his family. Recently, he's taken up

photography and has dedicated much time to photographing his two daughters for family albums as well as capturing images of nature.

Conditions:

- $34,000 in savings and $82,000 in debt (order randomized; ½ saw $82,000 in debt and $34,000 in savings)
- $82,000 in savings and $34,000 in debt (order randomized; ½ saw $34,000 in debt and $82,000 in savings)

Additional Questions:
Please recall Ben's occupation from the first passage you read.
Please recall the total amount Ben's family has in savings (in dollars) from the first passage you read.
Please recall the total amount Ben's family has in debt (in dollars) from the first passage you read.
Please recall the number of fishing trips Ben has been on in the past two months from the first passage you read.
Please recall whether the total amount that Joe's family has in savings is more or less than the amount that they owe in debt from the first passage you read.

- Their savings is more than their debt
- Their debt is more than their savings
- Their savings is equal to their debt
- I do not remember

Appendix M
Materials used in Study 13a
Shifting attention to debt

Opportunity cost of debt
Within-subjects methodical variations:

Outline (one group gets positive, another gets negative)
Both groups see all questions (1a-d):

No Wage Calculation
1a) A1, D1, equal wage
D1a) A2, D2, incongruent wage > by 20%
D2a) A3, D3, equal wage
1b) A1, D1, incongruent wage > by 100%
D1b) A2, D2, equal wage
D2b) A3, D3, incongruent wage > by 200%
With Wage Calculation
1c) A1, D1, equal wage
D1c) A2, D2, incongruent wage >20%
D2c) A3, D3, wage equal
1d) A1, D1, incongruent wage > by 100%

NOTE: For the purposes of clarity and interpretability in reporting, I report only on cases where people in both profiles have equal wages(1a and 1c).

Positive (Negative switches assets and debt):
A1 = $5,100 and $20,000; D1 = $100 and $15,000 | Wage = $15 (equal/low) and $30 (high, +100%)
A2 = $7,000 and $42,000; D2 = $500 and $35,500 | Wage = $22 (equal) $20 (low) and $24 (high, +20%)
A3 = $17,000 and $56,000; D3 = $1,000 and $40,000 | Wage = $16 (low) and $48 (equal/high, +200%)

Introduction: On the following pages, you will be presented with information about pairs of people. Imagine that the two people are in similar financial situations, but that they differ in a variety of ways, as described.

Imagine that there are two men, ***[X]*** and ***[Y]***. The two men's finances are similar overall, but differ in a variety of ways, as described in the charts below. Which of these men do you think is better off financially?

========== POSITIVE ==========

1a) A1, D1, equal wage, no wage calc

	Total Assets	Total Debt	Hourly Wage
Jim	$5,100	$100	$15/hr
Sam	$20,000	$15,000	$15/hr

D1a) A2, D2, incongruent wage > by 20%

	Total Assets	Total Debt	Hourly Wage
Ben	$42,000	$35,500	$24/hr
Dave	$7,000	$500	$20/hr

D2a) A3, D3, equal wage

	Total Assets	Total Debt	Hourly Wage
Steve	$56,000	$40,000	$48/hr
Mark	$17,000	$1,000	$48/hr

1b) A1, D1, incongruent wage > by 100%

	Total Assets	Total Debt	Hourly Wage
Jerry	$5,100	$100	$15/hr
Alex	$20,000	$15,000	$30/hr

D1b) A2, D2, equal wage

	Total Assets	Total Debt	Hourly Wage
Paul	$7,000	$500	$22/hr
Jason	$42,000	$35,500	$22/hr

D2b) A3, D3, incongruent wage > by 200%

	Total Assets	Total Debt	Hourly Wage
Mark	$17,000	$1,000	$16/hr
Peter	$56,000	$40,000	$48/hr

1c) A1, D1, equal wage, WITH wage calc

	Total Assets	Total Debt	Hourly Wage	# of working hours needed to repay debt
John	$20,000	$15,000	$15/hr	1,000
Larry	$5,100	$100	$15/hr	7

D1c) A2, D2, incongruent wage >20%

	Total Assets	Total Debt	Hourly Wage	# of working hours needed to repay debt

Greg	$7,000	$500	$20/hr	25
Joe	$42,000	$35,500	$24/hr	1,458

D2c) A3, D3, wage equal

	Total Assets	Total Debt	Hourly Wage	# of working hours needed to repay debt
Eric	$56,000	$40,000	$48/hr	833
Matt	$17,000	$1,000	$48/hr	21

1d) A1, D1, incongruent wage > by 100%

	Total Assets	Total Debt	Hourly Wage	# of working hours needed to repay debt
Tom	$5,100	$100	$15/hr	7
Dan	$20,000	$15,000	$30/hr	500

