Spring 2015

Beneath the Human Capital Investment: Modelling student debt awareness and a Critical examination of financial aid materials using Construal-level Theory

Sophia Alecia Sutcliffe
Bard College

Beneath the Human Capital Investment:

Modelling student debt awareness and a

Critical examination of financial aid materials using Construal-level Theory

Senior Project Submitted to
The Divisions of Social Studies and Sciences
of Bard College

by

Sophia Alecia Sutcliffe

Annandale-on-Hudson, New York
May 2015

Acknowledgments

I dedicate this project to my family, for providing a perfect spectacle of experiences and mindsets for my young, inquisitive mind to watch and grow from. I truly wouldn't be who, or where, I am today without the influence of each and every one of you—Nina, Monie, Heather, Kathleen, David, and Tullah. And of course to my mom, for showing me what hard work looks like. I am eternally grateful for Emilio Peña, whom has been by my side each step of the way to sooth me in states of panic and slow me down when I was manic. For Georgia, my fellow behavioral economist, whose words and emojis of encouragement always come at just the right time, and for always getting it.

To Kristin, for bringing judgment and decision-making to Bard and for always thoughtful and thorough feedback. To Dimitri, for your guidance and support, and for being so available despite being in constant demand to save the global economy. To Sanjay, for your guidance in econometrics and for being so accommodating over the years. To the economics program for the Levy scholarship, and the Bernstein family and psychology program for the Bernstein award to help fund my senior project research. And lastly, a thanks to myself.

I, Sophia Alecia Sutcliffe, swear that this senior project presented to the division of Social Studies, abides all plagiarism law of Bard College.

Sophia Alecia Sutcliffe

April 28, 2015

Table of Contents

Abstract

As student loans are increasingly utilized to invest in higher education, it is important to consider how students perceive and understand their loan commitments. Study 1 surveyed a sample of 147 Bard students on their attitudes towards debt and how much they knew about their loan commitments. Over half of the students sampled could not report how much they currently owed in student loans (N=76, 51.4%), 23.8% (N=35) could not identify the types of loans they held, 25.2% of participants could not provide an estimate of how much debt they expect to graduate with within a range of $5,000- $10,000, and the strongest predictor of debt ignorance was whether parents completely managed the financial aid process. Parents and students alike report the financial aid process to be extremely confusing and overwhelming, and the present study suggests an intervention to support financial aid decision-making. Study 2 primed participants to either think abstractly (think about *why* you do something) or concretely (think about *how* you do something), and compared how participants processed financial aid information when presented in a list with additional written descriptions versus a table which summarized all aid information in a concise, uniform structure. Those that read the financial aid package in a list with written descriptions displayed better recall of details of the aid package, and focused more on the total amount of aid offered than those that read the financial aid package in a table. It is suggested that aid packages separate types of aid into financial gifts and loans rather than bundling them into a single category of financial aid. The need for more personal and engaging student loan education is pressing, and may have long-term effects on financial behavior if designed carefully.

Preface: Why Behavioral Economics?

The marginalist revolution of the mid-20th century reinstated a homogeneous, rational, utility-maximizing economic actor at the crux of mainstream economic theory. These predictable and responsive individual actors build a predictable and responsive population, and provide the clean theoretical grounding in order to model and reach optimal outcomes. But fortunately, we do not live in a world of individuals that follow identical decision processes; of people with unwavering preferences and that the primary motivation of behavior is to maximize utility. We are not always functioning at full capacity to be able to carefully deliberate all possible paths, our preferences are ever-changing by circumstance and surroundings, and there are more than material or informational barriers that keep us from reaching optimal outcomes—there are psychological and social barriers as well.

The mainstream, rational economics approach is to diagnose an issue with set notions of what *should be* and how people *should* act, which leaves little room to consider *what is.* In order to improve and reach optimal outcomes you must understand the barriers to reaching them, and in terms of rational economic behavior, there are barriers of error in judgment and choice processes. Human judgment and decision-making does not always tend towards perfection, but the nascent field of behavioral economics is rapidly compiling evidence of how perfectly imperfect humans can be. It is becoming increasingly clear that humans are irrational in systematic and predictable ways, so the question then becomes: how can we correct for these predictable errors?

Introduction

Changing Scenery

The environment surrounding undergraduate education has changed rather drastically in the last decade. As the government urges more students to enroll in college, prospective students watch tuition rise at a staggering rate (Lewin, 2013). At the same time the benefits of a college degree are projected to increase (Carnevale, Smith, & Strohl, 2013).The solution to these contrasting signals has been, by and large, to increase access to federal student loans. For the fiscal year of 2011-2012 federal student loans accounted for 61%, or 105 billion, of all federal aid available for postsecondary education, with the remaining 39% distributed between federal grants, the federal work study program, and educational tax credits (Department of Education, 2014).

Educational loans have more than quadrupled since the early 1990s (Avery &Turner, 2012). Between 2004 and the end of 2012 student debt increased by 13.7% annually (Edminston, Brooks, & Shelpelwich, 2013).This increase in national educational debt is driven both by a greater number of borrowers and the growing average student's loan balance (Dunghoon & Lee, 2012). In the 2013-2014 there were 7.8 million undergraduate students that took federal student loans, with an average balance of approximately $26,000 (College Board, 2014; Haughwout, Lee, Scally, & van der Klaauw, 2015). As more and more students take on educational debt and the proportion of adults in educational debt grows, student loans have been a persistent topic of public discourse.

In 2014 a majority (37%) of student borrowers is making large enough payments to reduce their principal balance, but it is not a large majority (Haughwout et al., 2015). Seventeen percent of borrowers are 90-days delinquent on their loans, 13% are making interest-only

payments, and 33% have a balance that is larger than the last quarter (Haughwout et. al., 2015). The final trend, in which existing loan balances are growing, can occur when loans are in a period of deferment or forbearance, or when payments are on one of the Income Based Repayment plans (Haughwout et. al., 2015).

Viewing loan performance by the borrower's balance at graduation, a greater percentage of loans of $1,000-$5,000 had experienced default than any other bracket (Haughwout et. al., 2015). This is interpreted as the effect of students whom enroll and do not complete college, such that they take on educational debt and do not receive the higher earnings achieved with a degree. In contrast, those with graduating loan balances of $50,000- $100,000 are more likely to see a different type of poor performance than any other group. Borrowers with graduating loan balances of $50,000- $100,000 are most likely to have loan balances which are larger now than last quarter (Haughwout et. al., 2015). The incidence of both the poorly performing loans, but especially the cases of large balances, suggest that students are not deliberately and explicitly weighing the cost and expected benefits of higher education, or are highly overconfident in their expected benefits estimates.

The effect that these existing, large loans which continue to grow have on financial behavior is not yet clear. After all, if the payments are tacked to one's income rather than an amortization schedule, then these payments should be able to be met. These borrowers may have to make payments for many more years than the standard ten year repayment plan, but at least they will be paid. There is evidence to suggest that such long-lasting debts are contributing to the declining rate of home ownership (Elliot, Grinstein-Weiss, & Nam, 2013). Greater incidence of high debt balances is also affecting the type of occupations graduates are pursuing—there are fewer graduates enter public service jobs and more graduates entering high-earning professions

such as finance and law (Rothstein & Rouse, 2011). According to standard life-cycle theory of human capital investments, higher debt burdens have an income effect on post-college decisions only insofar as the ratio of the current debt exceeds lifetime earnings, which is a rare occurrence. As is the critique of many standard neoclassical models, in this case the reality does not support the theory.

With the growing number of borrowers and increasing size of average loan balances alongside the slow repayment of existing loans, the state of student loans has been a persistent topic of public discourse. In a period in which a college degree provides greater benefits and student loans are increasingly necessary to obtain a degree, efforts must be made to assist students and families through the college application and enrollment process to ensure that those that wish to enroll in higher education are able to do so. Federal authorities have put financial education on their list of priorities, but these efforts would benefit from a behaviorally-based design audit. Taking a behavioral perspective on how students approach and understand financial aid and loans puts policy makers and consumer protection groups in a better position to design effective and efficient interventions to aid financial decision-making.

A rational microeconomic explanation of students failing to make payments on their student loans might be that there is asymmetric information regarding the flexibility of repayment, and mention uncertainty of future returns such that individuals invest a reasonable amount given expected returns at the time. In contrast, the behavioral economics explanation might include the overconfidence bias in expected salary estimates, the abstract nature of an intangible investment in human capital, or explore individuals' relationship with money and how it affects debt management practices. The different policy implications of the two interpretations of the same financial behavior are drastic. The first interpretation implicates provision of more

quality and timely information. Making up-to-date information available is surely important, but it does not quite finish the job. It is possible that people are fully informed, but that there is something about perceptions or relationships with finances which keeps people from responding appropriately to full information (Harrison, Agnew & Serido, 2015; Lapp, 2010).

Overview of Present Research

This research examines the human capital investment, and specifically the use of student loans to finance this investment, through a behavioral lens. The feasibility of people deliberately weighing the costs and benefits of investing in their human capital is questioned. Both the future benefits and, even more damaging, the costs of higher education, are left uncertain until college applications have been sent and reviewed. This empirical investigation questions the conceptualization of interest rate as the primary role of student loans in the decision to invest in human capital, and examines attitudinal and behavioral influences of student loans. The present research proposes that providing information and increasing financial knowledge is not enough to ensure proper management of the human capital investment, and that attitudes towards and construals of student loans should be considered in the design of financial aid programs.

The present research explores possibilities for loan education prior to borrowing in the human capital investment decision phase, and once students have borrowed and must manage their loans. Study 1 surveys debt attitudes and engagement in a liberal arts undergraduate population. Study 2 examines different presentation formats of financial aid award letters (written list, summary table) and the mindset with which the information is approached (abstract, concrete). The aim of the two empirical investigations in the present research is to enhance the quality of financial education for high school and college students by finding an approach which

improves processing and weighting of financial information and alleviates attitudinal barriers to loan management.

The first section describes the traditional model of the human capital investment and reviews literature on the human capital investment, particularly the models that consider the use of student loans to finance the investment. The second section outlines important factors of the current higher education and financial aid systems that complicate the human capital investment decision in order to provide contextual background useful for considering current observed student behavior and attitudes. The third section presents literature on student debt attitudes which have been previously used to model student financial and borrowing behavior and intentions in order to set up the current model used to predict student debt awareness and engagement. Chapter four outlines the methodology of survey creation and data collection, before results of the regression model are presented in chapter five. Chapter six provides a summary and discussion of what is found in the survey and model of debt management in study one.

Study two, which presents a comparison of financial aid award letters in two formats and explores how this information is processed differently based on the mindset with which it is approached, is motivated by the lack of debt management found in Study one. Chapter seven presents literature in consumer research to inform the design of the financial aid materials, and on construal-level theory which sets up the use of a mindset manipulation in the present study. Chapter eight describes the methodology and materials used in study two. Chapter nine presents the results of study two, before discussing the findings and possible implications in chapter ten. Finally, the findings of these empirical investigations are discussed in light of policy implications and the design of financial aid education.

Chapter 2: Review of Literature

Modelling the Human Capital Investment

The classical investment model of the decision to enroll in college assumes that prospective students weigh the benefits of schooling against the costs of tuition and forgone wages while in school. These models rely on the assumption that students are approaching the decision to enroll as rational utility-maximizing individuals that are deciding how to divide their time between market work and human capital accumulation in order to maximize the present value of their earnings. The most popular base of human capital investment theoretical and empirical work is the Ben-Porath model (Mincer, 1997). According to this theory a prospective student will choose to enroll if the benefits of college are greater than the cost of tuition and forgone wages. More specifically, a student will choose to enroll if the expected benefits of a college degree are greater than the costs and if this difference is greater than the present value of their expected lifetime earnings with a high school degree. The outcomes of this tradeoff between the present costs of paying for the human capital investment and forgoing wages, and future benefits of a greater income stream largely depends on an individual's ability and learning propensity (Mincer, 1997; Hugget, Ventura, & Yaron, 2004).

Behavioral economics and finance

In recent decades a branch of economics has emerged as a critique of the assumptions about rational behavior and decision-making in humans. The nascent field of behavioral economics has made huge advances in understanding when and how human behavior strays from the models traditionally used in economics. Some may say that human behavior is simply erratic and cannot be modeled, but it is becoming increasingly clear that humans are irrational in systematic and predictable ways (Ariely, 2008; Thaler & Sunstein, 2008).This emerging field has

outlined a number of ways in which our behavior and decisions are biased to respond in a particular way. Of particular interest to the present research are the biases prevalent in investing behavior and decision-making.

One of the most powerful and recognized findings of behavioral economics is the extensive evidence showing that people understand things in terms of relative changes, rather than absolute values. This shatters the notion that people get an absolute utility from *x* number of goods, or that people can predict the utility that some number of goods or amount of money or leisure time will provide them. The utility of an additional unit is measured in terms of the utility added from the current *reference point.* In other words, an additional unit is only as good as it is better than what you have now. The strongest and most accepted evidence of this tendency is found in Kahneman and Tversky's (1979) prospect theory. The primary component of prospect theory is that losses hurt worse than gains feel good. For example, a loss of $10 will lose you more subjective utility than winning $10 will provide. This leads to people being more risk-seeking when a choice is presented as a loss, and to be more risk-averse when a choice is presented as a gain. Since losses hurt more than gains people are more willing to take risks to avoid them. This finding, known as loss-aversion, does not support the use of the traditional concave utility-function (Rabin, 1998).

Loss-aversion explains the phenomenon known as the sunk cost effect whereby people hang onto investments even when they are performing poorly. Once you have put money or effort into an investment you are less willing to lose it. This stems, in part, from the hypothesis of prospect theory that people are more risk-seeking when the choice is presented as a loss (Arkes & Bloomer, 1985). A rational actor would not consider past costs in deciding whether to invest in

something, but once you have dedicated resources or effort into an investment it is difficult to concede to something that feels like a loss.

The sunk cost effect may undermine the assumption inherent to the human capital investment which assumes that students reevaluate their investment each year as they obtain more information on their ability to succeed in college, the costs of college, and labor market opportunities (Catsiapis, 1974; Heckman, Lochner, & Todd, 2006). Students surely do become aware that some of their original predictions were inaccurate through time in school. Perhaps they were not as skilled in school as they had thought, or the costs do not seem justifiable without a clear career trajectory. But how well these realizations translate into changing behavior is hard to say.

The sunk cost effect may play a role, such that the amount of money and effort already spent on the investment keeps students from leaving school, even if they stand to lose money by doing so. For example, suppose a student finds that after a year or two at a well-respected but expensive private school that it will be difficult to continue paying tuition for school for that university. They could easily go to a state school practically for free, but with the $14,000 in loans that they have already taken to obtain a degree from this particular school they decide to stay. They take out private loans to cover tuition and graduate with $50,000 in debt. After investing the initial $14,000 in that school leaving without a degree with its name feels like a loss, and induces the student to take an even larger loss.

The overconfidence bias, true to its name, is the tendency for people to be overconfident in their judgments—believe that their estimate is closer to the actual value than it is, to overestimate the likely, and to underestimate the unlikely. People seem to have a rather rosy view of their abilities, and to genuinely, or at least probabilistically, believe that they are above-

average (Williams & Gilovich, 2008). The overconfidence bias, at least as evidenced by more active trading, seems to be more prevalent in men than in women (Barber & Odean, 2001).

A related bias is the illusion of control, in which people overestimate their ability to influence largely uncontrollable events. The illusion of control seems to decrease perceptions of risk, perhaps because people fail to account for some risks because they feel they have control over them (Simon, Houghton, & Aquino, 2000). Similarly, perceptions of control can be relatively stable within individuals that develops into a personally trait labeled locus of control. People with an internal locus of control generally feel that their actions can influence outcomes in a predictable way, while people with an external locus of control view outcomes as more subject to fate, chance, or powerful others (Rotter, 1966). Coleman and DeLiere examine the effect of an internal or external locus of control as measured in eighth grade on human capital investments, namely whether the student graduated from high school or not (2003). They find that, even when controlling for family structure, student GPA, parental education, and ability in math, science, reading, and history, locus of control shows an effect on whether the student graduated from high school. Without controls for ability or family background locus of control also has a significant effect on whether the student attended a four-year college, but when these controls are included locus of control no longer shows an effect (Coleman & DeLiere, 2003). Nevertheless, locus of control showed an effect on long-term educational outcomes, suggesting that this psychological construct is important to consider in the human capital investment

The biases observed in behavioral finance might similarly impact whether individuals decide to invest in their human capital. The human capital decision is laced with uncertainty, as it is intrinsically connected to future outcomes and the financial aid process keeps actual costs hidden until weeks before students must make their final decision to enroll. At this point many

qualified students who stand to benefit from enrolling will have opted out of enrolling due to misconceptions of high costs and moderate benefits, or will have received suboptimal financial aid due to the unclear eligibility requirements and complex application processes (Belley & Lochner, 2007; Bettinger, Long, Oreopoulos, & Sanbonmatsu et al., 2009; Oreopoulos & Petronijevic, 2014; Scott-Clayton, 2012).

Intangibility in Future Outcomes

The human capital investment model assumes that students are making explicit tradeoffs between the costs and expected benefits of enrolling in college. It is well-acknowledged that future earnings cannot be known with uncertainty (Levhari & Weiss, 1964; Snow & Warren, 1990; Wigger & Weizsacker, 2001; Baum, 2014). As the net costs of attendance are increasingly financed through student loans, for which the ability to repay is dependent on these expected future income streams, this uncertainty becomes a larger issue. Student loans are a means to an end; a means of obtaining an abstract long-term goal of increasing ones human capital and better general well-being. In addition to the financial returns of education, a recent Pew Research Center survey suggests that the gap between college and high school graduates is greater than it has ever been in the modern era, with young college graduates outperformed their peers with less education on every measure of economic well-being and occupational attainment, from job satisfaction to personal earnings and full-employment rates (Pew, 2014).

Taking a student loan requires evaluating the risk of committing a portion of your future income in an uncertain future labor market. This is an especially difficult task for young, prospective students who have limited knowledge about the labor market. As students progress in their education and choose a program they become more accurate in their beliefs of future wages, primarily by students' final year in college (Betts, 1996). If individuals are taking out a

significant amount of student loans, these inaccurate beliefs about future wages could have serious consequences. At this point students have taken out all the loans that they will need to take to finance this investment in their human capital.

Student loans are a unique investment tool in that students are not required to make payments on their loans until 6 months after they graduate. This is true for all federal loans and many private educational loans. While this is an important and necessary attribute of student loans because it enables students to be physically and mentally invested in their higher education, it delays the consequences of borrowing until after they have graduated. This structure of student loans dampers the ability for students to deliberate their investment each year. While information about total debt balances and what the monthly payments for loans will be is available, students need not search for or encounter it. If students do not engage with their loan commitments on their own they are not receiving feedback on the quality of their decisions to invest in human capital, and feedback is integral to the learning process.

The widely accepted theory of bounded rationality acknowledged the importance of feedback early on. According to the bounded rationality hypothesis, economic agents reevaluate their decisions as they receive new information or take new actions (Simon, 1972). For decisions that require a number of steps one may start with a set of beliefs or expectations, and gradually learn which beliefs and expectations are correct (Arthur, 1994). In this sense, modelling the human capital investment should allow students to reevaluate their expectations about the tradeoff between net costs and expected benefits. In the case of financing the human capital investment with student loans in which both the financial costs and benefits are not realized until the future, it is difficult to learn which beliefs and expectations are correct. Unless students seek this information on their own this assumption of the traditional models rests on shaky grounds.

The present research examines whether students check their loan balance annually or are aware of how much they currently owe in student loans, as a test of whether students tend to receive this feedback on the costs of their human capital on their own.

Furthermore, as the financial costs and benefits are further pushed into the future via student loans, explicit tradeoffs between the costs and benefits are made more difficult simply by their intertemporal nature. As pointed out by Rick and Loewenstein, the real world often cannot offer clear information about the long-run costs of our current behavior which makes the task of rationally and explicitly trading off delayed costs and benefits explicitly extremely difficult. Therefore, in practice, the act of making explicit tradeoffs between future costs and benefits is rare (Rick & Loewenstein, 2008). This topic will be further explored through the lens of Construal-level theory in introducing Study 2. For the purposes of Study 1, behavioral evidence suggests that costs and benefits of the future are represented abstractly, rather than as explicit, concrete values suitable for a cost-benefit analysis (Rick & Loewenstein, 2008).

Returns to Education

For some the benefits of a college degree over a high school diploma clearly outweigh the costs of attendance for some. The unemployment rate in 2014 amongst those with a bachelor's degree was 3.5%, as compared to a rate of 6% amongst those with a high school diploma (BLS, 2015). Those with a college degree raked in median weekly earnings of $1,101 in 2014, as compared to $668 for those with a high school diploma (BLS, 2015). This translated into workers over the age of 25 with a bachelor's degree earning $21,300 (60%) more annually than workers with a high school diploma in 2012 (US Census Bureau, 2013).