========== NEGATIVE ==========

1a) A1, D1, equal wage, no wage calc

	Total Assets	Total Debt	Hourly Wage
Jim	$100	$5,100	$15/hr
Sam	$15,000	$20,000	$15/hr

D1a) A2, D2, incongruent wage > by 20%

	Total Assets	Total Debt	Hourly Wage
Ben	$35,500	$42,000	$20/hr
Dave	$500	$7,000	$24/hr

D2a) A3, D3, equal wage

	Total Assets	Total Debt	Hourly Wage
Mark	$1,000	$17,000	$48/hr
Steve	$40,000	$56,000	$48/hr

1b) A1, D1, incongruent wage > by 100%

	Total Assets	Total Debt	Hourly Wage
Alex	$15,000	$20,000	$15/hr
Jerry	$100	$5,100	$30/hr

D1b) A2, D2, equal wage

	Total Assets	Total Debt	Hourly Wage
Paul	$500	$7,000	$22/hr
Jason	$35,500	$42,000	$22/hr

D2b) A3, D3, incongruent wage > by 200%

	Total Assets	Total Debt	Hourly Wage
Peter	$40,000	$56,000	$16/hr
Mark	$1,000	$17,000	$48/hr

1c) A1, D1, equal wage, WITH wage calc

	Total Assets	Total Debt	Hourly Wage	# of working hours needed to repay debt
Larry	$100	$5,100	$15/hr	340
John	$15,000	$20,000	$15/hr	1,333

D1c) A2, D2, incongruent wage >20%

	Total Assets	Total Debt	Hourly Wage	# of working hours needed to repay debt
Joe	$35,500	$42,000	$20/hr	2,100
Greg	$500	$7,000	$24/hr	292

D2c) A3, D3, wage equal

	Total Assets	Total Debt	Hourly Wage	# of working hours needed to repay debt
Matt	$1,000	$17,000	$48/hr	354
Eric	$40,000	$56,000	$48/hr	1,166

1d) A1, D1, incongruent wage > by 100%

	Total Assets	Total Debt	Hourly Wage	# of working hours needed to repay debt
Dan	$15,000	$20,000	$15/hr	1,333
Tom	$100	$5,100	$30/hr	170

Appendix N
Materials used in Study 12b
Shifting Attention to Assets

Attention to assets
Within-subjects methodical variations:

Outline (one group gets positive, another gets negative)
Both groups see all questions (1a-d); target comparisons are of equal costs, 1a vs. 1c:

No Expenses Calculation
1a) A1, D1, equal cost
D1a) A2, D2, incongruent cost > by 20%
D2a) A3, D3, equal cost
1b) A1, D1, incongruent cost > by 100%
D1b) A2, D2, equal cost
D2b) A3, D3, incongruent cost > by 200%
With Expenses Calculation
1c) A1, D1, equal cost
D1c) A2, D2, incongruent cost >20%
D2c) A3, D3, cost equal
1d) A1, D1, incongruent cost > by 100%

Positive (Negative switches assets and debt):
A1 = $5,100 and $20,000; D1 = $100 and $15,000 | Monthly expenses = $3,300 (equal/low) and $6,600 (high, +100%)
A2 = $7,000 and $42,000; D2 = $500 and $35,500 | Monthly expenses = $1,320 (equal) $1,200 (low) and $1,440 (high, +20%)
A3 = $17,000 and $56,000; D3 = $1,000 and $40,000 | Monthly expenses = $2,400 (low) and $7,200 (equal/high, +200%)

Introduction: On the following pages, you will be presented with information about pairs of people. Imagine that the two people are in similar financial situations, but that they differ in a variety of ways, as described.

Imagine that there are two men, ***[X]*** and ***[Y]***. The two men's finances are similar overall, but differ in a variety of ways, as described in the charts below. Which of these men do you think is better off financially?

========== POSITIVE ==========

1a) A1, D1, equal Expenses, no Expenses calc

	Total Assets	Total Debt	Monthly Expenses
Jim	$5,100	$100	$3,300
Sam	$20,000	$15,000	$3,300

D1a) A2, D2, incongruent Expenses > by 20%

	Total Assets	Total Debt	Monthly Expenses
Ben	$42,000	$35,500	$1,320
Dave	$7,000	$500	$1,440

D2a) A3, D3, equal Expenses

	Total Assets	Total Debt	Monthly Expenses
Steve	$56,000	$40,000	$2,800
Mark	$17,000	$1,000	$2,800

1b) A1, D1, incongruent Expenses > by 100%

	Total Assets	Total Debt	Monthly Expenses
Jerry	$5,100	$100	$6,600
Alex	$20,000	$15,000	$3,300