Objective measures of returns to education are important in proving the importance of a college degree, but subjective perceptions of returns to education are what guide prospective

students' decision to pursue education (Betts, 1996; Attanasio & Kaufman, 2009). Students must be generally aware of the benefits of a college degree if they are willing to pay the increasing costs of higher education, but might not think about the different expected benefits of specific majors and occupations. The overall earnings premium for a college degree over a high school diploma is a good benchmark to weigh the benefits of higher education, but it is an average including both the rising earnings of high-skill occupations such as business management, STEM fields, and health professionals as well as the falling earnings of middle-skill clerical, administrative, and sales occupations (Autor, 2010).

A seminal study examining undergraduate's perceptions of wages for specific degrees (bachelors in engineering, MBA, Ph. D in Chemistry, etc.) found substantial variation in perceptions of average salaries (Betts, 1996). Student's year of higher education was the strongest predictor of accuracy in salary estimates (Betts, 1996). Accuracy of wage perception was significantly different between first and fourth years, with first years providing higher salary estimates, and with accuracy increasing the most between the third and fourth year (Betts, 1996). In line with this finding that knowledge of returns to education comes with time, a study of high-school seniors found perceptions of returns to education to be slightly overestimated (Avery & Kane, 2004).

These findings show that students generally do learn about wages in their field on a continual basis, and most aggressively so in their final year, but that it is rather inaccurate and overzealous in the earlier years. This pattern of information acquisition is intuitive and it may be unreasonable to expect young adults to know what they can expect to make in a potential career track any sooner than their final year or two, but does not bode well for the traditional form of the human capital investment model. If students are enrolling based on overestimates of the

returns to a college degree there is more room for error. Furthermore, investing in human capital through a college degree does not benefit all equally—not everyone with a college degree earns more than someone with a high school diploma (Baum, 2014; Webber, 2014).

Even with the rising costs of tuition a college degree continues to pay off, but perhaps more for some than others (Baum, 2014). Given the variability in how much students stand to benefit from schooling many urge the importance of carefully selecting an institution, a major, and a prospective occupation (Oreopoulos & Petronijevic, 2013; Haughwout, Lee, Scally, & van der Klaauw, 2015). Estimates of earnings based on major and based on occupation are easily found online, but it is unlikely that students actively seek this information before they enroll (Christie & Munro, 2003). Furthermore, there is a degree of fundamental uncertainty involved in estimating future returns based on the current labor market (Baum, 2014). Even if accurate estimates were available students frequently change their field of study.

Using current outcomes as a benchmark for future returns is especially risky given the endogenous relationship between expectations of future returns to a college degree and the supply of labor (Baum, 2014; Snow & Warren, 1990). As more of the population obtains a college degree, the greater supply of high-skilled workers may put downward pressures on the returns to a college degree (Snow & Warren, 1990). Based on current job projections excess supply of high-skilled workers is hardly a concern in our recovering economy, pointing to a shortage of skilled workers if anything (Carnevale, Smith, & Strohl, 2013).

Employment projections using 2010 Census data as a base point suggest that returns to higher education do not suffer based on whether students deliberately engage in a cost-benefit analysis of enrolling in a degree program, given the demand for workers with a postsecondary degree, but the urgency of students carefully selecting an institution and program still stands with

these optimistic employment projections. Out of all projected positions for the 2012-2020 period: 35% will require a bachelor's degree or more, 30% require an associate's degree or some college/training, and 36% require only a high school diploma (Carnevale, et al., 2013). Some prospective students may benefit more from a 2-year degree than a bachelor's degree, and some may benefit from no degree. Thus, future research should focus not on whether or not students enroll in postsecondary education at all, but what type of program they enroll in.

As a college education becomes more important and costly, and for-profit and online universities advertise sub-par educations, it is dangerous to assume that the returns to a college degree apply to all degrees. Similarly, it is dangerous to assume that all educational debt is equally secured by future returns. These societal concerns cannot be addressed in the current empirical work due to the nature of the sample, but an important, individual-level question may be addressed: how do students understand their loan commitments in relation to their expected earnings?

Costs to education

Accurate cost estimates, while revealed sooner, are difficult to make. Every institution has its own sticker price and varies in generosity with the amount of scholarships, grants, and federal loans that they allocate. While specific wage benefits to schooling are available and simply under-utilized, the net cost of attending college is largely unavailable until after students have applied, have been accepted, and schools send out financial aid offers. The most visible and salient piece of information on the cost of education during the application process is the sticker price, which is often a far greater price than most students will be asked to pay (Scott-Clayton, 2012; Oreopoulous & Petronijevic, 2014). Despite the growing difference between sticker and

net price (Oreopoulous & Petronjevic, 2014) the majority of students look at the sticker price without factoring in financial aid (College Board, 2013).

Not only do students and parents seem to focus on the sticker price rather than the net cost, they seem to overestimate sticker prices. High school students overestimated the cost of tuition at a four-year public college by 65 percent, and parents overestimated by 80 percent (Scott-Clayton, 2012). The high sticker prices most cited in the media might act as an anchor for public perceptions of the costs of attending college as well (McGuigan, McNally, & Wyness, 2012). Overestimating the personal net costs of attending college may deter students and their parents from striving to achieve higher education.

High sticker prices have been shown to discourage students from applying to college (Avery & Kane, 2004), or from applying to the more selective but expensive schools which would offer significant financial aid (Avery& Hoxby, 2004). High sticker prices are especially alarming for low-income students as one year of tuition likely might exceed their family's annual income. As mentioned above this demographic has a lower reference point, which in turn might make the college investment seem impossible even if they stand to significantly benefit from it. For example, more than half of students from the advanced high school programs in a public school in Chicago attended the most selective institution that they were accepted to, and 20 percent of them didn't apply to a four-year college at all (Roderick, Nagaoka, Coca, & Moeller, 2009). This issue of undermatching qualified students to quality educational institutions has been pinned on delayed, inadequate information and the highly complex financial aid process in the United States (Avery & Turner, 2009; Bettinger et al., 2009).

Student loans in the human capital investment

For the fiscal year of 2011-2012 federal student loans accounted for 61%, or $105 billion, of all federal aid available for postsecondary education, and was projected to increase to $112 billion in 2014 (Department of Education, 2014). The remaining 39% is distributed between federal grants, the federal work study program, and educational tax credits (Department of Education, 2014). Despite the sea changes in how the human capital investment is being financed, there is a dearth of evidence of how student loans affect this decision.

The use of loans to finance the human capital investment has been directly related to the explicit inclusion of risk in human capital models (Levhari & Weiss, 1964; Ioenescu, 2004). The additional risks of student loans considered in these two models are the illiquidity of the human capital as compared to physical capital, and the changing interest rates on student loans. I will argue that beyond these risks, there is fundamental uncertainty involved in weighing future costs in outcomes that, while difficult to model, should not be eliminated by assumption.

The decision to enroll in higher education today is inextricably linked to future outcomes. There is a degree of uncertainty endogenous to any investment decision, but the human capital investment decision is riskier than investments in physical capital. First and foremost is the fact that human capital is illiquid—it cannot be bought or sold on the market. Once the time and monetary resources have been dedicated to that education or training, those inputs cannot be liquidated or retrieved. In deciding to invest in human capital individuals must dedicate to implement the schooling or training they invested in before they can receive a return on that investment. On the flip side, human capital is something that cannot be removed from its owner. This is a concern for educational lenders since there is no physical collateral backing the loan. The lack of physical collateral may reduce the accountability of students to repay their loans.

Perhaps this is the reason that student loans are by law the only type of loan that cannot be discharged[1].

Researchers have not ignored the uncertainty involved in the human capital investment decision. Levhari and Weiss develop a two-period model (present, future) in which future earnings are dependent on present level of investment in human capital (1964). The model assumes that individuals are allocating their current resources between physical and human capital based on the average rate of return to each type of investment (Levhari & Weiss, 1964). Uncertain inputs include personal ability to thrive in higher education and quality of schooling, and the uncertain supply and demand conditions of the future labor market, both captured in a single random effects variable μ, subject to the model:

$$y^1 = y^0 + \lambda y_0 \gamma(\lambda, \mu)$$

Where λy_0 is the amount of investment in dollar terms and $\gamma(\lambda,\mu)$ is the average rate of return for each dollar invested in human capital (Levhari & Weiss, 1964). In this model the marginal rate of return of physical and human capital depends on the degree of uncertainty of the future state of the world, and they conclude that investments in human capital will decrease under conditions of greater uncertainty (Levhari & Weiss, 1964).

Importantly to the present empirical research, their model proposes that wealthier individuals are less risk-averse because they can afford to take on more financial risk (Levhari & Weiss, 1964). They also mention, but do not place great importance on, the use of loans to pay for human capital. They posit that, for an individual who is a net borrower for their human capital investment, an increase in interest rate will decrease investments in human capital. These two insights introduced by the risk model of the human capital investment suggest that there is

[1] Cases of student loan discharge are extremely rare and difficult to obtain (Pelley, 2012).

less risk involved in the human capital decision for high-income prospective students, and that interest rate charged on student loans impacts individual's decision to invest in his/her human capital for those that borrow to finance their investment.

A more recent analysis considers parental wealth and models risk in the human capital investment through student loans. If tuition costs are paid by parental contribution, the human capital investment carries very little risk. If tuition is paid through student loans, financing the human capital investment is risky due to the uncertain interest rate on student loans (Ioenescu, 2008). This model also accounts for an individual's learning ability, initial stock of human capital, and financial assets (parental financial contribution). Unlike the risky model of human capital investment described above, Ioenescu finds a minimal difference in college enrollment between parental wealth quartiles (2008). Ioenescu argues that the most important predictors of college enrollment are a high level of learning ability and a low level of educating and/or job training (and thus a need to invest in it). Additionally, these researchers explore the enrollment responses following the implication of relaxed eligibility requirements and changes to repayment options in the federal student loan program (FSLP), and find that allowing students to lock in an interest rate and a choice of repayment plan followed with a greater increase in enrollment (2008).This model, similar to that of Levhari and Weiss, suggests that the risky element of student loans lies in the interest rate charged on loans which is subject to change each year. Therefore, locking interest rates down removes the risk and possibility for risk-aversion to affect college enrollment. Despite these attempts, the human capital investment literature, by and large, is failing to consider the role of student loans (Aud, Wilkinson-Flicker, Kristapovich, Rathbun, Wang, & Zhang, 2013).

Researchers continue to add new variables and considerations to the human capital investment model, but do these accurately capture the decision process that students and their parents engage in deciding to enroll in college and take out loans? Do students truly look to interest rates as the basis of their decision? The blossoming field of behavioral economics offers a more nuanced view of possible barriers, and risks, involved in the human capital investment decision. Modeling psychological factors into economic models can improve understanding of the latent motivations and incentives underlying the observed behaviors and factors typically used in economic models (Coleman & DeLiere, 2003; Dowd, 2008).

Financial aid

Students and their parents alike report the financial aid process to be the most confusing and overwhelming part of the application process (College Board, 2013). There are numerous financial aid programs and the differences and requirements are not made clear: institutional scholarships/grants, federal pell grants, federal Stafford subsidized loans (interest does not accrue until six months after graduation), federal Stafford unsubsidized loans, federal Perkins loans, and the federal work study program. Institutional grants are those offered by the university, and Pell grants are provided by the government based on the expected family contribution (EFC) towards tuition. Federal Stafford loans carry a comparatively low, variable interest rate, provide flexible repayment plans, and are provided by government-supported private lenders. Federal Perkins loans are provided by the university with a set interest rate of 5%. Some institutions list private lenders on their financial aid packages as well, which carry higher interest rates than federal loans, are not flexible in repayment, and often require payments to be made while students are still enrolled. Federal work study funds do not actually go towards direct costs of attendance but is earned only if students obtain a work study position on campus.

The complex FAFSA application process and a lack of transparency in eligibility requirements which apply to most of these types of aid may mar the effectiveness of such programs. Eligibility for federal student loans is even less transparent than grant aid because individual institutions decide whether and how federal loans are incorporated into aid packages (Scott-Clayton, 2012). Study 2 will argue that giving individual institutions the discretion to choose how federal loans are presented in a financial aid package might give them more influence than is immediately obvious. Furthermore, the cost of complexity in the application process is a primary oversight of the classical human capital investment model (Oreopoulos & Petronijevic, 2014), and one which behavioral economics has the tools to reduce.

A landmark study in this domain teams with H&R block to increase college information and simplify the financial aid process which produces results with real outcomes (Bettinger, Long, Oreopoulos, & Sonbahnmatsu, 2009). In this applied experimental study some families were given the option to transfer their tax information directly to the Free Application for Federal Student Aid (FAFSA) application right after filing their taxes at tax preparation center, were provided with estimates of their financial aid eligibility, explanations of why they were eligible, and tuition prices for nearby colleges. The information-only group was given financial aid eligibility estimates, explanations of why they were eligible, tuition prices for local colleges, and simply encouraged to complete the FAFSA at home. The control group received a brochure with general information about college and financial aid.

Students in the treatment group that filed their FAFSA at the tax center were 25 percent more likely both to enroll in and to continue college than either of the other groups. The information-only group, which received estimates and explanations of financial aid and prices of nearby schools, were no more likely than the control group to file their FAFSA. Prospective

college students in the treatment group were 10 percent more likely than the other groups to receive a Pell Grant. For students currently enrolled in college, the treatment group was 3 percent more likely to receive aid, and saw a 2 percent increase in their aid receipt (Bettinger et al., 2009). The significant effect of this intervention translated to a real world change in 2010. Those that file taxes with TurboTax have the option to transfer their TurboTax file to pre-populate half of the FAFSA application, thus streamlining the necessary but onerous process of filing a FAFSA. No examination of the impact of this behavioral intervention on enrollment or aid receipts could be found, but this is an example of the potential of small, cost-effective changes that can incentivize and increase access to higher education.

Borrowing Today to Pay for a Lifetime

As discussed, a few attempts have been made to include the use of loans in human capital investment models (Levhari & Weiss, 1964; Snow & Warren, 1990; Ioenescu, 2008). However, student loans only enter the model insofar as how changes in the interest rate affect decisions to enroll. These models assume rational actors that are explicitly weighing the net costs of education to expected benefits, a tradeoff which is made riskier when financed by loans due to the interest rate. Given the sea changes in how a college education is being financed the role of student loans deserves more attention. Are students considering interest rates on loans in their decisions? Are they explicitly weighing the net costs of education to the expected benefits? Are they considering the costs and benefits each year as they decide whether or not to invest more into their human capital? These are all assumptions underlying the human capital investment models that the empirical analysis in the present research aims to critique.

The present research surveys a sample of undergraduates on their awareness of and engagement with their own debt. If student behavior followed present value models, students would check their loan balance at least once a year as they make their decision whether to reenroll or not, be able to report how much they currently owe and how much they expect to owe in educational loans, to have an estimate of how much they expect to make. If the only contribution of the use of student loans to finance the human capital investment is through the interest rate, then students should be able to report the interest rate that their loans carry. This research explores whether the majority of students have this basic level of awareness about how they are financing the investment in their human capital.

The previous two sections detailed a number of complications involved in evaluating the net cost and returns to education. These many "behavioral sinkholes" placed along the path to

deciding whether to enroll in a postsecondary degree question the validity of claims that any student with the academic ability to succeed in higher education should see no barriers to enrolling in a postsecondary program (Ioenescu, 2008). This research specifically explores whether a sample of undergraduate students are adhering to the investment model's assumptions that students reevaluate their human capital investment each year, and that the only role of student loans is in the interest rates that they carry. In order to further explore how students understand their educational loans a number of questions about their financial attitudes are included in the survey.

Attitudes Towards Debt and Finances

A necessary evil.

Conducive to the perceptions that a college education is necessary to succeed in the current labor market, and the greater reliance on federal loans to finance this investment, an emerging trend in the debt attitude literature reveals a similar theme of student debt as necessary to receive a higher education. One recent examination asked educational borrowed to report how relevant a number of adjectives were to their student loan experience. Significantly, the *mandatory* theme was the strongest predictor of the student loan experience, including adjectives such as important, necessary, useful, and needed (Mueller, 2014). The only other significant attitudinal construct was *duress* (Mueller, 2014). Out of thirty-five adjectives which passed the initial factor analysis, nineteen were related to unhealthy emotional states (overwhelming, frustrating, consuming, looming). How prevalent is this attitude of student loans as a negative but necessary experience, and what does it imply?

This is not the only account of student loans as a "necessary evil". There are two studies which, through interviews, identify of a category of student debtors as 'debt-resigned' (Christie

& Munro, 2003; Harrison, Chudry, Waller, & Hatt, 2015). The researchers defined this group as the "average student making their way despite a borrowing regime that they were not particularly pleased with, but which simply had to be gone through" (p.97; Harrison et al., 2015). This debtor type is largely represented by students whom come with families with fewer financial resources and less educated parents (Christie & Munro, 2003).

A national survey of currently enrolled students in the United States found the attitudinal measure of 'debt as necessity' to be a significant predictor of financial outcomes and intentions (HigherOne, 2013 and 2014). Nearly half (40.5%) of the 40,000 college students surveyed agreed that "students have to go into debt. Viewing debt as a necessity was a significant negative predictor of intentions to pay student loans on time and in full, start a savings plan, and start budgeting, and predicted high-risk debt behaviors, withdrawal from college (in the next year), and history of being late on credit card payment (HigherOne, 2013 and 2014). The present survey of student debt attitudes similarly expects that viewing debt is a necessity will predict lesser engagement with and awareness of one's own debt. The effect of *debt necessity* is expected to function through how much control students feel they have over their finances. In regards to student loans, if students do not feel like they have control over their borrowing/debt they may avoid engaging with their loans. Feeling that debt is necessary, or that student loans are something that everyone must take may reduce perceptions of control over their debt/borrowing.

Perceived control.

Akin to locus of control, which has been included in human capital investment models, perceived control is used to measure how much control one feels over some aspect of their life, in this case finances. When people feel they have control over a situation, or a greater sense of self-efficacy, they are more likely to engage in more active problem-focused coping strategies,

while lower levels of perceived control tend to lead to more passive, emotional coping (Thoits, 1995). Similarly, consumer behavior research finds a relationship between perceptions of personal control and financial management behavior. Using data from the 1999 Freddie Mac Consumer Credit survey, Perry and Morris (2005) propose a framework of financial management behavior based on locus of control, financial knowledge, and income. They find a small negative relationship between one's view that outcomes are more subject to external forces, as compared to the view that outcomes are in their control, and engaging in financial management behavior. Level of financial knowledge displayed a strong positive relationship with financial management behavior (Perry & Morris, 2005). This relationship between financial knowledge and financial management behavior was mediated by whether one held an internal locus of control (Perry & Morris, 2005). Similarly in the present study, the effect of perceived knowledge about one's student loans on debt management behavior is expected to be mediated by the perceived control they feel have over their borrowing/debt[2]

Most importantly, perceived control is an attitudinal belief that perhaps can be adjusted. The 'model' debtor type identified by Harrison (a, 2014) was the debt-savvy group, which was very tuned into loan schemes and how the loan system works and "consequently, saw the system as broadly fair and their student loans as manageable and not of undue concern" (p. 95). It would be difficult to change the attitude that debt is necessary, because individuals might face credit constraints that make it necessary, but it may be possible to change perceptions of control. Providing students with the knowledge to manage their loans, and framing student loans as an

[2] Perceived control over finances, specifically student loans, were used here rather than a locus of control scale which asks about control over general life events and to allow for a student loan-specific interpretation. Furthermore, given the source of the sample from a private, liberal arts college and therefore a relatively wealthy population it was expected that there would not be much display in persistent feelings of external control, but that students may feel a lack of control over this particular part of their life.

investment that they can "take control of" might bring them closer to the debt-savvy student debtor.

Financial anxiety.

Financial anxiety is a rather under-studied subject with powerful implications (Burchell, 2003). Financial anxiety has been defined as a psychosocial syndrome in which individuals have an uneasy and unhealthy attitude toward engaging with, and administering their personal finances in an effective way (Burchell, 2003). The most recent Nellie Mae survey of borrower perceptions of student debt suggested that negative attitudes towards education debt are steadily increasing (Baum & O'Malley, 2003). As described in the section on 'debt as necessity' a significant proportion of the adjectives which passed the factor analysis in Mueller's model (2014) described unhealthy emotional states. In Harrison's cross-national study (2015), the anxiety factor was a strong negative predictor of awareness of one's own debt.

Over and above the consequence of avoiding engagement with one's own finances, financial anxiety could be a predictor of poor mental and social health. Students that consider leaving college for financial reasons report poorer mental health and social functioning (Roberts, Golding, Towell, and Weinreb's, 1999). If engaging with the financial burden one is taking on has such negative effects, perhaps it is wiser to avoid engagement. Loan educational programs and campaigns should be sensitive to presenting information to students with the understanding that it can cause students anxiety. Information alone could be insufficient. One may have the information necessary to manage their debt, but if they hold negative attitudes towards their debt they still may avoid it.

Awareness

Awareness is a powerful indicator of students' relationship to their debt. It is expected that, at the very least, individuals know how much debt they are incurring. Harrison, Agnew, and Serido (2015) make a similar suggestion in a cross-national examination of student loan attitudes. This examination finds 'awareness' to be the only factor that significantly relates to the other measured attitudinal factors of 'anxiety', 'utility for investment' and 'utility for lifestyle'. The authors describe awareness as the extent to which individuals feel engaged with their debt, and postulate that this likely reflects the degree of control that the individual feels in regards to their debt (Harrison et al., 2015). Accordingly, perceived control is expected to have a strong relationship to awareness in study 1.

Harrison et al. (2015) measured awareness in terms of subjective awareness such that people did not have to display knowledge of their repayment terms, but simply reported whether or not they 'have a good idea about their repayment terms'. The financial outcomes measured in the survey discussed above are intentions and perceptions, rather than actual behavior or knowledge. The present survey also includes questions about perceived knowledge, but measures awareness using a more objective measure. The present research asks students to report debt-engagement behaviors that they currently or previously engaged in and their objective level of awareness of their own debt, rather than self-reported intentions. The present survey has the advantage of examining students all borrowing under the same loan system, so we are able to explore more direct questions about objective awareness about federal student loan schemes, such as when federal student loans enter the repayment period.

Chapter 4: Study 1

Method

Overview.

In order to explore how current attitudes towards educational debt impact student debt management a survey was conducted measuring attitudes towards student loans as a necessity, perceived sense of control over debt management and borrowing, and financial anxiety. Students answered a number of questions regarding their loan commitments in order to measure students' awareness and engagement with their loan commitments.

The survey was distributed to a convenience sample of undergraduate students at a private liberal arts college. Indices of the attitudinal measures and key demographic controls were regressed onto individuals' scores on an index of loan awareness and engagement in an ordered probit model to measure how student debt attitudes might impact engagement and awareness of educational debt. Dummy variables for student gender, year in school, and parental socioeconomic status were also included in the model.

Participants.

Participants were recruited online through an email blast and social media sites to the student population of a private liberal arts school in upstate New York. The email was sent to the entire undergraduate population as an advertisement for a workshop on student loan management, and included a link to the survey at the bottom of the email. The email informed students that the survey was for a senior project on attitudes towards student loans and was not connected to or necessary to attend the workshop, but that they could enter in a raffle to win $100 upon completing the survey. The survey was also posted on social media sites as a survey

for a senior thesis on attitudes towards student loans which allowed them to enter in a raffle for $100.

The latter method of recruitment primarily provided few participants, many whom had already graduated and entered repayment on their loans. This small subsample (N=7) had already faced the consequences of borrowing and made payments on their loans, which put them in a position to more accurately answer the questions regarding loan awareness, and were thus excluded from analysis. Nineteen participants dropped out before completing the section on engagement and awareness of one's own debt and were thus excluded from analysis. All dropped out before they reached the section on awareness (primary dependent variable) and were thus dropped from analysis. Five participants were removed because they reported that they didn't have any student loans and didn't expect to graduate with student loans. One participant was removed because he/she looked up his/her loan information while taking the survey, as evidenced by the report of his/her current loan balance down to the cent.

The final participant pool consisted of 147 undergraduate students. The sample was overwhelmingly female with 38 males, 102 females, and eight participants opting not to report a gender. This sampling issue will be further discussed in the results and discussion section, as it complicates the interpretation of any gender-related results.

Materials.

The debt attitude and awareness survey was built using surveygizmo. The survey took approximately 6 minutes and contained 3 sections: debt and financial attitudes, debt awareness and engagement, and demographics.

Attitudinal measures. Attitudinal measures were adapted and modified from existing surveys of financial and debt attitudes. The survey measured attitudes of debt as a necessity,

financial anxiety, positive financial attitudes, and perceived control. Debt necessity, financial anxiety, and positive financial attitudes were each measured in three items. Perceived control was measured using five items, with two relating to perceived knowledge to manage one's finances/debt and three relating to perceived ability to control/manage one's borrowing/finances. Additionally, participants reported the degree to which the individual or their parents handle their financial aid. For each of these items participants reported the degree to which they agreed with the statement on a 1 (strongly disagree) to 5 (strongly disagree) likert scale (See Appendix A-A).

Awareness and engagement. Awareness of one's own debt was measured with eight questions. Participants first reported to report their current loan balance and how much debt they expect to graduate with. In reporting their current loan balance participants were instructed to only provide an estimate if they were confident that their estimate was within $1,000 of the true balance. If they were not confident in their ability to estimate they simply responded 'unsure'. Participants then identified the types of loans they held, the interest rate that each type of loan carried, and when the repayment period for federal loans begins. Additionally, the survey included two questions regarding whether participants engaged in loan management behaviors (checking loan balance once a year, making a loan payment).

Procedure.

The link to the survey was primarily distributed through an email blast to the undergraduate population at Bard College. The subject of the email read "student loan workshop and chance to win $100". The email first provided information about the loan workshop, and then described that in return for filling out a survey for a senior thesis on attitudes towards student loans they could enter a raffle to win $100. A link to the survey was provided at the bottom of the email, and individuals that clicked on the link were first directed to a separate html

page on the Bard psychology program website which displayed the informed consent form. Individuals indicated consent to participate by clicking 'continue' at the bottom of the consent form and were then directly linked to the survey.

Participants first completed the debt attitude section. The order in which questions were presented was randomized for each participant in order to control for any possible order effects[3]. After the attitudinal measures participants completed the section on debt awareness and engagement, in which items were not randomized. Finally, participants completed a demographics section that asked what year of higher education they were in, the program they expected to get their degree in, how much they expect to make in the year after graduating and in 5-10 years after graduation, the level of education reached by their parents, parental income, gender, and race.

At the end of the demographics questions participants were informed that they could enter their email in the raffle on the next page. The final page displayed a debriefing statement describing the study and a link to a separate survey form where participants could enter their name into the raffle for $100 such that their email addresses could not be matched to participants' survey responses. All procedures and materials were reviewed and approved by the Bard institutional review board on February 13, 2015 (See Appendix .

[3] Order effects are when the order in which questions are presented affects how participants respond. For example, participants may be slightly more fatigued or anxious to finish on the 15th question than they are on the 1st question.

Analysis and Results

Data preparation.

All responses to attitudinal questions were coded into dichotomous variables for the regression analysis. For the attitudinal measures responses of strongly disagree-neither disagree nor agree (1-3 on likert scale) were coded as a '0' and responses of slightly agree-strongly agree (4-5 likert scale) were coded as a '1'. One question regarding *perceived control* ("It is difficult for me to reduce my borrowing/debt") was reverse-scored such that a response of disagree was coded as a '1' and agree coded as a '0'.

For the awareness questions each participant's responses were coded according to their own reported loan commitments. For example, only participants whom reported that they had federal unsubsidized loans were coded as incorrect if they did not provide an interest rate for federal unsubsidized loans[4]. The questions regarding students' current loan balance and how much educational debt they expect to graduate with were coded as '0' if the participant responded 'unsure', and coded as '1' if participants provided an estimate. A scale of *awareness* was constructed by summing all non-zero responses for the awareness and engagement questions, such that each participant scored from 0-8 based on how many questions they answered properly, if they could report their current and graduating loan balances, and if they reported engaging in the debt management behaviors.

A scale was constructed for each attitudinal construct by summing responses to each question measuring that attitude. Indices were created for each psychological construct measured in the survey: *necessity, anxiety,* and *perceived control*. Each participant's non-zero responses to

[4] The possible range of interest rates for federal loans was 3.5-5%, based on the interest rates charged on federal loans for the years 2010-2015, or all possible years that students in this sample could have taken out a federal loan.

each question relating to that psychological construct were summed to create a new variable to be entered into the regression model. categorical ordinal variables, the variables representing participants' score on each attitutdinal index for each psychological construct was entered into an ordered logit/probit model and regressed onto the index *aware*. Robustness checks found no differences between the ordered probit model using scales or single variables to represent debt attitudes. It was expected that necessity and anxiety would negatively predict awareness, while perceived control and perceived knowledge would positively predict awareness subject to the following model:

$$\boldsymbol{awareness} = \beta_{\text{o}} + \beta necessity + \beta anxiety + \beta control + \beta knowledge + ix.SES + ix.year$$

Descriptive analysis.

The total sample consisted of 147 undergraduates at Bard College (38 male, 110 female, 8 undeclared). The sample was representative in terms of year in school, parental income, and major, but skewed in terms of gender, race, and parental education. The sample was skewed in terms of gender, race, and parental education—there were more female than male participants, more white than non-white participants, and more participants whose parents had a bachelor's degree or more.

Loan awareness.

A rather significant proportion of students in this sample could not report basic attributes of their loan commitments. Strikingly, over half of the participants sampled could not report how much they currently owe in student loans (N=76, 51.4%). Participants had the opportunity to comment on this question, some expressing that at one point they knew but that the numbers had "jumbled together". Many expressed a general sentiment of disdain, and some even a sense of

injustice, in the amount they owed. These sentiments match the finding that negative sentiments towards student loans are increasingly common (Baum & O'Malley, 2001). Current level of borrowing did not show a relationship to any of the debt attitudes.

A greater number of students could provide an estimate of how much debt they expect to graduate with (N=102, 68.91%). The same restrictive instructions that participants had to be certain within a $1,000 range that applied to the current loan balance did not apply to the graduating balance question[5]. The looser instructions make the finding that 25.2% of participants were unable to report an estimate of how much debt they expect to graduate with, within a $5,000- $10,000 range even more striking. Out of the 74.8% of students that provided an estimate of how much they expect to graduate with provided graduating loan balances in the range of $1,000 to over $100,000 (See figure 1). A large proportion of students fall into the range of $20,000-$30,000 (Mode= $20,000-$25,000 range), slightly below the current national average graduating loan balance of $29,400 (Institute for College Access, 2014).

In terms of the types of loans students held: 48.1% (N=112) held federal subsidized loans, 41.6% (N=97) held unsubsidized, 24.5% (N=57) held federal Perkins loans, and15.9% (N=37) held private loans. Many students held multiple types of loans, and 23.8% of participants could not identify the types of loans they held (N=35). The picture regarding interest rate awareness is even bleaker. Only 11.61% (N=13) of participants holding federal subsidized loans and 8.25% (N=8) of participants holding federal unsubsidized loans correctly identified an interest rate which fell within the possible range of 3.5-5%[6].

Financial and debt management.

[5] . For the graduating balance question, participants did not have to generate an estimate, but simply had to choose a rough estimate from $5,000-10,000 wide ranges between $1,000 and $100,000.

[6] This is the range of interest rates charged on federal loans for the possible years of 2009-2015 which students could have taken federal student loans .

Regarding debt management behavior, 45.9% (*N*=68) of participants reported that they checked their loan balance at least once a year, with 35.8% (*N*=53) admitting that they did not check their loan balance at least once a year and 18.2% (*N*=27) participants reporting that they were 'unsure'. Surprisingly, 25% (*N*=37) of participants reported that they had made a payment on their student loans before. Making any payments on student loans before the repayment period has begun shows active debt management behavior, but it is possible that these payments were made on private loans for which the repayment period has started already.

There was an overwhelming endorsement of statements regarding positive financial behaviors, such as "It is important to understand how student loans impact your credit score" (87.5% agree) and "It is important to save a portion of your income each month," (93.8% agreed), suggesting that participants are not careless about financial matters. Nearly unanimously, this sample endorsed financial management behavior. This suggests that students might like to know more about their loans but haven't gotten around to it, or don't know how to start, or their parents are managing their financial aid and loans until they graduate. The lack of awareness found in the present study may be less of a function of caring about one's loan commitments, and more about exposure to or opportunity to engage with one's loans.

For a majority of participants the latter was the case. Forty-six percent (*N*=69) of participants reported that their parents completely handled their financial aid, 41.5% (*N*=61) reported that they themselves handled their financial aid, and 11% (N=17) played a part in their financial aid.

Expected benefits.

There was greater uncertainty about the immediate benefits of college as compared to the medium-term benefits, such that 52.7% (*N*=78) of participants reported that they were unsure of

how much they expect to make the year following graduation. For those that reported how much they expect to make in the year following graduation the range was between $0- $95,000 (*M*=$28,071, *SD*=$22,580). For five to ten years after graduation, 40.5% (*N*=60) reported that they were unsure how much they expect to make. The estimates that were reported fell between $10,000 and the endpoint 'more than $100,000', which was the most common answer (*N*=12). The mean expected salary was $59,150 (*SD*=$25,440). The responses of 'unsure' are interpreted with caution, as some uncertainty could stem from plans to go to grad school or enroll in a professional program rather than an aloofness of how much an undergraduate degree could earn them.

Fourth-year students provided an average estimate of $50,800 (*SD*=$22,138), which was much lower than the estimates provided by first (*M*=$60,790, *SD*=$21,940), second ($66,430, *SD*=$30,600), or third year (*M*=$62,800, *SD*=$27,360) students. The difference between fourth and fifth-year students as compared to students in their third year or earlier was not statistically significant, but replicates previous findings that students in their early years of college are more confident in their salary estimates (Betts, 1996) (See figure 6). Given the majority of participants that could not provide an estimate of how much they expect to make it seems unlikely that those that are currently enrolled engaged in any explicit comparison of the financial benefits of a college degree. It is likely that going to college is more of a given than a carefully deliberated choice for many of these participants, but there is reason to believe that this finding would hold in a more representative sample. As mentioned in chapter one, higher education is becoming more necessity than a choice in the modern labor market (Carnevale, Smith, and Strohl 2010). It is more likely that people have a general expectation that people make more and have more job opportunities with a college degree and trust that this will be the case for them. As discussed by

Rick & Loewenstein, future costs and benefits are represented more abstractly, so people rely on more of a 'gist' to base their decision off of—the general belief that one earns more with a college degree than without- than an explicit trade-off. For the majority of the population sampled this is a safe assumption given higher initial wealth, but there is significant variation in the degree to which a college degree ensures higher earnings. These variations warrant a slightly more specific estimation than earning 'more'.

Financial consultants suggest, as a rough figure, that one should not borrow more than they expect to make in the first year after they graduate (SALT, 2015). In order to see how common it was for participants to borrow more than this suggested threshold, a new variable of *unmanageable debt* was computed as the ratio of graduating debt to expectations of first-year salary. A value was not computed if the participant failed to provide an estimate for either graduating balance or expected benefits (N=82). Out of the participants for whom a value was computed, 62.1% (N=42) participants expected to graduate with more debt than they expect to make in the year after graduation. This does not account for participants that plan to enroll in a master's or professional program upon finishing their undergraduate studies. Perhaps a more accurate comparison may be how much one expects to make five to ten years after graduation. Debt balance at graduation and expected benefits five to ten years after graduation are plotted against one another in Figure 3, showing only a dozen participants that didn't expect to be making more in five to ten years after graduation than the debt they expect to graduate with.

Debt and financial attitudes.

Only 33.6% (N=49) endorsed the debt necessity statement that 'Students have to go into debt' (See Figure 4). It's expected that this attitude would find more endorsement in a more representative sample given that this attitude is more common in low-income credit constrained

individuals (Christie & Munro, 2003). An overwhelming 85% of students demonstrated financial anxiety (*N*=125) (See Figure 4). This may be exaggerated by the predominantly female sample, since women tend to demonstrate higher levels of financial anxiety (Archuleta, Dale, & Spann, 2013). Fifty-six percent of participants expressed that they "find it difficult to manage/control [their] debt/borrowing" (*N*=83). Similarly, 56.8% of participants did not feel that they had the financial 'know-how' to be able to manage their loans (*N*=83; See Figure 4).

There was an overwhelming endorsement of positive financial attitudes and behaviors relating to saving and budgeting. Eighty-eight percent of participants agreed that it is important to understand how one's student loans affect their credit score (*N*=126), and 88.4% (*N*=130) stated that it is important to carefully monitor one's finances while at college.

Regression Analysis with Scales

An ordered probit model was used to examine how debt attitudes affected how aware and engaged students were with their educational debt. Indices for *anxiety, debt necessity, perceived control,* and *perceived knowledge* were entered into a regression to predict degree of awareness about one's own educational debt. In the first stage of analysis attitudinal variables were entered individually. In the second stage all attitudinal variables were regressed onto awareness, and finally dummy variables for year in school, socioeconomic status, and gender were entered.

When regressed alone *anxiety* showed a marginally significant negative effect on *awareness* (β= -0.14, *SE*= 0.09, *p*=.10), such that more financial anxiety corresponded to less awareness of personal loan commitments. *Debt necessity* did not show an independent effect on *awareness*. *Perceived control* did not demonstrate an independent effect, but *perceived knowledge* showed an independent positive effect on *awareness* (β=0.47, *p*<.001). The model of

all four debt attitudes demonstrated weak explanatory power (McFadden's R^2 =0.03), and again only *perceived knowledge* showed a significant effect (β=0.43, *SE* =0.12, *p*<.01).

Three demographic variables were then included as dummy control variables. *Year,* or students' year in school (1-6) was included based on the assumption that as students near their final year in school and the repayment period, they will be more motivated to understand their loan commitments. Parental education was used as a proxy measure of socioeconomic status. This was captured in a binary variable representing whether students' parents received a bachelor's degree or more. Parental education was chosen over parental income for two reasons. First, there is a better chance that students will be able to report their parents' level of education with greater accuracy than they would report their annual income. Secondly, whether parents have experience in applying to and funding a higher education should hold more weight in the present context than parental income. Parental income and parental education did positively correlate (N=141, *r*=0.29, *p*<.001), supporting the use of parental higher education as a proxy for socioeconomic status. The final control variable included was gender. Gender was not originally included in the model, but the skewed nature of the heavily female sample surveyed urges a measure to control for any effects of this bias in the sample. Based on previous literature women tend to be more anxious and less confident in finances, thus females were expected to show lesser awareness and engagement with their debt.

When socioeconomic status, year in school, and gender are controlled for *perceived knowledge* remains significant (β=0.38, *SE*=0.13, *p*<.005). All demographic control variables are found to be significant and the total model demonstrates, still weak, but greater explanatory power (McFadden's R^2=0.06). Having parents that are college educated had a significant negative effect on *aware* (β= -0.17, *SE*=0.09, *p*<.05). Gender also had a significant negative

effect on *aware*, such that women demonstrated less awareness of their loan commitments (β= -0.61, *SE*=0.21, *p*<.001). This effect of gender is frequently found in the literature (Chen & Volpe, 2002).Year in school positively affected scores on *aware* in the predicted direction-- older students scored better on *aware* (β=0.18, *SE*=0.07, *p*<.001). The overall explanatory power of the model including the dummy variables remains weak (McFadden's R^2 =0.06)

The negative relationship between socioeconomic status (as measured by parental education) and *aware* is counter to findings and predictions about financial knowledge based on socioeconomic status. Literature on financial literacy in young adults suggest quite the opposite—that children of parents whom went to college and have higher incomes learn better financial habits and behavior from their parents (Shim, Barber, Card, Xiao, Serido, 2010). I further explored this finding by including a variable which captured whether the student or the parent was primarily responsible for managing the students' financial aid. This variable shows very strong significance (*p*<.01) and increases the overall explanatory power of the model to pseudo R^2=0.06). Most importantly, including a variable for whether students or parents are primarily responsible for managing the students' financial aid diminishes the effect of socioeconomic status to be no longer significant. This suggests that the relationship between socioeconomic status and awareness is mediated by the degree to which students themselves are responsible for managing their financial aid.

Some may criticize the use of scales for the attitudinal constructs, as it is difficult to interpret the more abstract notions that these constructs represent than it is to interpret responses to individual questions. There is also the concern of whether each question is measuring the psychological construct that it is meant to. In order to address this issue I measured the internal reliability of each attitudinal scale using cronbach's alpha, for which $\alpha \leq .70$ is considered to

communicate an acceptable level of reliability. The debt as necessity and financial anxiety scales nearly reached an acceptable level of internal consistency (necessity: α=.68, anxiety: α=.66). In contrast, perceived control displayed very poor internal consistency (α=.41). When removing one variable "If I chose to I could reduce/control my debt" which did not correlate to the other variables the internal reliability of the perceived control scale is slightly improved (α=.61). Since perceived control was the only psychological construct which demonstrated an effect on awareness and this scale was deemed statistically unreliable, I proceed with an additional analysis using single-question variables representing each psychological construct as a robustness check.

Factor Analysis

A principal component factor analysis (PCA) was run on all attitudinal variables to extract single-question variables which best measured the latent psychological constructs underlying the attitudinal questions. Principal component analysis finds strong patterns among variables, and identifies the latent constructs that the individual variables are measuring. Factor analysis also produces a value for how well individual variables load onto, or fit the underlying pattern of, the relevant component. Factors were extracted based on if the variable demonstrated an eigenvalue of 1 or more. The principal component factor analysis for each attitude demonstrated an adequate sample for running a PCA as measured by the Kaiser-Meyer-Olkin measure of sampling adequacy at the p<.001 level.