D1b) A2, D2, equal Expenses

	Total Assets	Total Debt	Monthly Expenses
Paul	$7,000	$500	$1,320
Jason	$42,000	$35,500	$1,320

D2b) A3, D3, incongruent Expenses > by 200%

	Total Assets	Total Debt	Monthly Expenses
Mark	$17,000	$1,000	$7,200
Peter	$56,000	$40,000	$2,400

1c) A1, D1, equal Expenses, WITH Expenses calc

	Total Assets	Total Debt	Monthly Expenses	Number of Months Assets Would Pay For
John	$20,000	$15,000	$3,300	6.1
Larry	$5,100	$100	$3,300	1.5

D1c) A2, D2, incongruent Expenses >20%

	Total Assets	Total Debt	Monthly Expenses	Number of Months Assets Would Pay For
Greg	$7,000	$500	$1,440	4.9
Joe	$42,000	$35,500	$1,200	35.0

D2c) A3, D3, Expenses equal

	Total Assets	Total Debt	Monthly Expenses	Number of Months Assets Would Pay For
Eric	$56,000	$40,000	$7,200	7.8
Matt	$17,000	$1,000	$7,200	2.4

1d) A1, D1, incongruent Expenses > by 100%

	Total Assets	Total Debt	Monthly Expenses	Number of Months Assets Would Pay For
Tom	$5,100	$100	$6,600	0.8
Dan	$20,000	$15,000	$3,300	6.1

========== NEGATIVE ==========

1a) A1, D1, equal Expenses, no Expenses calc

	Total Assets	Total Debt	Monthly Expenses
Jim	$100	$5,100	$3,300
Sam	$15,000	$20,000	$3,300

D1a) A2, D2, incongruent Expenses > by 20%

	Total Assets	Total Debt	Monthly Expenses
Ben	$35,500	$42,000	$1,440
Dave	$500	$7,000	$1,320

D2a) A3, D3, equal Expenses

	Total Assets	Total Debt	Monthly Expenses
Mark	$1,000	$17,000	$7,200
Steve	$40,000	$56,000	$7,200

1b) A1, D1, incongruent Expenses > by 100%

	Total Assets	Total Debt	Monthly Expenses
Alex	$15,000	$20,000	$6,600
Jerry	$100	$5,100	$3,300

D1b) A2, D2, equal Expenses

	Total Assets	Total Debt	Monthly Expenses
Paul	$500	$7,000	$1,320
Jason	$35,500	$42,000	$1,320

D2b) A3, D3, incongruent Expenses > by 200%

	Total Assets	Total Debt	Monthly Expenses
Peter	$40,000	$56,000	$7,200
Mark	$1,000	$17,000	$2,400

1c) A1, D1, equal Expenses, WITH Expenses calc

	Total Assets	Total Debt	Monthly Expenses	Number of Months Assets Would Pay For
Larry	$100	$5,100	$3,300	0.0
John	$15,000	$20,000	$3,300	4.5

D1c) A2, D2, incongruent Expenses >20%

	Total Assets	Total Debt	Monthly Expenses	Number of Months Assets Would Pay For
Joe	$35,500	$42,000	$1,440	24.6
Greg	$500	$7,000	$1,320	0.4

D2c) A3, D3, Expenses equal

	Total Assets	Total Debt	Monthly Expenses	Number of Months Assets Would Pay For
Matt	$1,000	$17,000	$7,200	0.1
Eric	$40,000	$56,000	$7,200	5.5

1d) A1, D1, incongruent Expenses > by 100%

	Total Assets	Total Debt	Monthly Expenses	Number of Months Assets Would Pay For
Dan	$15,000	$20,000	$6,600	2.3
Tom	$100	$5,100	$3,300	0.0

Appendix O
Outline for Game Played in Study 13
Roulette Game

Introduction:
On the following pages, you will be playing two different games of chance. You will be playing for real money in each of the games. Along the way, you will receive tokens to help you keep track of how much you are winning and losing. You will get one green token for every 10 cents that you win (this money is yours to keep at the end of the game) and one red token for every 10 cents that you lose (this is money you will owe at the end of the game).

You will earn $1 for participating in the experiment, and you cannot lose more than $1 in total throughout (so you won't walk away with less than you started with, but you can make more than the base amount).