Three components were identified, but did not precisely map onto the three attitudinal measures that the questions were designed to measure. Both the questions relating to financial anxiety and the questions relating to whether participants felt they had control over their finances/debt loaded onto Component One. Financial anxiety was expected to relate to perceived

control, such that people that feel they have less control over their finances also feel more anxious about their finances. Consistent with this predicted relationship, the perceived control questions negatively loaded onto Component One and the anxiety questions positively loaded onto it. The loading values of the anxiety questions were much higher than the loading values of the perceived control questions, suggesting that Component One primarily identifies patterns of financial anxiety, and responses to the perceived control questions displayed a strong negative relationship to financial anxiety and thus was grouped into Component One.

In order to precisely measure my predictions about perceived control, variables were extracted from Component One—one to represent financial anxiety and one to represent perceived control. The financial anxiety variable that most strongly loaded onto Component 1 was "Thinking about my personal finances can make me feel anxious" with a factor loading of 0.40. The variable chosen to represent perceived control was "It is difficult for me to reduce/control my borrowing/debt" with a factor loading of -0.29.

The other attitudinal measures mapped neatly onto constructs, such that the debt necessity questions accounted for Component Two and perceived knowledge mapped onto Component Three. The variable chosen to represent debt necessity was "Students have to go into debt" with a factor loading of 0.8[7]. The variable chosen to represent perceived knowledge was "I have the financial 'know-how' to be able to manage my student loans" with a factor loading of 0.84. See appendix A-C for PCA table.

Regression analysis with single variables.

An ordered probit regression was run with the response to each of the single questions used to represent the attitudinal constructs: debt necessity, financial anxiety, perceived control,

[7] The factor loadings of debt necessity and perceived knowledge are stronger because only one latent construct is measured in

and perceived knowledge. Responses to each attitudinal variable were monotonically ordered from one to five to how much the participant agreed with the statement scored on a scale of 1(strongly disagree) to 5 (strongly agree). In the first stage of analysis attitudinal variables were regressed onto awareness individually. In the second stage of analysis all four attitudinal variables were regressed onto awareness. Finally, the dummy variables for demographic characteristics and exploratory analyses were conducted.

When entered alone *necessity, anxiety,* and *perceived control* did not exhibit significant effects. As expected *perceived knowledge* showed a strong positive effect on awareness (β=0.36, *SE*=0.08, *p*<.001). When all four debt attitudes were regressed onto awareness the overall explanatory power of the model on awareness is still weak (McFadden's R^2 =0.04; see table 3). *Perceived knowledge* again showed a significant positive effect on awareness (β=0.37, *SE*=0.87, *p*<.001), and *perceived control* showed a marginally significant negative effect (β= -0.14, *SE*=0.08, *p*=.09). *Perceived control* was expected to positively affect awareness, such that the more in control one felt over their debt/borrowing, the more they will actively manage their debt. The question used to measure *perceived control* asked about one's ability to control their borrowing/debt, which relates to financial resources. It is possible that those whose parents manage the financial aid process feel more in control because they are not involved in figuring out how to make ends meet and thus do not face a sense of credit constraints. When the dummy variable for financial aid responsibility is added the effect of *perceived control* is no longer marginally significant, but is not greatly reduced (β=-0.11, *p*=0.12). Perhaps this finding is a type I error, or perhaps this suggests that those that are more credit constrained and have less control over the amount that they borrow have greater awareness of their debt. In support of this, Boddington & Kemp find that those with higher debt levels engage in more debt engagement behavior (1999).

Indeed, those who felt they had control over their borrowing/debt had the lowest level of graduating debt (See Figure 2).

When the dummy variables for year in school, gender, and socioeconomic status were entered into the model *perceived knowledge* remains significant (β=0.33, $p<001$). The dummy variables for gender ($p<.001$) and parental education showed significant effects on awareness ($p=.06$), and the overall explanatory power of the model to predict level of awareness and engagement with student debt is improved (McFadden's $R^2=0.06$). Again, when a variable regarding the degree to which the student themselves or their parents manages their financial aid was entered into the model the effect of socioeconomic status is completely eliminated. Whether or not the student manages their financial aid shows a strong effect on *awareness* ($p<.001$), and significantly adds to the explanatory power of the model (McFadden's $R^2=0.08$; see table 4).

Summary

Over half of the students sampled could not report how much they currently owed in student loans (N=76, 51.4%), 23.8% (N=35) could not identify the types of loans they held, 25.2% of participants could not provide an estimate of how much debt they expect to graduate with within a range of $5,000- $10,000, and 40.5% ($N=63$) participants could not estimate how much they expect to make five to ten years after graduation. On their own, these results are rather alarming and can be interpreted as reckless borrowing, but considering the lack of awareness alongside the debt attitudes that this sample held towards their debt, though, paints a different picture.

It does not seem that these students are financially reckless and borrowing without considering the consequences. They are not ignorant to how unaware they are of their loan commitments. Perceived knowledge was a strong and consistent predictor of awareness, such

that those that did not feel they knew what they need to know were less able to answer questions about their loan commitments. This lack awareness does not seem to be taken lightly, either. The financial anxiety items showed strong negative relationships to perceived control and perceived knowledge, such that perceptions of less control and knowledge of loans corresponded to higher financial anxiety (See table 5). The direction of this relationship cannot be identified with the current dataset—a lack of knowledge about one's debts could cause anxiety or financial anxiety could cause a failure to manage one's debts—but there is certainly a relationship that should be addressed in the design of loan education programs. In either case, the negative relationship between perceived knowledge and financial anxiety suggests that students are not carelessly borrowing. The strong negative relationship between perceived knowledge and anxiety is thus interpreted as students feeling anxious about how little they know about their loan commitments, rather than students actively avoiding managing their finances. Furthermore, this sample strongly endorsed positive financial values and behaviors and expressed concern over how their student loans will affect their credit score. This paints a picture of students that are borrowing what they need to in order to invest in higher education and feel unprepared to manage them.

This general lack of awareness of the explicit financial costs and benefits of higher education strongly questions the assumption that students are actively weighing the costs and benefits of the college path against the non-college path. This survey was distributed in early March- about a month before students receive their financial aid package and must decide whether to enroll the following year- so it is not unreasonable to expect students to be thinking about their current financial commitments if we are to assume that students reevaluate their decision to invest in human capital each year.

Regarding the regression model, the dominant effect of *perceived knowledge* on awareness is not too surprising. *Perceived knowledge* measures whether students felt they had the knowledge to manage their student loans and *awareness* is an index of how much students knew about their loans. It seems that the index of awareness accurately captured a set of knowledge that one needs to manage their student loans, and that students' perceptions of how much they knew accurately represent how much they actually knew. The finding that students did not overestimate their perceived knowledge is important, because overconfidence in how capable one is of managing an issue can lead to less motivation and efforts towards handling that issue (Stone, 1994).

It is interesting and worth considering that students are willing to take on loan commitments and remain somewhat ignorant to how that commitment works. This suggests that it has become, in a sense, normal to take on loans without fully understanding the terms of these financial commitments. This finding, along with the finding that 34% of participants agreed with the statement "Students have to go into debt" suggests that there is debt tolerance, or debt resignation, in young adults, which is consistent with previous research on student debt attitudes (Chudry, Foxall, & Pallister, 2011; Project Money, 2014). Furthermore, increasing tolerance for debt has been found to follow from the necessity and capacity to borrow (Davies & Lea, 1995).

Another contribution of this model is the effect of personal experience managing one's financial aid found in the regression analysis using the attitudinal scales. Students of lower socioeconomic status appear both more responsible for managing their financial aid decisions, and more aware of their loan commitments. This may alleviate some threat of students not understanding their loan commitments, in that there was a tendency for a lack of awareness to occur amongst the students whom have a greater financial safety net in their family to fall back on if

they themselves cannot honor their loan commitments. It is also assuring that even if the students aren't managing their financial aid to deliberate the loan decision it seems that their parents, whom have more financial experience, are likely deliberating for them. The results from this analysis show the negative side effects of parents dominating the financial aid process. While parents may be better equipped to make these decisions the burden will ultimately fall on students, and when it does students may be unprepared to handle such a responsibility.

Surprisingly, year in school was the only variable that did not demonstrate an effect in the single-variable robustness check. It was expected that there would be a dramatic learning curve in the fourth year as students prepare to enter the repayment period, but there was no difference in average awareness by year in school, $F(3,138)=0.55$, p=n.s.. Average awareness was identical between third (M=2.7, SD=1.3) and fourth-year students (M=2.67, SD=1.49), which was not much greater than first (M=2.51, SD=1.36) or second years (M=2.3, SD=1.39) (see figure 6). This suggests that participants in their fourth year were no more prepared to manage their educational debt than younger students, despite the repayment period lingering in the near future for fourth-year participants.

The results from the survey in study 1 suggest that there are a significant proportion of students who are not aware of the basic terms of their student loans. The necessity of more widespread financial literacy was realized following the recent financial crisis. Part of the recipe for the housing bubble and crash was that a number of sub-prime borrowers took on loans with disadvantageous, difficult to comprehend repayment plans which lead to an increase in mortgage defaults (Mayer, Pence, Sherlund, 2009). Financial literacy, specifically numeric ability of mortgagers, showed a negative correlation to default rates of mortgagers from the period of the housing bubble (Gerardi, Goette, & Meier, 2010). One lesson to be learned from the housing

crisis is that most people, especially those new to the process of taking on credit, might not fully understand the conditions of their loans. Efforts should be made to aid comprehension of underlying loan terms, especially the expansive federal loan program, so students are better prepared to manage their student loans. Furthermore, more loan education has the potential to reduce financial anxiety among college students. It is well-observed that financial anxiety has detrimental outcomes on students' psychological and mental health, and even on educational outcomes (For a review see Archuleta, Dale, & Spann, 2013). Not only are students carrying the financial burden of the investment in their human capital, but carry the psychological burden that is attached to their debt.

Study 2 is motivated by lack of debt awareness and the financial/debt attitudes exhibited in Study 1. Stronger financial literacy relating to student loans important to ensuring that students are prepared to manage their debts, as well as preventing additional strain or psychological strain related to financial anxiety. A lack of awareness about one's loans leaves them an ominous, looming, burden that they are graduating into. Educating students on their debts and how to manage them may relieve some of the weight of this financial burden that is increasingly necessary to participate in higher education.

Study 2 examines an information intervention at the point at which students and families are ultimately making the decision to invest in human capital—the financial aid package. Traditionally, financial aid packages simply list the name and amount of each aid item, and the total amount of aid. I propose that this is not adequate information for prospective students and parents to base their decision off of, and experimentally examine two ways of presenting additional financial aid information. Study 2 also examines the effect of an abstract or concrete mindset has on how financial aid information is approached.

Chapter 5: Designing Around the Decision

The results in Study 1 stress the need to improve financial education for prospective and current students with loans. Study 2 aims to contribute to recently improved efforts towards aiding consumer decision making by focusing on how information about student loans is provided and presented. Study 2 examines how presenting financial aid information in a tabular versus verbal format, and how the mindset, or frame of processing, with which this information is approached with affects comprehension and usability of the informative material. The material targeted in this experiment is the financial aid award letter. The financial aid award letter is the primary source of information that all students evaluate in making the important decision to finance their investment in human capital.

Literature Review

Informing consumer decision-making.

The Federal Reserve Board has drastically enhanced efforts to improve information and materials to aid informed consumer financial decision making. Through numerous structured interviews and consumer surveys the Board has delineated a number of findings as guidelines for providing financial information (Hogarth & Merry, 2011):

- Disclosure language should be plain but meaningful
- Thoughtful design of visual elements such as headings, tables, and charts can make disclosures more useful
- Contextual information, or a frame for information, can improve comprehension and usability of disclosures
- Standardizing disclosures can be difficult
- The "less is more" maxim often holds
- Achieving a neutral tone is difficult
- Establishing the choice structure may be part of creating the disclosure
- What works in print may not work online

As a policy-directed report for the Fed the goal of this report was more to describe findings of what works, not to explain why it works. The structured interviews used in these observational studies are important in sketching general guidelines to follow in designing informative materials, but in order to confidently apply these findings to other situations a deeper examination and explanation of the psychological processes underlying the observed behaviors is crucial.

By understanding the psychological mechanisms underlying whether people will be motivated to read financial disclosure statements and how they process that information we can more effectively apply these guiding principles to different contexts and populations. Randomized controlled experiments are necessary to estimate the effect of design features, and helpful in highlighting how the presentation of information and the choice environment may be affecting less observable behaviors or processes. The present research critiques relevant aspects of the current system of presenting financial aid information, and proposes an alternative based on consumer decision making research. Building off of the structured interviews organized by the Fed I focus on the psychological underpinnings of the second and third guidelines for designing materials: thoughtful design using tables, and the framing of information. I draw from the consumer decision-making literature to propose how tables enhance comprehension and usability, and propose a contextual frame based on literature on construal-level theory.

Consumer decision-making.

Consumer decision making research looks to answer four questions: which brands/choice alternatives are considered and why, what information about each alternative is processed and why, how are these inputs combined to come to a decision, and how do memories of previous decisions affect these questions (Alba, Hutchinson, & Lynch, 2001). This research focuses on the

second question regarding which information about each product is processed, and specifically how information is organized affects which information is processed.

The processing strategy enlisted when making a decision is contingent upon characteristics of the information environment--the perceptual influences of information display (such as the visual salience of information) and task complexity factors (such as problem size and comparability of attributes) (Bettman, Johnson & Payne, 1991; Payne, Johnson & Bettman, 1993). An important distinction in processing strategies is how selective a consumer is in processing information. A consumer may examine the same amount of information for each attribute and alternative (*consistent* processing) or unequal amounts of time or effort examining information on different alternatives or attributes (*selective* processing) (Bettman, Luce, & Payne, 1998).

People are more likely to engage in selective processing when a task becomes more complex or when some attribute information is more visually prominent or easier to process (Janiszewski, 1998; Lurie, 2004). One way to increase the prominence of an attribute is to sort alternatives by that attribute, which subsequently guides how people view and evaluate alternatives and makes that attribute more important to the choice at hand (Areni, Duhan, & Keiker, 1999; Jiang & Punj, 2010). For example, when restaurants were listed by price people viewed less expensive restaurants, but when listed by location people viewed more expensive restaurants (Jiang & Punj, 2010). Selective processing can be especially detrimental to decision-making if individuals selectively process, or if the choice environment encourages selective processing of, less important attributes (Bettman et al., 1998; Diehl, 2005). Whether it is done intentionally or inadvertently, the way in which information is organized guides which information about items is evaluated or receives more weight when evaluating choice options.

Another important display factor which guides selective processing of information is attribute concreteness. Attribute concreteness refers to whether attribute information is presented in an easy to process form (i.e a single descriptive word "excellent") or a form which requires deeper processing (i.e verbal descriptions such as "a delectable blend of sauvignon cabernet grapes") (Jiang & Punj, 2010). Numerical information, for example is considered to be more concrete by allowing for direct comparisons between alternatives (Huber, 1980). In contrast, verbal and linguistic information is considered to be more abstract and to lead to more alternative-based processing (Stone & Schkade, 1991). Alternative-based processing is when consumers process information about each choice option individually, as compared to attribute-based processing in which consumers view information by how each choice option varies on an attribute. When choice alternative are more similar or more complex, verbal representations of information require more effort (Stone & Schkade, 1991). When choice alternatives are more similar, it is difficult to identify the differences between choice alternatives, especially if engaging in alternative-based processing. In the case of student loan schemes, the differences are often minimal. For example, the only difference federal subsidized and federal unsubsidized loan scheme is when interest starts to accrue. To students new to the world of credit, this difference may be difficult to catch and comprehend the effect of. When information is presented as concrete, numeric values the difference may be clearer.

Furthermore, verbal descriptions discourage the use of simple mental arithmetic (Huber, 1980). This is likely a side effect of what has been termed the *concreteness principle*, or the tendency for people to process information in the form that it is given to them rather than transforming it, because it is cognitively taxing to transform information (Slovic, 1972; Bettman & Kakkar, 1977). In other words, if financial information is presented using verbal prose, people

likely will not translate it into numeric terms even if it is beneficial to do so. Of import for the present purpose, verbal descriptions of loan terms may be detrimental to the processing of financial information which requires some degree of mathematical thinking. For instance, people may read about the different types of federal Stafford loans and be able to verbally report that one accrues interest while you're in school, but may not feel the need to translate what that means in monetary terms.

Attribute concreteness and attribute prominence may help explain why summary tables are preferred by consumers (Bettman & Zins, 1979; Hogarth & Merry, 2011). Not only is the summary table more preferred than lists of alternatives or attributes, it also took less time for participants using summary tables to acquire information and make a choice across many choice tasks (Bettman & Zins, 1979). A significant advantage of tabular presentation is the regularity of how information is presented (Rao & Card, 1994). This feature of tables better aligns information about attributes, a feature which is found to reduce the complexity of a choice task (Payne, Johnson, & Bettman, 1993). This enhances the usability of the information and makes the task of evaluating and processing the information easier for consumers.

In terms of the perceptual influences of a tabular format, the matrix table places all relevant information in one place and equally encourages both attribute and alternative-based processing (Bettman, 1975). Information about attributes and alternatives is equally available and prominent in this design. Furthermore, information about how alternatives score on each attribute is typically presented in a brief or a numerical value in order to fit all information in individual cells, making attribute information more *concrete*. Now consider the organization of information in a list. Whether the list is organized by choice alternatives or a particular attribute will guide how consumers evaluate information. Organizing by alternative encourages

consumers to process information about each choice alternative as a whole, making comparisons between how each alternative scores on different attributes (Bettman & Zins, 1979). Organizing information by attribute encourages consumers to process information by how alternatives score on each individual attribute, making it difficult to process how each choice alternative fairs as a whole (Bettman & Zins, 1979). Most importantly, if information is organized by a single attribute that attribute will be more prominent and influential in how people evaluate their choice alternatives (Areini et al., 1999; Jiang & Punj, 2010).

The focus of policymakers has traditionally been on making information available, but information must be both available and processable if it is to improve informed consumer decision-making. A landmark example of this is that unit price information aids decision making and saves shoppers money when it is presented in a summarized list, but people are less likely to use this information when it is scattered across the aisle and item prices are viewed in isolation from one another (Russo et al., 1977). When relevant information is presented individually and seen sequentially it is difficult to process and encode in a meaningful manner (Russo et al., 1975).

Controlling the flow and presentation of information is a technique which has been put to extensive use by marketers (Ariely, 2000) and can be used to guide consumers attention to the most important, or often overlooked information, to aid informed consumer decision-making. In the case of providing information about student loans, policymakers want to draw attention to how loans compare on interest rate, whether rate is fixed or variable, whether interest accrues while the student is enrolled, etc. Presenting information about each loan individually might not be as effective in encouraging these comparisons as summarizing all loan schemes under the same organization would be. Furthermore, differences between loans are typically described

verbally. This may be more comprehensible, but descriptions of options in words rather than numbers discourages use of mental arithmetic (Huber, 1980), which the present task requires to an extent.

The present research explores how presenting financial aid information in a summary table, as compared to a simple list with additional verbal descriptions of the different loan types using written prose. Young adults approaching the decision to take on loans have not had much experience with financial products, and might not come to this information with the understanding of how different interest rates or repayment terms impact the total cost of a loan over its lifetime. They may not know what attributes of a loan to pay attention to, or how to evaluate different loan schemes. In the case of loans, small differences in a few attributes of a loan scheme can make a huge difference in the total cost of a loan over its lifetime.

The goal of the table presentation is to draw students' attention to these few important attributes and compare alternatives based on those attributes. Accordingly, I hypothesize that the summary table will aid processing and comparisons between financial aid items, as compared to an organized list, by providing attribute information in a concrete format and making all attributes equally prominent. Making all attributes equally prominent in a table should encourage more *consistent* processing than the list organized by amount of aid offered. Thus, those in the list condition are expected to report that the total amount of aid offered and possibly the total amount scholarships to be more important to their decision than those in the table condition, while participants in the table condition are not expected to show an overwhelming focus on any single attribute compared to others.

Furthermore, the additional verbal descriptions of the different loan schemes are expected to be more difficult to process than when provided in a table. These descriptions do not visually

align attributes, making it difficult to make comparisons and see how one loan scheme compares to another. This may lead participants to accept a bad loan product (private loan) or make the task of evaluating the aid packages more difficult, as compared to those that view the aid packages in a table.

Current system of financial aid presentation.

When students receive their financial award letters they are asked to sign and return the letter if they accept the package, and indicate if they deny any individual aid item. This is the point at which prospective students are effectively decide to enroll and finance the investment in their human capital. As the consumer decision-making literature reviewed above emphasizes, the design of financial aid awards could have great impact on how prospective students evaluate this decision and the financing options involved.

Many universities continue to organize and present financial aid awards by the amount offered, such that the letter communicates the name and amount of each aid item and the total aid amount. The amount offered is an important attribute of the aid item, but arguably a less important one. A more important attribute to communicate, in terms of financial aid items, is whether it is a gift (scholarship or grant) or a loan. Loans and scholarships are drastically different forms of aid, and summing the two types of aid into a singular financial aid package is confusing and misleading. The essential difference is implied in the names of the aid items, but the distinction can and should be made clearer. There is no additional cost to financial aid offices in presenting gift aid and loan aid under separate labels in the financial aid award, and it could help prospective students and their parents comprehend and evaluate how they finance their higher education.

The Consumer Financial Protection Bureau and Department of Education designed the 'College Shopping Sheet' as a model for how financial aid awards should be presented (Financial Aid Shopping Sheet, 2013). This model format organizes costs, financial gifts, loans, and other forms of paying for college into their own separate lists. It also clearly delineates the net price of enrolling, as well as important statistics of that university (graduation rates and loan default rates). This format is helpful in understanding differences between the broader categories of aid and important information about the possible risks of investing in education at that institution (graduation and default rates), but will not help in comprehending differences between the types of loans included in aid packages (Subsidized Stafford, Unsubsidized Stafford, Perkins, ParentPLUS). There are a variety of Federal loan products and it is important that students and parents understand the loan schemes and commitments of any loan that they take.

Information about different types of federal loans is made widely available online and in the entrance counseling that is necessary for students to complete before taking federal loans. The entrance counseling describes the different loan schemes and provides examples, but there is reason to believe consumers don’t deeply engage with general descriptions and disclosures.

One of the structured interviews study informing the Fed guidelines for designing consumer choice materials explored the effectiveness of five different designs of brochures explaining loan disclosures. People strongly disliked the brochures which lacked transaction-specific information about the loan program, and overwhelmingly reported that they likely wouldn't use the brochure that only presented general information about the program. Participants often claimed that they would prefer to receive information specific to their own application (i.e. interest rate and credit limit) even if it meant waiting until after they had applied to receive any information at all regarding the program (ICF Macro, 2009). This observation

lends to the importance of providing contextual information about loan schemes, or how that loan scheme plays out in the consumer's situation. These general descriptions are more abstract and can be difficult to process, especially in how they relate to one's own situation. Being made aware that a loan accrues interest while you're in school at a rate of 4.6% interest likely doesn't mean anything to a young adult new to the world of finance.

The differences between providing general or contextual information as it relates to individual consumers is not examined in the present study in order to keep information constant between all participants. As the next section proposes, providing information about student loans as it directly translates into individual situations may not be necessary. Inducing people to think in a mindset that encourages thinking more closely about the details, rather than the general gist, of a product may have a similar effect.

Construal level-theory.

Construal-level theory has much to offer the third guideline identified by the Fed paper: providing context or a frame for information can enhance comprehension and usability of information. Construal level theory (Trope & Liberman, 2010) proposes that psychologically distant objects are construed at a higher, more abstract level and more psychologically near objects are construed at a lower, more concrete level. Construal levels refer to the processes that give rise to how an object, activity, or goal is mentally represented (Trope & Liberman, 2010). The psychological distance of an object is how much an object or concept strays from the self in the here and now, which can be measured on a variety of scales: time, space, social distance, personal experience.

The psychological distance of an object or activity thus guides one's construal of that object. Moving from a concrete, detailed, low-level construal of an object to a high-level

construal entails retaining central features and removing features that are incidental to some specific context (Trope & Liberman, 2010). A high-level abstract representation is not exactly less informative than a concrete representation. While taking away some contextual details an abstract representation provides other information about the value of the object, such as the valence, and provides broader contextualization in its relation to other objects (Trope & Liberman, 2010).

Trope and Liberman provide two criteria to distinguish between high-level and low-level features: centrality and subordination. High-level features are central to the meaning of the object or activity, such that removing that feature would have a greater impact on the meaning of the object/activity than would removing a low-level feature (Trope & Liberman, 2010). For example, the meaning of a restaurant is impacted much more if we remove 'serves food' than if we remove 'seats 50 people', indicating that the feature of a restaurant serving food is a high-level feature and the number of guests a restaurant can seat is a low-level feature. Accordingly, a high-level construal of an object- determined by the psychological distance of that object- focuses on central features, while a low-level construal focuses on peripheral, contextual features (Trope & Liberman, 2000; Fujita et al, 2008). The subordination criteria refers to low-level features being more dependent on, or subordinate to, high-level features than vice versa (Trope & Liberman, 2010). For example, whether you can make a lunch reservation at a restaurant only matters if the restaurant is open for lunch hours. Thus, the detail about whether a restaurant takes lunch reservations is subordinate to details about a restaurant’s hours.

The thrust of construal-level theory is the impact of psychological distance on how an object or activity is mentally construed. Specifically, people use higher levels of construal to represent an object that is psychologically distant and lower levels of construal to represent

objects that are more psychologically near. The reasoning behind this relationship between distance and construal is that high-level construals (central, superordinate features) are more likely than low-level construals (contextual, subordinate features) to remain unchanged as distance of the object changes (Trope & Liberman, 2010). For example, the higher-level goal to spend more time with family is more stable over time and across social contexts than the more concrete goal of taking a hike with family, because the hike is limited by the ever-changing weather. Thus, it is more useful for people to construe objects or activities that are psychologically distant in a high-level, abstract way because those features won't change as distance changes. This holds for other forms of psychological distance, such as physical or social distance. People that live in a physically distant place from you might not have the option of taking a hike with their family, but they likely have the option of spending time with their family. Similarly, spending time with family is a much more likely activity than taking a hike with family across different cultures (socially distant).

These different construal levels impact judgment and evaluation of objects and activities in a number of ways. High level construals tend to focus on the *desirability* of something rather than the *feasibility* of it (Trope, Liberman, Wakslak, 2011). Desirability concerns relate to the action's end-state, or *why* you want to complete it, as opposed to feasibility concerns that relate to the means used to reach that end-state, or *how* you can complete it. Interestingly, the farther an action is into the future, people care less about the feasibility of completing that action and more about the desirability of completing it (Liberman & Trope, 1998).

Construal level also has been shown to impact which, and how many, features people focus on in evaluating objects. As psychological distance increases, people seem to focus more on central, goal-related features-- those features that make up higher-level construals-- in

evaluating an object or situation (Trope & Liberman, 2000; Fujita et al, 2008). In a study on social distance, the advice that people offered others, as compared to the decisions they made for themselves, placed more weight on a single attribute deemed to be the most important attribute and less weight to peripheral attributes (Kray & Gonzalez, 1999).

In another study participants were either asked to imagine that they were buying a radio set tomorrow or next year and viewed one of two products. In one condition the radio set had poor sound quality but the alarm clock function worked well, and in the other condition the radio set had good sound quality but a poor clock function. When participants imagined buying the clock next year they were more satisfied with the radio set that had a good central feature (sound quality) but poor peripheral feature (clock function), but when imagining buying it tomorrow participants were equally satisfied with the radio set presented in each condition (Trope & Liberman, 2000). In this case, a high-level construal, as induced by framing the decision in the faraway future, led to an arguably better outcome by encouraging people to look at the 'bigger picture', focusing on the primary feature of the product.

Focusing on central features may be useful in some situations such as the radio set example above, but it may also contribute to more selective or shallow processing of information. When situations are represented at higher levels of abstraction as opposed to lower, concrete levels people are less sensitive to missing information (Pfeiffer, Deval, Kardes, Ewing, Han, & Cronley, 2014; Alter, Oppenheim, & Zemla, 2010). Priming people to think about taking a trip or purchasing something tomorrow, as opposed to in the distant future, resulted in more detailed processing both in a visual task and a product evaluation task (Förster, 2009; Pfeiffer et. al, 2014). Furthermore, manipulating temporal distance in this way found deeper task involvement when participants imagine buying in the near future (low-level), in that they were

more likely to ask for additional information and more likely to report that information was missing than did the distant-future (high-level) condition (Pfeiffer et al., 2014).

The finding that more psychologically near events or objects tend to be processed in more detail has been expanded to test whether people induced to think in a more concrete, low-level construal style would also lead to more detailed processing. Alter, Oppenheim, and Zemla argue that an abstract mindset leads to greater illusions of explanatory depth, or the tendency to overestimate how well one understands how things work, across six studies with participants on Mechanical Turk (2010). Thus the proposed mechanism of the illusion of explanatory depth (IOED) is that people draw on abstract knowledge when assessing their understanding of a concrete concept (Alter et al., 2010). The relevant example would be that people understand the concept of credit at an abstract level, that you are borrowing money that must be paid back, but fail to grasp how the components of a loan function and interact with the principal amount to calculate monthly payments.

Alter and colleagues first establish this relationship by comparing how people that naturally take a more abstract or concrete representation of events and concepts judged their ability to explain the mechanical processes of objects, like a zipper or sewing machine, finding that those who preferred more abstract descriptions of events also demonstrated greater illusion of their ability to explain how things work. The same effect was displayed when an abstract or concrete mindset was manipulated by having participants to either describe *how* you conduct three activities (concrete mindset) or to describe *why* you conduct three activities before participants were asked to explain the mechanical processes of objects. The effect of manipulating an abstract or concrete construal style persisted into the domain of politics. After being induced to take on a more abstract or concrete construal style participants rated how well

they understood the stance of their preferred candidate on healthcare before they were asked to describe the candidate's stance such that someone that knows nothing about this topic could understand the politician's stance. Those that were induced to take on an abstract mindset were more likely than those induced to take on a concrete mindset to overestimate how well they understood the policy stance of their preferred candidate. (Alter et al., 2010)

These findings suggest that high-level construals seem to induce shallower processing in evaluations of products as compared to low-level construals. Similarly, it has been suggested that high-level, abstract construals foster overconfidence in how well one understands a concept. Inducing an abstract construal style led people to overestimate their understanding of how different objects or concepts work, as compared to those primed in a concrete mindset (Alter et al., 2010).

Mindset.

Construal level is often induced by manipulating the psychological distance of the object or event, but more recently mindset induction has been used to more directly manipulate construal level. This development is especially useful for applying construal level to real life decisions for which people can't be asked to make the decision a year from now (temporal distance), or to make the decision for someone else (social distance).

Direct construal manipulation has been achieved by inducing either an abstract or concrete mindset. One way of achieving this is by priming people to think about actions at varying levels of abstraction. A concrete, low-level construal of an action represents the action's process, while an abstract, high-level construal represents the action's purpose (Trope & Liberman, 2003). The action which people think about at different levels of abstraction need not be related to the object or action being evaluated to affect how information about it is processed

(Freitas & Gollwitzer, 2004; Lu, 2013; Pfeiffer et al, 2014). Those primed in an abstract mindset (by asking participants to think abstractly about *why* they think someone would complete a behavior) were less likely to detect missing information about a product than did those primed to think concretely about *how* someone might complete a behavior (Pfeiffer et al., 2014). Those primed with an abstract mindset performed similar to those primed in a concrete mindset when prompted to think about what information might be missing, whereas participants in a concrete mindset did not differ significantly depending on being prompted to think about missing information suggesting that a concrete mindset encourages more consistent processing of information. Also of interest, those primed in a concrete mindset provided more moderate evaluations of products than did those primed in an abstract mindset (Pfeiffer et al., 2014).

A similar mindset prime is used to manipulate construal level in the present experiment. Participants primed in a concrete mindset are expected to engage in more detailed processing of information as compared to participants primed in an abstract mindset, as measured by overall scores on comprehension question.

Congruency between display and processing.

The pioneers of consumer decision making research urged the importance of matching the form of communication to the form of processing (Bettman et. al., 1991). The more recent convergence of consumer decision making research and construal level theory breaches this topic. One such study examined how construal level facilitated categorization of more abstract forms of communication (words) versus more concrete forms of communication (pictures). Amit, Algam, and Trope propose that words represent a more high-level construal, in that verbally representing an object requires one to bestow some meaning to that object, extracting the general gist of an object (2009). In contrast, pictures are particular, detailed, contextual representations of

an object which generate a feeling of proximity, as compared to verbal representations (Amit, Algam & Trope, 2009). These researchers find support for this proposition in that participants categorized and identified pictures that were socially distant objects slower than socially near objects, and categorized socially distant objects faster when represented in an abstract, verbal form. In other words, congruency between the construal level of the form of representation (concrete-picture, abstract-verbal) was congruent to the psychological distance, and thus construal level, of the object itself, facilitated faster processing and categorization of objects.

This interpretation is consistent with the categorization of verbal representations as more abstract as compared to more concrete numeric representations (Huber, 1980; Stone & Schkade, 1990). In relation to the present experiment, the interaction between mindset and presentation format may follow a similar pattern. Priming an abstract mindset may facilitate processing the more abstract, verbal descriptions of loan schemes provided in the list condition, while a concrete mindset may facilitate processing of the table conditions which presents attribute information in concrete, numeric descriptions. In contrast, participants in an abstract mindset may have more trouble processing the table with its brief numeric, concrete description of loan schemes. Similarly, those in a concrete mindset may have trouble navigating the lengthier verbal descriptions of loan schemes.

Construal of student loans.

There has been surprisingly little application of construal-level theory to exploring how the decision to take a loan is mentally represented and thus evaluated by people. Cohen, Belyavsky, and Silk approached the issue of rebates, and the more general issue of when there is a gap between a consumption choice and acting on behalf of that choice. The temporal distance between the choosing a product and the related process involved in using that product

leads to an undervaluation of the likelihood of taking that action. Cohen and colleagues suggest that "mentally refocusing on steps needed to implement either acquisition or consumption may in fact lead to choice reversals and attitude-behavior inconsistency," (p. 270; 2008).

Undergraduate students chose between two flash drives, between which the only difference was the price: one was a fixed price of $32.99, the other $34.99 with a $7 rebate (final cost of $27.99). After making a choice, participants either briefly visualized or simply thought about certain aspects of the store in which they made their purchase, reported whether these aspects seemed time-consuming or quick and easy. Participants then read a rebate redemption form explaining the typical steps to rebate redemption and either visualized each of these steps at a time, thought about each of these steps one at a time, or had more time and thought about all the rebate redemption steps at once. Finally, participants were informed that since they were students and didn't have experience with rebates they had a few minutes to think about their earlier choice and could revisit their decision. All participants received identical information, but engaged with it differently. Visualization had a beneficial effect for those that had a propensity to visualize, but did not prove beneficial overall. Those in the visualization condition did change their initial choice of the rebate price more than the other conditions, but this difference was not significant. Despite the relatively weak effect of visualization practices they did find that thinking about the process and feasibility of an action involved in conditional pricing schemes changed preferences for these products.

Recall that how an object or event is construed depends on how close it is to the here and now. Thus, visualizing oneself redeeming a rebate brings this event to a low-level construal, and caused attitudinal changes towards the rebate offer. Such practices have immense promise in

affecting current preferences and behavioral intentions towards things that may naturally be construed at an abstract, high level.

In the case of student loans, for example, there is good reason to believe that student loans are construed abstractly at a high-level rather than at a low-level. For one, this is likely the first time young adults are engaging in a financial investment, and novel objects are construed at a higher level than old objects (Förster, Liberman, & Shapiro, 2009). Students often come into the human capital decision having little to no experience with financial products, which may lead them to thinking about student loans more abstractly. It would be rather unreasonable to expect this population to know what information to look for or prioritize in evaluating a financial product if they have yet to engage with concepts of interest rates and compounding interest.

The second reason there is to believe that loans, or more specifically the loan process, might naturally be construed at a high level is the temporal distance of loans. In signing a loan promissory note you are agreeing to pay back a certain amount by a set future date. The nature of the credit process provides a benefit today, while pushing the cost and consequences off into the future. For student loans in particular, the costs aren't realized until years after they have taken the loan commitment making the consequence of student loans extremely temporally distant[8].By the time students face repayment to experience the feasibility of honoring this commitment they have already borrowed everything that they will borrow.

The dangers of how such an arrangement might be construed are clear. Events in the future are construed abstractly (the gist of the event) which leads to less detailed processing of the event, a focus on few primary features with little weight on secondary, low-level features,

[8]The repayment period of federal student loans, and many private student loans, does not begin until 6 months after a student has graduated or unless you become enrolled less than half-time.

and are identified more by their *why* aspects than with the *how* aspects of that event (Trope & Liberman, 2010; Pfeiffer et al., 2014; Kray & Gonzalez, 1999; Liberman & Trope, 1998). Students surely understand how student loans work on an abstract level--- that you must eventually repay that amount—but do they understand how repayment works? Do they understand capitalized interest, or the advantage of the federal government 'paying' the interest rates on your loans while you are in school?

These are rather abstract concepts in themselves that might be better understood if borrowers could see how these differences in loan schemes play out in the instance of their own loan commitments. If students can see the effects of capitalized interest they may be more motivated to make payments towards the interest accumulating. There are likely students that have some dispensable cash which could go towards interest payments, or that earn income in the first six months of graduation which could go towards interest payments. Without exposure to a tangible amount that is relevant to your own situation, you may not be motivated to manage your finances.

Surveys of student debt attitudes loosely support this interpretation of student loans being construed at a high-level, in that there is strong agreement that 'student loans are a good investment in the future' (Harrison et al., 2015 (1) &(2)). This suggests that the student loan process is represented, or strongly associated with its *why* aspect—you take out a student loan in order to invest in your human capital. Students likely do not consider the *how* of student loans work until repayment has begun. Surveys of debt attitudes and awareness, including study 2, suggest that there is a significant lack of awareness in undergraduate populations about the "how" features of loans that guide the feasibility of repayment (when repayment starts, monthly payment, expected salary) (Harrison et al., 2015; Mueller, 2014).

Furthermore, in Study 1 many more people could report how much debt they expect to graduate with than how much they currently owe. Anecdotally, it seems that students tend to conceptualize their student loans as the total amount of debt they expect to graduate with, and often attach this figure to their degree (i.e. 'Leaving with a degree and $40,000 of debt'). The expected graduating debt is the more accurate figure for students to consider since this is the ultimate cost of their human capital investment, but it may make their debt feel less manageable—a large, looming, abstract figure that one day they will have to repay. Students may view their debt as more manageable if they focus on the more concrete *how* aspect of repaying loans—the monthly payment. Framing large purchases in the lens of smaller installment payments is a popular sales technique that has been used to draw consumers into buying luxury goods that they otherwise would not have been able to afford (Willging, 1965). The present research suggests that this sales technique which has been used to convince consumers that that luxury sports car is a feasible investment, to show prospective students that college is an affordable investment, and to make current students feel that their debts are manageable. Thus, manipulating construal-level may bring the *how* aspect of student loans to light to frame college as a manageable investment for both prospective and current students.

The present experiment explores which attributes of loans may be construed at a high or low-level to pilot test whether a construal-level manipulation affects how a loan is construed. In interpreting student loans through the lens of construal level theory it is important to define which features of a loan might be considered central high-level features and which are considered incidental low-level features. Low-level features are those that depend on a certain context, or that depend on other higher-level features. The monthly payment, for example, depends on the principal amount, repayment term, and interest rate, making it a low-level

feature. In contrast, the principal amount of a loan doesn't depend on any other feature of the loan itself, only on the external conditions that cause people to ask for a loan. It is expected that priming a concrete mindset will lead people to pay more attention to the low-level feature of the loans ('monthly payment' attribute), while an abstract, high-level construal will cause people to pay more attention to high-level features such as the principal amount or when interest starts to accrue.

Method

Overview

In order to explore whether and how different mindsets and information presentations affect processing and recollection of financial information I conducted a study manipulating mindset (abstract, concrete) and presentation format (organized list, summary table) using a 2X2 between-subjects design. A total of 185 participants were recruited on Amazon's Mechanical Turk.

Participants first completed the construal manipulation, which was presented as a thought experiment. In the abstract condition participants thought in successively abstract terms by thinking *why* you improve your physical health (i.e. what larger life goals exercise helps with). In the concrete condition participants thought in successively more concrete terms by thinking about *how* you would meet a broader life goal through a specific course of action (what smaller actions to take to find happiness in life). The second part of the experiment was the financial decision task. Participants were asked to imagine that they were a high school student choosing between two financial aid packages, and either viewed the two aid packages in a summary table or in an organized list with additional information provided in written prose. After choosing an aid package, participants answered a number of comprehension questions about the package they chose and the loan schemes of the different loan types.

The primary dependent variable was operationalized as the sum of comprehension questions answered correctly. I hypothesize that comprehension scores vary between experimental conditions, with the table condition enhancing comprehension scores in comparison to the organized list condition. Comprehension scores in tabular presentation conditions are expected to be further enhanced when participants are primed in a concrete

mindset, and will suffer when participants are primed in an abstract mindset. Participants are expected to report better user experiences when the mindset they are primed with is congruent to the abstractness of the how financial aid information is presented, such that the abstract-list and concrete-table conditions are congruent.

As a manipulation check, participants primed with an abstract mindset are expected to report that the 10-year value of loans were more important to their decision than participants primed with a concrete mindset. Those in the concrete mindset conditions are expected to report that monthly payments were more important to their decision than participants in the abstract conditions.