[NOTE: [Game 1 vs. Game 2 first] and [High vs. Low condition first] varied in the below, so each person should had one Variable game and one Even-Odd game, one high and one low condition]

Variable -
In the [second] game, the amount of money you can win or lose on each spin varies. Instead of making a guess about where the ball will land, you can spin the wheel at whichever speed you choose, where 1 is the slowest (so the wheel will spin the least), and 10 is the fastest (so the wheel will spin the most). You will make or lose the amount of money that appears on the wheel where the ball lands after each spin. You will be playing 10 rounds of this game.

a. High outcome: play 10 rounds of game, end +12, -8. Win 8 (sum to $1.20), lose 2 (sum to $0.80)
b. Low outcome: play 10 rounds of game, end +5, -1. Win 8 (sum to $0.50), lose 2 (sum to $0.10)

Even-Odd-
In the [first] game, we will spin a ball on a wheel with odd and even spaces. You can choose whether you think that the ball will land in an odd or an even space when the wheel stops spinning. If your guess is correct, you will receive $0.10 at the end of the game, as indicated by the green tokens on your screen. If your guess is incorrect, you will owe $0.10 at the end of the game, as indicated by the red tokens in the upper right corner of your screen. You will be playing [XX] rounds of this game.

a. High condition: play 20 rounds of game. Win 12, lose 8
b. Low condition: play 6 rounds of game. Win 5, lose 1

After each game, wins and losses displayed on screen for 1 seconds, with the images in the center of the screen and the words: "You won $X.XX in this game, and you lost $Y.YY." Keep the same page, and after 1 sec, add the below questions:

DVs

How satisfied are you with your experience in the game?
How satisfied are you with your final outcomes? [1- not at all satisfied to 6- completely satisfied]

After both games: Of the two games you just played, which game do you think you did better in?

Appendix P
Materials used in Study 14
Allocating Time

In the upcoming days, the people listed below will be spending time doing the following activities. Based only on these activities, please indicate which person you would rather trade schedules with:

Q1:
Jane gets to enjoy a 40 minute massage, and has to spend 60 minutes stuck in traffic.
Samantha gets to enjoy a 10 minute massage, and has to spend 30 minutes stuck in traffic
vs
Sarah gets to enjoy a 60 minute massage, and has to spend 40 minutes stuck in traffic.
Mary gets to enjoy a 30 minute massage, and has to spend 10 minutes stuck in traffic.

Q2:
Dave gets to enjoy 2 hours catching up with friends, and has to spend 3 hours cleaning his house.
John gets to enjoy 15 minutes catching up with friends, and has to spend 1 hour and 15 minutes cleaning his house.
vs.
Larry gets to enjoy 3 hours catching up with friends, and has to spend 2 hours cleaning his house.
Jeff gets to enjoy 1 hour and 15 minutes catching up with friends, and has to spend 15 minutes cleaning his house.

Q3:
Megan gets to enjoy a fancy dinner out at one of her favorite restaurants, and has to spend 2 hours in a work meeting over the weekend.
Brittany does not go to a fancy dinner out, and has to spend 1 hour in a work meeting over the weekend.
vs.
Sally gets to enjoy 2 fancy dinners out at her favorite restaurants, and has to spend 1 hour in a work meeting over the weekend.
Rebecca gets to enjoy a fancy dinner out at one of her favorite restaurants, and has no work meeting over the weekend.

Appendix Q
Schedule and Survey used in Study 15
Product Choice

Bar A on left side of table, Bar B on right side of table (from POV of people walking by)

1. 10:00-10:30 Bar A is positive high, Bar B is positive, low
2. 10:30-11 Bar B is negative high, Bar B is negative low
3. 11-11:30 Bar A is positive low, Bar B is positive high
4. 11:30-12 Bar A is negative low, Bar B is negative high

1. 12-12:30 Bar A is positive high, Bar B is positive, low
2. 12:30-1 Bar B is negative high, Bar B is negative low
3. 1-1:30 Bar A is positive low, Bar B is positive high
4. 1:30-2 Bar A is negative low, Bar B is negative high

1. 2-2:30 Bar A is positive high, Bar B is positive, low
2. 2:30-3 Bar B is negative high, Bar B is negative low
3. 3-3:30 Bar A is positive low, Bar B is positive high
4. 3:30-4 Bar A is negative low, Bar B is negative high

Thank you for participating and answering the questions below. There are no correct answers, but please make your choices on your own. As thanks, you'll get to keep one of the bars on the table.

Imagine that you're out at a friend's birthday dinner, and the waiter brings out a large plate full of chocolates—more than enough for everyone to have plenty—on the house. How many chocolates would you eat?

I would eat _____ chocolates.

The bars on the table have been rated by 3 expert judges on a variety of positive and negative features, ranging from flavor to nutritional value. Their overall ratings are shown beside each bar.

Please take a moment to decide which bar you would rather try based on the ratings displayed. Circle the label of the one you'd like below, and return this page in exchange for the bar you've marked.

Bar A Bar B

Please state your age: _____
Please state your gender: _____