Participants

Participants were recruited online through Amazon's Mechanical Turk. Participants were screened according to their performance on tests on Mechanical Turk. Based on Mechanical Turk recommendations, the experiment was advertised to Mechanical Turk users with a performance score of 85 or above. A total of 185 participants were randomly assigned to one of four conditions: abstract list, abstract table, concrete list, and concrete table. Each participant was compensated $0.75 for participating, and participants took an average of 10:42 ($4.50/hour) to complete the experiment.

Materials

Mindset prime.

Construal level can be directly manipulated by inducing an abstract or concrete mindset. Mindset is defined as judgmental criteria and cognitive processes that, once activated, persist across tasks (Luchins, 1942). The present study manipulated construal level by asking participants to generate increasingly abstract events by thinking about *why* you would do

something (abstract mindset, high-level construal) or successively concrete events by thinking about *how* you would do something (concrete mindset, low-level construal). The procedure used to activate abstract and concrete mindsets between participants was adapted from Freitas, Gollwitzer, and Trope (2004).

Participants first read a passage explaining a thought experiment describing abstract or concrete thought processes, and then completed a similar exercise. For the abstract condition participants read the following passage about the reasons *why* you might do an activity, and more specifically how this activity relates to broader life goals:

> For everything we do, there always is a reason why we do it. Moreover, we often can trace the causes of our behavior back to broad life goals that we have. For example, you currently are participating in a psychology experiment. Why are you doing this? Perhaps to make some extra money. Why are you looking for extra money? Perhaps you want to do something special with your family? Why take a special family excursion? Perhaps this time with family provides happiness in your life.

This exercise encourages thinking progressively more abstractly by considering the central features of an activity that relate it to broader, more abstract goals such as obtaining happiness. In contrast, participants in the concrete condition read a passage about *how* someone could meet a broader life goal. Directly mirroring the instructions above, participants in this condition read about the smaller steps of *how* to find happiness in life (taking a family excursion, making extra money, participating in an experiment). This encourages concrete thinking about the smaller, detailed steps that must occur to meet a broader goal.

The passages were modified from Freitas et. al (2004) in order to be more relevant to the population in this sample. Freitas introduced this thought experiment using the activity of participating in an experiment to fulfill a psychology course requirement. The population found

on Mechanical Turk falls, on average, in the age range of 28-40. The passage was modified to describe the rationale of participating in the study for some extra cash for a family activity. This subject matter was assumed to be relevant to the typical demographics of the population which the sample was recruited from.

After the reading passage participants were asked to practice a thought exercise similar to the one explained in the reading passage. For the abstract condition participants were asked to list three ways that improving and maintaining one's physical health could help them meet larger life goals, and report on a scale of 1 (very little) to 5 (very much) how much the activity would help meet the larger goal. For the concrete condition participants were asked to list three ways they could improve and maintain their physical health, and how much implementing each of these smaller activities would help reach the goal of improving their physical health.

Finally, participants filled in a vertical flow chart which followed a similar format as the exercise above. One of five boxes contained the same goal as in the previous activity- 'improving and maintaining one's physical health'. For the abstract condition participants started in the bottom box, which was filled with the physical health goal, and filled in each successive box to show *why* improving and maintaining their physical health is related to larger life goals. The concrete condition started in the top box, which contained the physical health goal, and participants filled each successive box to show *how* they could meet this goal of improving and maintaining their physical health. See appendix

Financial aid presentation and decision.

Participants were presented the choice of two financial aid packages in one of two formats: lists of financial aid items with additional verbal descriptions, or in a summary table.

Both formats contained the same information, but presented it differently. See Appendix B-B to view the financial aid packages.

Aid package decision.

Before viewing the two aid packages participants were instructed to choose one of the packages, and that they would be asked a number of questions about their choice in the following page.

> Imagine you are a high school senior preparing to enroll in an undergraduate program at a private university. You have been accepted to two schools of equal quality and prestige. Both of the schools meet all of your needs in terms of academics, location, class size, extracurriculars, and price....Tuition and fees for both schools are $43,000 per year.
>
> You just received financial aid packages from both of the schools. Since you are indifferent between the two schools, your choice of school really comes down to which gave you the better financial aid package.
>
> Imagine that you are also lucky enough to have a wealthy relative that has offered to help you pay for school. They will give you up to $3,000 each year to help you pay for college.

On the next page participants were instructed to take a few minutes to view the aid packages, reminded of the tuition and amount that their family will contribute, and that they will be asked a number of questions about their decision. Participants either viewed the aid packages in a list format with written descriptions of each aid item below the list of items awarded, or in a summary table. Both formats communicated the same pieces of information, but in different formats (list and written prose vs. table and numeric).

Aid Package 2 was designed to be objectively worse than Aid Package 2. Aid Package 1 offers a total of $10,000 in federal loans, with $5,000 in subsidized loans and $5,000 in unsubsidized loans. In contrast, Aid Package 2 offers $4,500 in subsidized loans and $5,500 in unsubsidized loans. Both packages offer the same amount in federal loans, but a greater proportion of the loans in Package 2 accrue interest while you're in school (unsubsidized loans).

Aid Package 1 offers a lower total aid amount, but this is only because there is a high-interest, private loan included in Aid Package 2.

One may find Aid Package 2 more attractive due to the higher total aid amount offered if they do not have any other resources to pay for the remaining tuition balance. Part of the decision situation is that there is a wealthy relative willing to give you up to $3,000 to help pay for your tuition. This extra family contribution ensures that the difference between tuition and the amount offered in Aid Package 1 is covered, and makes it so Aid Package 2 offers more aid than you need in order to cover tuition costs. Thus, no participant should be making their decision based on a sense of financial need. If participants understand the decision situation and deliberately assess the differences between the packages, there should be a clear preference for Aid Package 1. The list condition is designed to make the total amount of aid offered more prominent than the rest of the aid package attributes. Therefore, it is predicted that the list condition will be more susceptible to choosing aid package 2.

List condition.

The list condition presented the two financial aid packages in lists organized by the name and amount offered of each aid item with the total amount of aid summed at the bottom. Verbal descriptions of each loan and its repayment terms are written below the aid package. These additional descriptions provided the interest rate, when interest starts accumulating, the monthly payment under a standard 10 year repayment plan, and the total value of the loan over the course of 10 years in standard repayment. Additionally, the total monthly payment of all loans and 10 year value of all the loans offered in the aid package were included as well. Descriptions of the federal subsidized loan, federal unsubsidized loan, and private loan were each written in their own paragraph. Organizing the loan descriptions in this way thus encourages within-alternative

processing, by organizing all attribute information about one loan type at a time. This additional information is not provided on most award letters, but is given here to keep the quantity of information consistent between conditions (See Appendix B-B).

Table format.

Summary tables place all information in one place. The table format was expected to make it clear how loan scheme attributes (loan amount, interest rate, when interest begins accruing) relate to the value of a loan after ten years in repayment, by organizing information about each aid attribute in a compact, concrete format which makes the differences in each loan attribute value between the three loan types equally prominent. This organization allows easy comparisons of how different aid items rate on each attribute and draws attention to which attributes distinguish each aid item from one another. The two financial aid packages were displayed in a table in which the individual aid items (grant, federal subsidized loan, federal unsubsidized loan, private loan) were organized by row, and aid item attributes (principal amount, interest rate, when interest starts accruing, monthly payment, 10 year value of loan) organized by column. Participants could easily scan information by column to compare how each aid item fares on that attribute, or scan information about the aid item as a whole. Thus, the table organization equally allows both searching for information by attribute and by alternative.

The two aid packages were organized under the same table structure, but separated by a row showing the total amount offered in the aid package, the total value of all loans after 10 years, and the total monthly payment for the loans included in the package. An additional blank row was inserted between the two aid packages in order to clearly distinguish between aid package 1 and aid package 2.One column labeled ‘Aid Package’ was dedicated to further distinguish Aid Package 1 from Aid Package 2.

Decision questionnaire.

The decision questionnaire was designed by the researcher for the present study. The questionnaire includes four sections (comprehension, processing, user experience, and demographics) and a total of thirty-eight questions. For a sample of the questionnaire, please see Appendix C.

Comprehension. Nine questions measured objective understanding by asking participants to correctly report the composition of the aid package (i.e. 'How much of the aid package was made up of loans?'), identify interest rates, and identify differences between federal subsidized and unsubsidized loans (i.e. 'When does interest start accruing on federal subsidized loans?'). These questions were in a multiple choice format, such that participants identified the correct answer from a number of options. The answer options consisted of 3-5 possible answers and an 'unsure' option.

Processing. In order to measure whether the construal-level manipulation impacted processing strategies seven questions asked participants how much attention they paid to different attributes in making their decision. Participants reported how much they focused on each attribute (monthly payment, 10 year value) on a sliding scale from 1 (did not pay attention) to 5 (paid a lot of attention). The purpose of these questions is to measure whether, and which, experimental condition caused participants to focus on more high-level features (10 year value of loans) or low-level features (monthly payment). The order of questions was randomized for each participant in order to control for any possible effect of question order.

User experience. Participants indicated how strongly they agreed on a scale of 1 (Strongly disagree) to 5 (Strongly agree) with six statements regarding their experience viewing the aid packages. These questions included how comfortable or anxious they felt looking over

the packages, whether it was difficult to understand and navigate the information provided, and how clear the differences between packages were. This section is to measure which condition provided the greatest degree of usability. A poor user experience makes it less likely for consumer's to use and engage with the information. The order of questions was randomized for each participant.

Experience and demographics. Having experience with student loans could give some participants an advantage in comprehending the differences between the types of student loans offered, which many of the comprehension questions relate to. In order to account for this possible mechanism and better interpret the results participants report the most recent experience, if any, that they have had with student loans. For demographic variables, participants recorded age, race, education level, and annual income.

Procedure

As an online study, participants consented to participate with a button-click, indicating that they were 18 or older and had read and understood the consent statement. After consenting to participate, participants were randomly assigned to complete a thought experiment designed to induce either a concrete or abstract mindset. Participants were randomly assigned to the concrete or abstract condition based on a function on surveygizmo. Each participant first read the passage explaining the thought exercise, and then completed a similar thought exercise.

After the thought experiment participants were asked to imagine that they were deciding between two colleges based on which school gave the better financial aid package. Participants read the hypothetical scenario and were informed that they would be asked a number of questions about their decision. On the next page participants were instructed to take a few minutes to view the aid packages, reminded of the tuition cost and how much their family could

contribute, and informed that they will be asked a number of questions about their decision. Participants either viewed the aid packages in a list format with written descriptions of each aid item below the list of items awarded, or in a summary table. Both formats communicated the same information, but represented it differently.

After participants chose a package they filled out the decision questionnaire described above. The next page contained a unique completion code to enter in Mechanical Turk for compensation as well as a debriefing statement.

Results

Data preparation

Construal-level manipulation. Responses in the mindset prime section were screened to ensure that participants completed the thought exercise and provided real responses to both portions of the mindset prime. Four participants were removed from analysis for providing non-responses, or only completing one of the two components of the thought exercise.

Comprehension scale. Responses to each comprehension question was coded on a dichotomous scale, such that a correct answer were coded as '1,' and incorrect or 'unsure' responses were coded as '0.' One comprehension question was specific to the financial aid package that participants chose, and asked participants to identify the amount of loans included in the package. Responses to this question were coded correct or incorrect depending on the amount of loans included in the package that the participant chose. No other correct answers depended on the aid package chosen.

In order to compare overall comprehension among the groups, a scale of *comprehension* was created using the responses to the eight comprehension questions. Correct responses were summed for each participant such that each participant could have a *comprehension* score of 0-8

depending on the number of correct responses given to the eight objective comprehension questions. The *comprehension* scale thus consisted of eight items and demonstrated an acceptable degree of internal reliability using Cronbach's Alpha (α=0.69). A *comprehension* score was not computed for participants who failed to provide an answer to any of the eight items, which excludes two participants from between-group analysis of *comprehension*.

User experience. Two variables were created to measure user experience. One variable, labeled *difficult*, was computed by calculating mean responses to the questions regarding how difficult or confusing the financial aid package was to navigate (α=.9). The other variable, labeled *clear*, was computed by averaging responses to the three questions regarding how clear the differences between the aid packages and different aid items (α=.86). See Appendix C-C for scales.

Loan experience. The type of previous experience participants had with student loans coming into this experiment could impact how they process the financial aid package. If they have recent experience dealing with the financial aid system, the information in the financial aid packages would likely be familiar and be easier to process. Thus, more recent experience with financial aid packages should make processing easier. Experiences with student loans were divided into four categories: Never had student loans, children with loans and loans not in repayment, loans in repayment, loans paid. More specifically, participants whose children have loans and those with loans that are not yet in repayment likely have the most recent experience handling financial aid packages.

Descriptive Statistics

The 12 participants that completed the study on a tablet or mobile device were removed from analysis because in these formats each question was displayed individually and the

financial aid packages were difficult to view. After excluding the mobile and tablet participants and those that did not complete the mindset prime, there were 171 participants with usable data. It seems the randomization function on surveygizmo used to assign participants to experimental condition favored the abstract-list condition: abstract-list (*N*=51), abstract-table (*N*=40), concrete-list (*N*=38), concrete-table (*N*=42) (See table 6).

The final sample included 73 male participants, 97 female participants, and 1 participant that did not provide gender. Participant age spanned from 18-71, but half of participants fell between the 22-35 age range (*M*=36.6, *SD*=12.01). The participant pool displayed a range of experiences with student loans and education (See table 7). Participant self-reported income ranged from $0-172,000 and was heavily positively skewed (*M*= $44,478).

Comprehension

The table format was expected to aid comprehension by making the differences between loan types more prominent. The table format makes it clear how the loan types are different by making it easier to see comparisons in interest rate, when interest starts accruing, the ten year value of each loan, and monthly payments easier. In contrast, the list condition presents details on the different loan types in written prose. Information was organized by alternative loan types (federal subsidized loan, federal unsubsidized loan, private loan, grants), presenting the loan scheme of each loan type one by one, rather than under a single structure, as in the table format. Construal level was expected to affect comprehension in that a concrete mindset would encourage deeper processing of details of the loan scheme.

The primary dependent variable used to measure which presentation format made the financial aid information most comprehensible and easy to process was participants' scores on the comprehension scale. It was hypothesized that the table condition would aid processing of

financial aid information by making the differences between aid items more prominent, and thus improve comprehension and participants' ability to recall details of the packages. It was also hypothesized that construal-level would encourage a more shallow (abstract mindset) or detailed (concrete mindset) processing of information and thus lead to differences in comprehension. In order to examine differences in overall comprehension of the financial aid packages between conditions a 2 (construal: abstract, concrete) X 2 (format: list, table) between-subjects a univariate analysis of variance (ANOVA) was conducted with the *comprehension* scale as the dependent variable.

The average score on *comprehension* across all participants was M=4.65 (SD=2.12) out of a possible score of eight, so overall comprehension and recall of financial aid information was rather low overall. There was no main effect of construal level on comprehension, $F(1,169)=.514$, $p= 0.47$, $d=0.11$. A marginal main effect of format was found, such that participants in the **list** condition (M=4.6, SD=0.23) displayed better comprehension and recall of financial aid information than did participants in the **table** condition (M=4.04, SD=0.24), $F(1,169)= 2.83$, $p=.09$, $d=.28$ (See table 9). No significant interaction between construal and format was observed either, $F(1,169)=0.03$, $p =0.85$.

The main effect of presentation format was not in the predicted direction. Presenting financial aid packages in a table did not seem to enhance the ease of processing of financial aid information. In fact, participants who viewed the financial aid packages in a list with additional written descriptions seemed to process the financial aid information better, as reflected in their stronger comprehension of information in the financial aid packages.

Loan experience.

To ensure that the effects of experimental condition were not impacted by participants' loan experiences a 2 (list, table) x 2 (concrete, abstract) x 4 (no loans, recent loans, loans in repayment, paid loans) ANOVA was run on *comprehension.* There was no interaction between loan experience and experimental condition, $F(1,169)=.45$, but there was a main effect of loan experience. A one-way ANOVA of loan experience was run on *comprehension* in order to better understand the effects of different loan experiences, $F(1,69)=4.52$, $p<.01$, $d=0.38$. The primary difference seemed to stem from the 'recent loan' group made up of those that are not yet in repayment and those whom have children with student loans ($M=5.76$, $SD=1.97$). Those with no loan experience had significantly lower *comprehension* scores ($M=3.79$, $SD=1.97$) than the other groups. Those with loans in repayment ($M=4.38$, $SD=1.97$) and those whose loans were paid off ($M=4.28$, $SD=2.34$) displayed slightly stronger comprehension than those who had never had loans (See Figure 7).

A bonferroni post-hoc test was conducted to identify whether the effect of *loan experience* was solely a result of the strong comprehension that those with loans not yet in repayment and those whose kids had loans. The post-hoc test showed that neither those who had loans in repayment ($p=0.92$) or those whom had paid off their loans ($p=1.0$) demonstrated significantly stronger comprehension than those who never had loans. The difference in comprehension scores between participants whose loans were not yet in repayment/ kids with loans (recent experience) and those who had never had loans was significantly different ($p=0.002$), as was the difference between those who had recent experience and those whom had paid their loans ($p<.05$). The effect of *loan experience* on how well participants comprehended and were able to recall the information in the financial aid packages seems to stem from the superior performance of those with more recent experience dealing with the financial aid

decision. More recent experience made participants whose loans were not yet in repayment and whose children had loans more familiar with the current financial aid system and led to greater comprehension of financial aid information.

Aid Package

Aid package two was designed to be objectively worse, with more of the loans accruing interest while the student is enrolled (more unsubsidized than subsidized loans) and a private loan with aa higher interest rate than the federal loans and which provided more funds than the cost of enrollment. Participants in the list condition were expected to choose aid package two more frequently than participants in the table condition. In the list condition, aid packages were organized by aid amount, such that the individual and total aid amounts were made more prominent in comparison to the additional written descriptions below. Chi-square goodness of fit tests were conducted to test whether there was an equal distribution of participants that chose the second aid package across the list and table conditions. The second aid package was chosen at similar rates across conditions, $\chi^2(1, N=171)=0.85$, p=n.s. In other words, people "fell for" the objectively worse, second aid package equally when the financial aid packages were presented in a list organized by aid amount, thus making the total aid amount more prominent, and when presented in a table, which makes all aid items and attributes equally prominent.

Processing

Attribute prominence.

Effect of presentation format. In order to examine whether presentation format led participants to focus more on the total amount of aid offered than on other attributes of the aid package a one-way ANOVA was run for all six aid attributes (total aid amount, interest rate, when interest starts accruing, monthly payment, 10 year value of loans grant amount). Responses

to the single self-report question in which participants reported how much attention they paid to each attribute when making their decision (1=did not pay attention, 5= paid a lot of attention) was the dependent variable, and presentation format was the independent variable.

Total aid offered was the primary aid attribute that was expected to differ in how much participants focused on while making their decision. The list condition was expected to lead participants to pay more attention to the total amount of aid offered, since the aid package list was organized by aid amount and thus made the total aid amount a more prominent attribute. There was a significant main effect of presentation format on how much participants focused on the total aid amount offered, $F(1, 170)=4.01$, $p<.05$, $d=.31$. As predicted participants that viewed the financial aid packages in a **list** reported that they paid more attention to the total amount of aid offered ($M=4.25$, $SD=0.11$) than participants who viewed the financial aid packages in a **table** ($M=3.94$, $SD=0.11$) (See Figure 8).

It was expected that participants in the table condition would pay more attention to details about loan schemes (interest rate, interest accrual date, total value of loan over 10 years) than participants in the list condition. Participants in the table condition did not report to pay more attention to any of the financial aid attributes than did participants in the list condition. These results suggest that financial information presented concretely in a summary table did not, as predicted, highlight attributes of the financial aid package any more than the written descriptions .

Effects of construal-level. As an exploratory analysis of whether construal level encouraged attention to be paid to the aid attributes which were posited to be more high or low-level attributes, one-way ANOVAs were run for each of the six variables measuring how much

attention participants paid to each attribute of the financial aid package (1=did not pay attention, 5= paid a lot of attention) with construal-level as the independent variable.

The only attribute for which construal-level showed a significant main effect was when interest started to accrue ($F(1,168)=4.59$, $p<.05$, $d=0.33$). Participants that were primed in an abstract mindset reported that they paid more attention to the date at which interest began to accrue ($M=3.74$, $SD=1.18$) than did participants primed in a concrete mindset ($M=3.34$, $SD=1.3$). The date at which interest rate begins to accrue could be interpreted as a high-level attribute in that it is a central feature of a loan scheme that does not depend on any other loan scheme attributes. This is an exploratory finding that depends on a subjective definition of which loan attributes are high and low-level attributes, and thus is interpreted with caution. No other effects of construal level are found on the importance of different loan attributes.

User experience.

In order to explore which condition provided a better user experience a 2 (construal: abstract, concrete) X 2 (format: list, table) between-subjects univariate aANOVAs were conducted for the two composite variables measuring user experience. The two user experience composites measured how usable participants found the information provided in the aid packages—how difficult they felt the information was to navigate and understand, and how well they felt they comprehended differences between packages and aid items. The experimental conditions in which mindset and the format of presentation were aligned (concrete-table, abstract-list) were expected to provide better user experiences. Also, the list format with additional written descriptions were expected to provide a better user experience since people are presumably more accustomed to viewing information in a written as compared to tabular format.

For the *difficult* composite, no main effects of construal level ($F(1,165)=1.18$) or presentation format ($F(1,165)=0.72$) were found, and nor was the predicted interaction between construal level and presentation format ($F\ (1,165)=0.24$). For the *comprehensible* composite variable there was a main effect of presentation format ($F\ (1,166)=5.22$, $p<.05$, $d=0.35$). As predicted, participants that viewed the financial aid packages in a **list** format with additional written descriptions of aid items were more likely to agree that the differences between aid items, loan types, and the two aid packages were clear when they viewed the packages ($M\ =3.74$, $SD=0.11$) than participants whom viewed the aid packages in a **table** ($M=3.36$, $SD=0.12$) (See figure 9).

Out of the two user experience variables, the *comprehensible* variable better represents the prediction that the list condition would provide a better user experience, as it communicates a sense of confidence in one's understanding of the financial aid information while viewing the aid packages. In contrast, the *difficult* composite directly communicates a more negative experience (i.e. 'Looking at the aid packages was confusing'). Considering the different connotations of these two variables it seems that the table did not provide a negative experience, but that the list condition made participants feel more confident in their understanding of the information when viewing the aid packages.

Manipulation check

Given the weak effects of construal-level uncovered in the primary analysis, a manipulation check was conducted to ensure that participants correctly completely the mindset manipulation. Each participant's responses to the second thought exercise— in which participants provided four reasons *why* one would want to (abstract condition), or *how* one could (concrete condition), improve and maintain one's physical health—were scanned. Each

participants' set of five responses were read to ensure that participants demonstrated successively concrete, or progressively abstract, thinking.

In the abstract condition responses were scored to ensure that participants provided goals that were increasingly broad, or increasingly future-oriented. Many participants provided a number of goals that were dependent on one another and thus fulfilled the subordinate factor of a higher-level construal, but were contextually specific rather than more general, broad goals and thus failed to fulfill the centrality aspect of high-level construal. Some participants failed to provide a narrative set of goals and simply provided four seemingly unrelated life goals they had (i.e: grow savings, get married, build a family, find fulfillment in life). Out of the appropriate responses, the majority provided reasons following a sequence similar to the following: "to feel better, to live without ailments, to live longer, to see my children grow".

For the concrete condition, responses were scanned to see if they followed a sequence of more specific goals. The low-level construal manipulation was considered to be followed if participants moved from a general goal of improving one's physical health to more specific steps involved in reaching that goal. Responses which failed to focus on smaller steps following a sequence of *how* they might reach the larger goal and how to implement the sub-goals were scored as a failed manipulation. Out of the appropriate responses many provided a sequence of responses similar to the following: "improve health, eating healthy, educate myself about nutrition, shop for healthy food, earn enough money to buy healthy food". A similar number of participants did not understand or failed to follow the instructions in the mindset manipulation (abstract: N=34, concrete: N=26).

The remaining sample consisted of 114 participants. The oneway ANOVAs comparing how much attention participants reported to pay to each financial aid attribute were ran again

with the remaining sample to see if any main effects of construal levels emerged. In this round of analysis which used only participants that passed the construal-level manipulation check, participants primed in an abstract mindset reported to pay more attention than participants primed in a concrete mindset to three out of the six aid package attributes. Participants primed in an **abstract** mindset paid more attention to the interest rate on loans (M=3.89, SD=1.01) than did participants in a **concrete** mindset (M=3.38, SD=1.33, $F(1,111)= 5.32$, $p<.05$, d=0.44. Participants in an abstract mindset also paid more attention to when interest starts accruing (M=3.81, SD=1.12) than participants in a concrete mindset (M=3.20, SD=1.28), $F(1,112)=7.31$, $p<.01$, d=0.51. Both the interest rate and when interest rate begins to accrue were initially interpreted as high-level attributes of the loan schemes, as they are primary attributes as compared to the ten-year value of loans and monthly payment attributes which are dependent on the interest rate and when interest begins to accrue.

Literature on mindsets proposes that an abstract mindset is characterized by more open-mindedness (Gollwitzer, 1990). In order to examine whether participants in an abstract mindset were more open-minded to different attributes overall, a composite variable was created to measure whether construal level affected how many aid package attributes participants focused on when making their decision. The composite variable, labeled *attribute importance*, was created by averaging each participants' self-reported response of how much attention they paid to each of the six attribute six self-reported responses of how much they paid attention to each attribute. There was a significant main effect of construal-level on *attribute importance,* such that participants in an **abstract mindset** considered more attributes important in their decision (M=3.92, SD=0.66) than did participants in a **concrete mindset** (M=3.55, SD=0.82), $F(1,121)=7.61$, $p<.001$, d=0.5 (See table 10). While this result was not predicted, the medium

effect size suggests that this is not an erroneous finding. Furthermore, the literature supports the interpretation of this finding as the effect of an abstract mindset allowing people to approach information with a more open mind, such that an abstract mindset encouraged consideration of more attributes in making their decision, but these findings were of an exploratory nature and must be interpreted as such.

Discussion

Study 2 examined how presenting financial aid packages in a table, as compared to a list organized by the amount of each financial aid item (how financial aid packages are traditionally presented), affected how financial aid information was processed and recalled, and whether the mindset with which the financial aid decision was approached affected the information people focused on in choosing a financial aid package. Participants were primed with either an abstract or a concrete mindset before they viewed and chose a financial aid package. Participants viewed the financial aid packages either in a list with additional written descriptions of the items included in each package, or in a table that organized all information about the aid items included in each package under one concise, consistent structure.

The table was expected to aid participants in comprehending the different loan schemes included in financial aid packages. Differences between the many types of federal loans are minimal, and someone novel to the world of credit and finance may be hard pressed to see the difference between federal and private loans. The table condition, which represented information numerically and in a format that allows for both alternative and attribute-based processing, was expected to help highlight the minimal differences between loan schemes as compared to the written descriptions.

Information presented linguistically has been found to make the search of information across similar attributes more difficult, whereas numeric information offers more flexibility (Stone & Schkade, 1991).The list with the written descriptions of loan schemes was expected to lead to more alternative-based processing of information, and thus have more trouble comparing loan schemes and identifying the minimal differences between loans and the two aid packages. The presentation format of the financial aid packages did affect comprehension and subsequent recall of financial aid information, but not in the expected direction. Those that viewed the

financial aid packages in lists with additional written information were able to answer more of the subsequent comprehension questions about details of the aid packages than those that viewed the financial aid packages in a concise, tabular format.

One possible explanation of the present results in the opposite direction of what was hypothesized is that the information contained in financial aid packages is simply too complex to put into the concrete, concise terms of a tabular format, especially without any additional contextual information. In attempt to make the differences between loan schemes concrete and concise, the design may have reduced these loan schemes to stark values and an ultimately less comprehensible form. The table was designed to make the differences between loan schemes clearer, but this design may have made it more difficult to piece together how a loan scheme operates as a whole. People may have had more trouble piecing together the meaning of the loans and aid package as a whole because the connection between aid attributes is more implicit in the table than in the written descriptions of the list condition. In contrast, the written descriptions in the list condition provided the same values and same information, but connected the dots between the attribute category and the value. For example, when providing the ten-year value of loans the written descriptions read: “The value of the federal unsubsidized loan after ten years in a standard repayment plan is $8,423.” It seems that, in attempt to keep information consistent between the two conditions the list condition may have received better quality information.

The assumption that representing these loan schemes in a concrete format would be the most beneficial may be faulty. There is much discussion revolving abstract and concrete representations in mathematical education. The standard view of mathematical learning was that learning begins with the concrete and develops into a more abstract understanding of how the

concrete components interact (Piaget, 1952; as cited by Wilensky, 1991). Wilenksy challenges this view, proposing that the abstract and concrete representations must be considered alongside one another to build more long-lasting knowledge (1991). It's suggested that in introducing a mathematical, in our case financial, concept that instructors provide meaningful concrete representations, but guide students in understanding relationships between concepts in the more abstract sense (Wilensky, 1991; Clements & McMillan, 1996).

Financial products like a loan are abstract concepts, especially to those new to the world of credit, in which one must understand the relationship between attributes of the loan scheme (interest rate, repayment term, interest accrual date). Providing a value under a general attribute category such as "Total value under ten year repayment plan" without providing any context as to how these attributes combine to construct a loan scheme might be confusing to participants, especially if they are unfamiliar with these financial products. The design of the present experiment failed to consider that the table alone might not communicate the differences between loans without any contextual information, such as instructions on how to interpret the table.

A better test of the hypothesis that an abstract mindset and verbal information impede the ability to identify and comprehend differences between loan schemes might present more general, abstract information about loan terms in a consistent format across conditions, and vary how the concrete attributes of monthly payment and ten-year value are presented (verbal, numeric). Perhaps the visual aid of a table is useful only if people have been provided with more contextual information to comprehend the concrete instantiations of how different loan schemes carry out within the larger picture. In relation to the suggestion that visual aids such as tables and graphs are useful consumer decision-making tools that was drawn from consumer surveys

conducted by the Federal Reserve, the present study suggests that visual aids are not as beneficial when they stand on their own without any additional, more contextual descriptions.

The entrance counseling that students must complete before federal loans are distributed offers more general information about what distinguishes the different types of federal loans. The present experiment cannot directly speak to how students are exposed to the federal loan program, but suggests that providing general information about the different types of loans is not sufficient for students to fully grasp how these differences affect their own loan commitments. It is more a lack of transaction-specific information, or any information, that federal loan education programs suffer from.

The other prediction relating to presentation format was that participants in the list condition would heed more attention to the total amount of aid offered. The list condition presented the financial aid package in a list organized by the name of the aid item and the amount offered, thus making the total amount of aid more prominent. When an attribute is made more prominent, it tends to receive more weight in the decision (Jiang & Punj, 2010). The greater amount of total aid offered in aid package two was expected to affect participants' decisions in the list condition. There were very few participants whom chose aid package two overall, and participants were equally likely to choose it irrespective of whether packages were presented in a list or a table. It is possible that it was too obvious that aid package two was the worse package, given that it also included more loans which accrued interest while one is a student. Thus, the hypothesis that presenting financial aid information in a list is detrimental to decision-making was not proven through observable behavior, but self-reports support this hypothesis. Out of the six attributes that participants were asked to report how important they were to their decision, the total amount of aid offered was the only attribute which differed by

presentation format. The effect was in the predicted direction, such that participants in the list condition reported that the total amount of aid was more important to them than did participants in the table condition.

This finding, while it is based on self-report, provides some evidence that the traditional format of presenting financial aid packages in a single list may impact how students value different aspects of the financial aid package. When evaluating an aid package, the total amount of aid does not communicate the net cost of attending a school. The more important figure is how much you must pay towards tuition and fees after accounting for any scholarship and grant aid. Presenting both financial *gifts* of scholarship and grants and financial aid in the form of loans under one category may lead students to evaluate the wrong bottom line.

Construal-level

Construal level was expected to cause participants to focus on different attributes of the aid package. After excluding responses of participants that did not correctly complete the mindset prime construal-level did show a significant effect, such that participants in the abstract attention reported that the interest rate, when interest accrues, and the total amount of aid were more important to their decisions than participants in the concrete condition. The interest rate and when interest rate starts to accrue are the more high-level attributes of a loan scheme—the primary attributes that are superordinate to the other attributes such as monthly payment and the ten-year value. The total amount of aid offered can be seen as a primary attribute, since it provides a good "gist" of the package as a whole. Considering that the categorization of which attributes are high-level or low-level attributes was exploratory, drawing any implications about which attributes receive greater weight based on construal-level would be made on shaky grounds.

Construal-level was also expected to affect how deeply information was processed in each format. Mainly, an abstract mindset in the list condition was expected to create the false sense that participants 'knew what they needed to know' after scanning the list of aid items and the respective amount offered, and thus would fail to carefully read the descriptions of the aid items provided below. This would reveal itself in lower comprehension scores, which were based off of the ability to answer questions about the specifics of the aid package, but there was no effect of construal level on comprehension. The present findings suggest the opposite effect, such that abstract construal style encouraged participants to focus on a more attributes overall in their decision.

Approximately a third of participants in each condition failed to correctly complete the mindset prime, suggesting that the instructions were rather difficult to follow. Perhaps the online environment/design made the thought exercise more confusing. The mindset induction task adapted from Freitas and Gollwitzer (2007) did require modification in order to be carried out online, as parts of the original task were geared to a paper and pencil format. Given the weakness of the prime, it is possible then that priming participants to think abstractly or concretely about an unrelated topic did not carry over into the financial aid task to be able to affect which attributes participants focused on. The present study failed to include a formal manipulation check, which makes it difficult to discuss implications for construing student loans differently. Additionally, if construal-level is to be implicated in the design of financial aid materials or education, it may be more useful to more directly test of whether the construal-level of student loans can be manipulated and the effects of doing so. Future research should more directly lead participants to think about their student loans in an abstract or concrete way. For example,

instructing people to think about *how* the loan process works, as compared to *why* one takes a loan.

Conclusion

This research was prompted by the drastically increasing dependence on student loans used to enroll in college. In the 2013-2014 fiscal year there were 7.8 million undergraduate students that took federal student loans, with an average balance of approximately $26,000[9] (College Board, 2014; Haughwout, Lee, Scally, & van der Klaauw, 2015). Repayment of these loans was slow in 2014: 37% of student borrowers made large enough payments to reduce their principal loan balance, 17% of borrowers are 90-days delinquent on their loans, 13% are making interest-only payments, and 33% have a balance that is larger than the last quarter, such that they are making payments that don't keep up with interest accrual (Haughwout et. al., 2015). These trends in existing loan performance suggest that individuals need more guidance in human capital investment decisions.

Study two suggests a possible intervention to aid individuals in the human capital investment decision. The main finding of study two was that the financial aid award letter, which resembled the traditional format of presenting financial awards, led participants to pay more attention to the total amount of aid offered, which includes both gift aid (grants, scholarships) and self-help aid (work study, loans). Focusing on the total amount of aid offered is not an accurate picture of the net cost of attendance. Allowing each university to choose how they communicate the financial aid they are offering opens the possibility for the omission of important information. Some universities don't include the costs of attending on financial aid letters, which makes it more difficult to calculate net cost. Furthermore, receiving numerous aid letters in different formats makes comparisons between aid offers difficult, especially if different universities label aid differently. If students are to be expected to conduct a cost-benefit analysis

[9] A recent report shows that a majority of new borrowers and borrowers with growing balances are ages

of the college investment and choose the most favorable institution and form of financing to do so, the design of financial aid packages can foster this process by clearly delineating which types of aid are to be repaid and requiring that award packages followed the same format.

Incidence of poorly performing loans is declining in recent cohorts, such that the 2014 default rate is down to 3.1% from 3.6% in 2012 (Haughwout, Lee, Scally, & van der Klaauw, 2015). The bigger issue may be, then, the existing loans that are poorly performing. In addition to aiding prospective students and borrowers in the human capital investment decision, there is a pressing need to guide current borrowers through repayment.

In order to design effective policies and programs for federal loans it is important to understand not only borrowing and repayment behavior, but the latent socio-psychological variables which impact borrowing and repayment behavior. The present research suggests that there needs to be more active student debt education. As is, the only loan counseling graduating students receive is a pamphlet summarizing repayment options and the repayment process, but behavioral research suggests that providing information and improving financial knowledge alone is not enough to instigate behavioral change (Malhotra, 1982; Lapp, 2010). Educational programs that have been successful at changing behavior focus not only on providing information but on reducing risk-taking behavior, by providing students skills and strategies to combat the issue at hand (Norvilitis, 2008). More hands-on, in depth loan education needs to take place in order to encourage better financial habits and debt management.

Investing in loan education for students before they leave college has the potential to generate better money habits in students even after they have left the higher education system by building a sense of financial self-efficacy (Shim et al., 2009; Shapiro & Burchell, 2012; Lapp, 2010). Self-efficacy is an individual's judgment of his or her ability to perform certain actions,

and plays a role in changing behavior, maintaining that behavioral change, and generalizing the changes to other domains (Schunk, 1991). Self-efficacy is strongly related to perceived control, but perceived control specifically relates to how much influence one feels that they directly have over outcomes, as opposed to one's confidence in their ability to effectively carry out an action (Schunk, 1991).

Financial self-efficacy, more specifically, is the perceived ability to handle one's finances, and has been termed the "missing link between knowledge and effective action," (p.1; Lapp, 2010). A program dedicated to finding ways of effectively encouraging low-income people to foster financial capability found a strong mediating link of financial self-efficacy between financial knowledge and a decrease in financial problems (Lapp, 2010). More specifically, this program expected that those enrolled in their assisted-savings program would learn more about their financial situation, feel empowered to change their situation through the program, and reduce their financial problems (Lapp, 2010). They found that after a year of the program financial knowledge increased, and financial problems decreased. After controlling for the change in financial self-efficacy after a year in the program, the ability for the increase in financial knowledge to predict a change in financial problems was muted—learning about one's financial situation knowledge decrease in financial problems was mediated by perceptions of financial self-efficacy (Lapp, 2010). Furthermore, once financial behaviors changed through the program, participants demonstrated a healthier relationship to money, in greater perceptions of financial self-efficacy and a reduction in finance-related stress. (Lapp, 2010)

Though unintentionally, the present model of debt awareness included and drew on these same concepts. The questions measuring perceived control and perceived knowledge tapped into students' feelings of self-efficacy in controlling and managing their student debt (i.e 'It is

difficult for me to reduce or control my debt' , 'I have the financial know-how to be able to manage my loans'). Furthermore, similar to their model, the present study found a strong negative relationship between perceived knowledge/perceived control and financial anxiety. The implications drawn from the current model and their model are similar as well. With the strong and consistent role perceived control/knowledge to predict debt awareness and engagement, it was suggested that a primary goal is to make students feel that they have the ability to control/manage their borrowing and debt.

Loan education should emphasize that student loans are a manageable, long-term investment. If debtors are provided with ways to manage their loan commitments and this task is presented as a manageable investment they should be more motivated to make payments to the extent that they have to funds to do so. Financial education which improves debtors confidence in their ability to manage their debt should dually improve debt management behavior and decrease financial anxiety. Removing negative attitudes towards debt is important in maintaining behavioral change, because financial anxiety and stress can lead to a reversion to poor money management (Shapiro & Burchell, 2012). Furthermore, reducing financial anxiety should alleviate the slew of negative side effects of financial anxiety on psychological well-being and academic performance (Archuleta, Dale, & Spann, 2013 for a review).

There is longstanding acknowledgment of the importance of financial education, but this void has yet to be filled (Lusardi, Mitchell, & Curto, 2010). The transition into financial independence is a defining aspect of young adults' transition into adulthood (Shim, Xiao, Barber, & Lyons, 2009). If students develop a sense of self as a poor money manager in this crucial transition phase it can have long-lasting negative effects on financial behavior and outcomes. Student loans have the potential to be a great learning experience for students as they enter

adulthood and become increasingly responsible for managing their personal finances. If students are encouraged to understand their loan commitments and educated in debt management practices before they graduate into financial independence enter they should not only be more prepared to manage their educational debt, but more prepared to manage their finances overall. Regarding the older cohorts of borrowers, this model of debt education and management should hold an may be even more pronounced. Low senses of financial self-efficacy occurs when one fails to effectively manage their finances (Shapiro & Burchell, 2012), so the effects may be even more pronounced in the population of existing debtors.

Construal level can advise the design of loan education programs. Following the behavioral model proposed by Lapp above, it is important for people to first become more aware of their own financial situation, and then to become empowered to actively manage the situation. Both of these steps lend themselves to taking a low-level construal style of student loans and borrowing. Encouraging a concrete, as compared to an abstract, construal can bring the object (loan) or action (loan management) closer to oneself in the here and now. It seems that students tend to conceptualize their student loans as the total amount of debt they expect to graduate with, supported by the finding that a greater proportion of students that could report an estimate for how much debt they expect to graduate with than an estimate of how much they currently owe. The expected graduating debt is the more accurate figure for students to consider since this is the ultimate cost of their human capital investment, but it may make their debt feel less manageable—a large, looming, abstract figure that one day they will have to repay.

Students may view their debt as more manageable if they focus on the more concrete *how* aspect of repaying loans—the monthly payment. Framing large investments a series of smaller payments has been used to lure people into buying luxury goods, and the present

research suggests that this sales technique is a feasible investment to show prospective students that college is an affordable investment, and to make current students feel that their debts are manageable. Not only does a monthly payment typically sound more manageable, it is a more tangible guiding point for students to plan a budget and set a salary goal in order to meet all payments. Setting a salary or pay goal may then help motivate students to prepare more for the transition into the labor market while they are in school. Some students end up with large monthly payments that do not sound manageable. To keep financial anxiety at bay and encourage more positive relationships with debt and finance debt education programs should remind students of the benefits of their degree and have them compare what they are expected to make each month with their degree. Even this may be an unmanageable figure, and this is why there are numerous repayment plans for federal student loans.

In presenting different repayment plans it is important to emphasize the effect of choosing a repayment plan with smaller monthly payments on the length of the repayment period and total value of the loan over the course of repayment. The smaller monthly payments offered in the alternative repayment plans, meant to alleviate financial strain on those that cannot meet the standard repayment plan, can have the same alluring effect as presenting loans as a monthly payment rather than the lump-sum principal amount. In order to minimize the number of people choosing the Income Based Repayment plans because of the attractive low monthly payment rather than out of inability to make a larger payment, both the monthly payments and the respective total value of the loan under the repayment plan should be presented with each repayment plan.

Monthly payment aside, more guidance needs to be offered to students in interpreting what their loans mean to life after college. More specifically, after exposing students to

information about their own debt, debt management programs should encourage students to think about *how* repayment works and the specific steps of making payments—e.g. contact the loan provider, understand repayment options, choose a repayment plan, make money, make a payment—and provide channels for doing so (i.e. number of loan provider, questions to ask the provider).

Policy Implications

It is important to acknowledge here that the educational and debt management programs mentioned above are a band-aid for a larger problem, and that altering the actual costs of borrowing and repayment would have a more direct effect on repayment success. Students take on the cost of investing in their human capital and they receive direct benefits for doing so, but there are well-founded positive externalities and social returns to a more educated population (Moretti, 2004). Furthermore, the private returns are highly uncertain, which creates a risk-based self-selection bias in who invests in their human capital (Wigger & Von Weizsacker, 2001). Greater uncertainty in the returns to education are more of a disincentive for low-income students, which adds to the criticism of design of the higher education and financial aid system as contributing to the growing inequality (Levhari & Weiss, 1964; Wigger & Von Weizsacker, 2001; Hoxby & Turner, 2015).

Given the social and private returns of human capital, and the screening of students by risk and income due to the increasing reliance on private finance for higher education is problematic. The United States has largely handled rising costs of college attendance by increasing access to credit (Avery &Turner, 2012). In order for private financing of the intangible, though, human capital investment to fund itself the economy must be able to absorb students upon graduation. If the economy cannot absorb students upon graduation, as was

largely the case for the recent cohorts entering a slowly recovering labor market (Haughwout et al., 2015).

The fact that there are nearly equal proportions of borrowers making large enough payments to reduce their balance (37%) as there are borrowers who aren't making payments large enough to cover interest payments (33%; Haughwout et al., 2015)[10], and thus watch their debt balance grow even as they make payments suggests that, either the economy isn't servicing graduates or people are recklessly borrowing. The high interest-rates charged on federally-ensured student loans certainly surely do not alleviate the financial strain on these recent graduates. In relation to the promising or detrimental effects of financial self-efficacy or the lack thereof, watching loan balances grow in spite of efforts to reduce them likely does not improve student borrowers' sense of being able to manage their debt.

As we see poorly performing loans grow due to capitalizing interest (Haughwout et al., 2015) it is important to question the level of interest charged on federal student loans. The government supported enterprises that service federal loans borrow these funds at the federal funds rate, which is currently floating around 1-1.2% (Federal Reserve Board of NY, 2015). The loans that these quasi-private institutions make are ensured by the federal government such that the interest rate charged should reflect the cost of lending government funds at an equal maturity. If graduates are able to repay their loan commitments on the standard ten-year repayment plan, the comparison is the ten year bond. The yield of the ten year bond has averaged around 2%-3% in the past seven years (2008-2014) (US Department of Treasury, 2015). The interest rate charged on federal student loans, in contrast, has remained between 3.86%-6.8% in this time period (Federal Student Aid, 2014). A minor difference between the ten-year yield and the

[10] This figure includes borrowers whom are in deferment or forbearance.

interest on student loans under a ten-year repayment plan is expected, in order to finance the servicing of the loan, but these fees have been no greater than 1.08% (Federal Student Aid, 2014). What, then, is the purpose of the additional 0.5-1.5% of additional interest charged?

As student loan borrowers struggle to make payments beyond the interest accumulated in the payment period, the cost of lending for government-ensured institutions should not be a concern. Student loans are being paid back slowly (Haughwout et al., 2015), which keeps graduates from investing elsewhere, and, as this research suggests, may be detrimental to student borrowers' sense of financial confidence. In addition to more stable and manageable interest rates, loan education efforts must be advanced. More personal and engaging loan education is necessary to encourage behavioral change. The Federal Reserve has already invested in student loan education, but would meet better results if these programs provided a platform for student borrowers to interact with their own loan commitments, and the opportunity to ask questions and receive suggestions specific to their commitments. This could be achieved by the federal government or the Federal Reserve through an online platform which both familiarizes borrowers with their own commitments and offers suggestions for talking to loan servicers and provides information and links for debt-management behaviors.

Tables

Variable	Obs	Mean	Std. Dev.	Min	Max
Students have to go into debt.	146	2.66438	1.255484	1	5
Thinking about my personal finances can make me feel anxious	147	4.2449	0.9972004	1	5
I find it difficult to manage/control my borrowing/debt.	147	2.52381	1.142776	1	5
I feel like I have the financial 'know-how' to be able to manage my loans	146	2.47945	1.045313	1	5
My parents are completely responsible for managing my financial aid	146	3.11644	1.533579	1	5

Table 1. Descriptive statistics for core debt attitude variables.

Variable	Yes (%)	No	Missing	N	Std. Deviation
Parents responsible	69 (46.9)	61 (41.5)	17	130	0.501
Check loan balance	67 (45.6)	53(36.1)	27	120	0.499
Aware current balance	71(48.3)	76 (51.7)	0	147	0.501
Aware graduating balance	112 (76.2)	35(23.8)	0	147	0.427
Aware loan type	112(76.2)	35(23.8)	0	147	0.427
Aware interest subsidized	13(18.8)	101(81.7)	33	114	0.319
Aware interest unsubsidized	8 (5.4)	87 (59.2)	52	95	0.279
Aware repayment start	68(46.3)	79(53.7)	0	147	0.5
Made a payment	37(25.2)	110(74.8)	0	147	0.435

Table 2. Descriptive statistics on individual loan awareness questions.

Variable	dy/dx	Std. Err.	Z	P>z	95% Confidence Interval	
Debt necessity	0.034733	0.06984	0.5	0.619	-0.10215	0.171616
Anxiety	-0.09691	0.09514	-1.02	0.308	-0.28338	0.089562
Perceived Control	-0.13512	0.081026	-1.67	0.095	-0.29393	0.023686
Perceived knowledge	0.37609	0.087021	4.32	0.0001**	0.205531	0.546648

Table 3. Ordered Probit model of debt engagement using single variables without dummy variables. McFadden's R^2=0.04, *N*=145

Variable	dy/dx	Std. Err.	z	P>z dence	95% Confi-	Interval]
Debt necessity	-0.00798	0.0730602	-0.11	0.913	-0.15117	0.1352151
Anxiety	-0.016511	0.1066736	-0.15	0.877	-0.22558	0.1925659
Perceived Control	-0.083202	0.0860763	-0.97	0.334	-0.25191	0.0855048
Perceived knowledge	0.242680	0.0949156	2.56	0.011*	0.0566486	0.428711
Year	0.326956	0.2059244	1.59	0.112	-0.076648	0.7305606
SES	-0.123397	0.2603128	-0.47	0.635	-0.633601	0.3868065
Gender	-0.696089	0.2244935	-3.1	0.002*	-1.136088	-0.25609
Fin.Aid Respon-sibility	-0.191266	0.0699591	-2.73	0.006*	-0.32838	-0.05414

Table 4. Ordered Probit model of debt engagement using single variables and including all dummy variables. McFadden's R^2=0.08, *N*=137

	Debt necessity	Financial anxiety	Perceived control	Perceived knowledge
Debt necessity	1	.208**	-0.117	-0.003
Financial anxiety	.208	1	-.378**	-.217**
Perceived control	-0.117	-.378**	1	.193*
Perceived knowledge	-0.003	-.217**	.193*	1

Table 5. Pearson's bivariate correlation table with four attitudinal variables. Perceived control and financial anxiety strongest correlation.
* $p<.01$, ** $p<.001$

Condition	Frequency	Percent	Valid Percent	Cumulative Percent
Abstract-list	53	29	29	29
Abstract-table	43	23.5	23.5	52.5
Concrete-list	43	23.5	23.5	76
Concrete-table	44	24	24	100
Total	183	100	100	

Table 6. Distribution of participants by condition.

Loan experience	Frequency	Percent	Valid Percent	Cumulative Percent
Never had	53	31	31	31
Child w. loan, not in repayment	21	12.3	12.3	43.3
In repayment	51	29.8	29.8	73.1
Paid	46	26.9	26.9	100
Total	171	100	100	

Table 7. Previous loan experience of participants.

Comprehension	Mean	Std. Deviation	N
Abstract-list	4.7358	2.22875	53
Abstract-table	4.3571	2.15068	42
Abstract Total	4.5684	2.19115	95
Concrete-list	4.5238	2.12118	42
Concrete-table	3.9773	2.16192	44
Concrete Total	4.2442	2.14715	86
List	4.6421	2.17293	95
Table	4.1628	2.15221	86

ANOVA

Source	SS	df	MS	F	Sig.
Construal	3.927	1	3.927	0.834	0.362
Format	9.596	1	9.596	2.038	0.155
Construal * Format	0.316	1	0.316	0.067	0.796
Corrected Total	847.923	180			

Table 9. Comprehension score by condition and ANOVA for construal (abstract, concrete) and format (list, table). R Squared = .017 (Adjusted R Squared = .000)

Attribute importance

	SS	df	MS	F	Sig.
Between Groups	4.211	1	4.211	7.611	0.007
Within Groups	66.395	120	0.553		
Total	70.607	121			

Table 10. After removing responses of participants whom did not pass the manipulation check, a main effect of mindset on how many attributes participants considered in their decision, $F(1,111)= 5.32$, $p<.05$, $d=0.44$

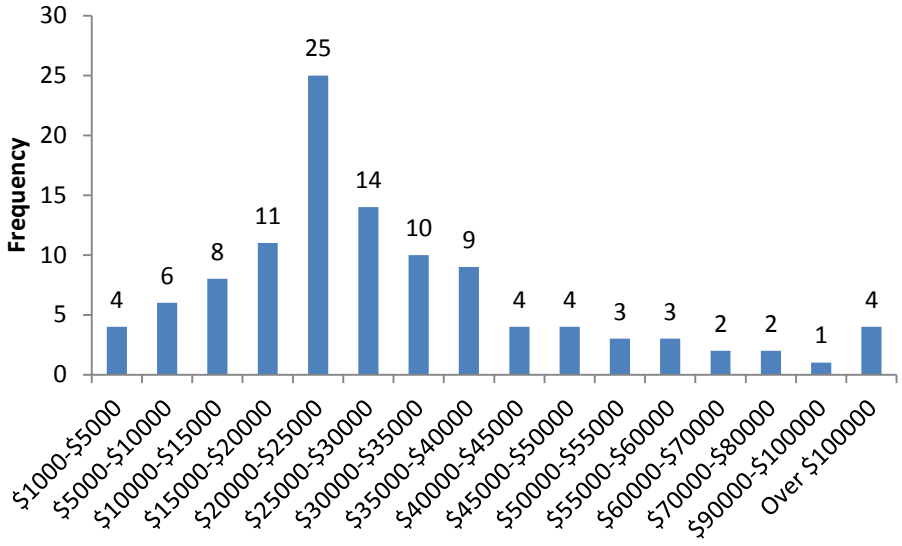

Figure 1. Range of graduating loan balances. Data label demonstrates frequency of graduating loan balances in each respective range.

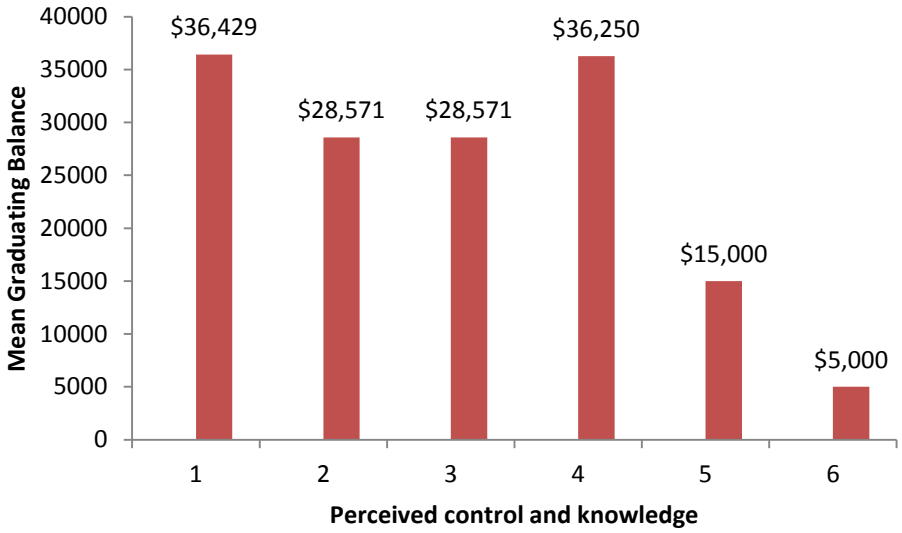

Figure 2. Mean graduating balance by total score of perceived control/perceived knowledge. Total possible score of 7, defined by number of positive responses to the control questions.

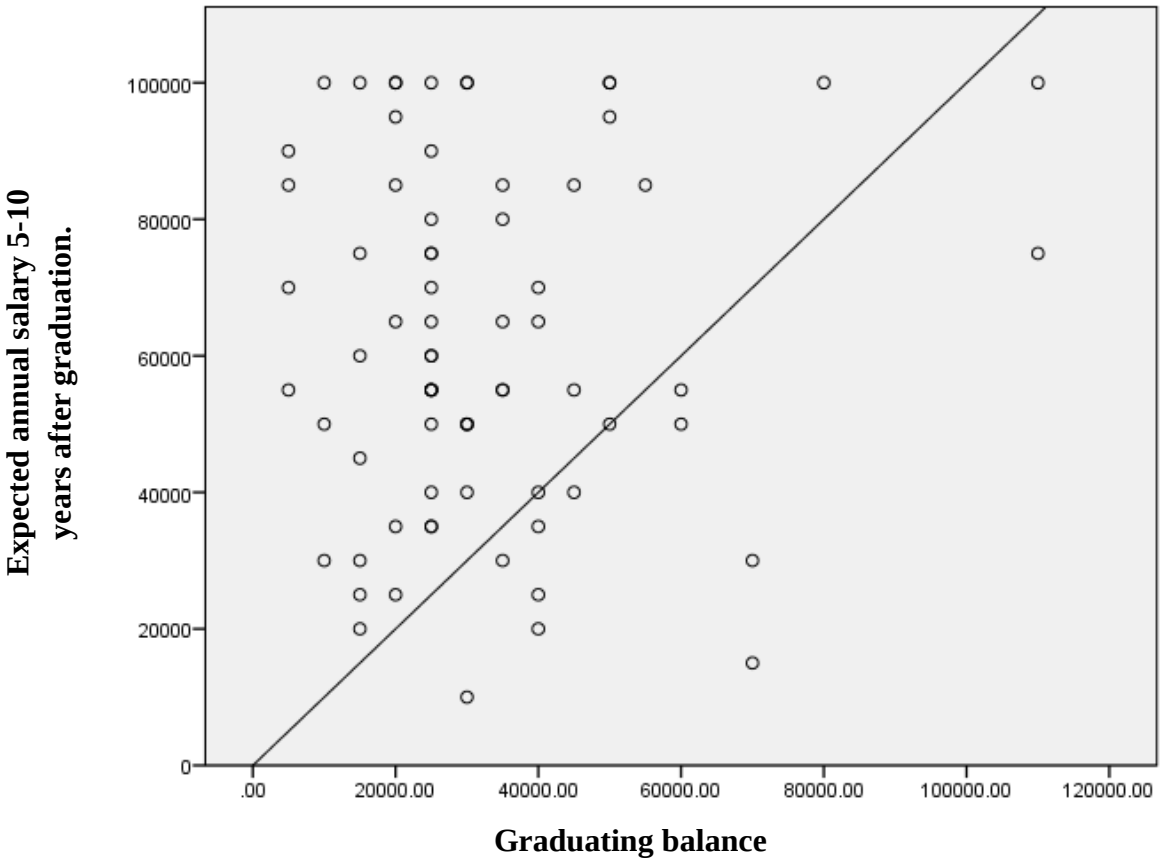

Figure 3. Expected graduating debt plotted against expected annual salary 5-10 years after graduation.

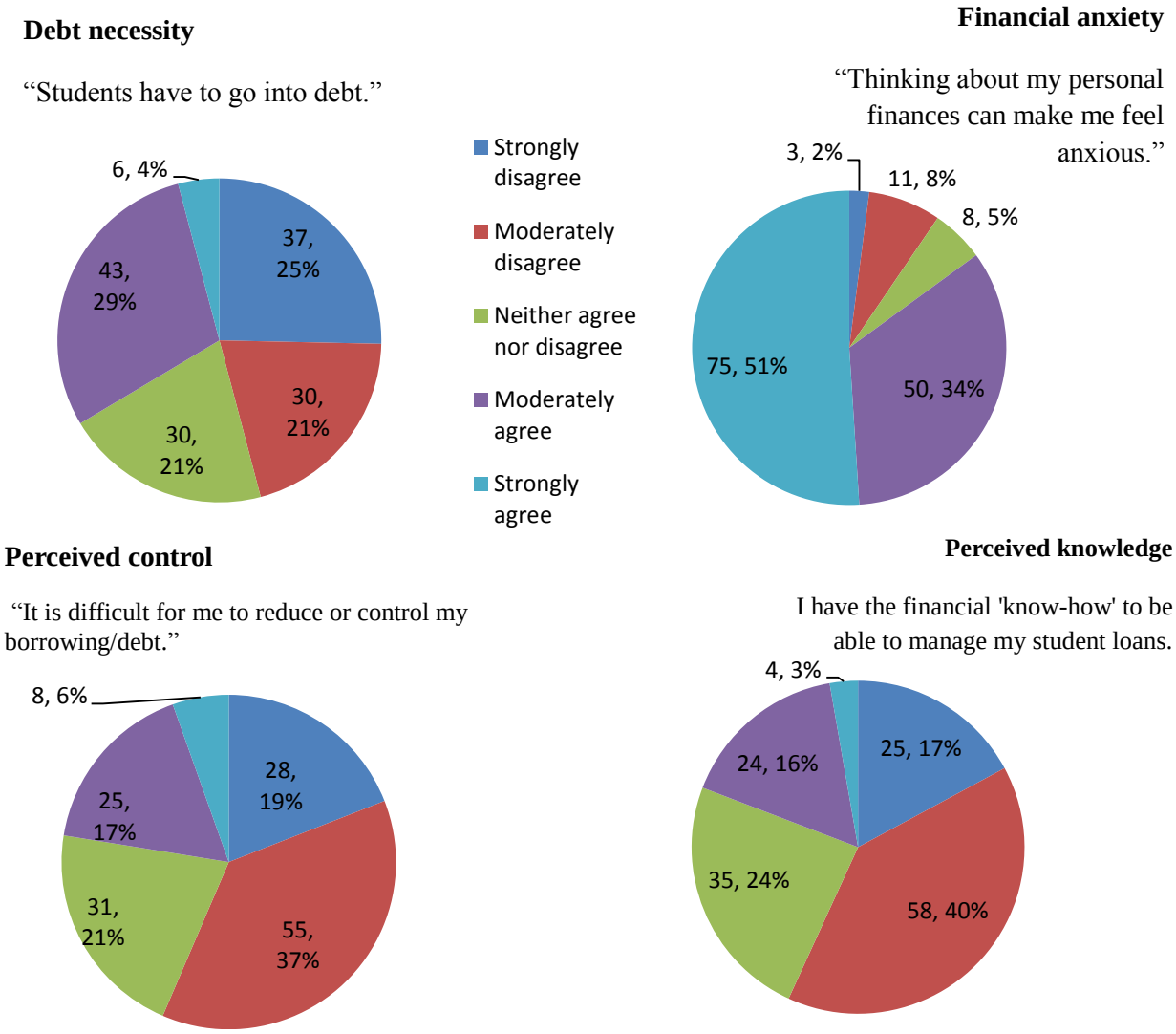

Figure 4. Raw responses to the four attitudinal measures: Debt necessity, Financial anxiety, Perceived control, and Perceived knowledge. Data labels represent the count percentage of each response type

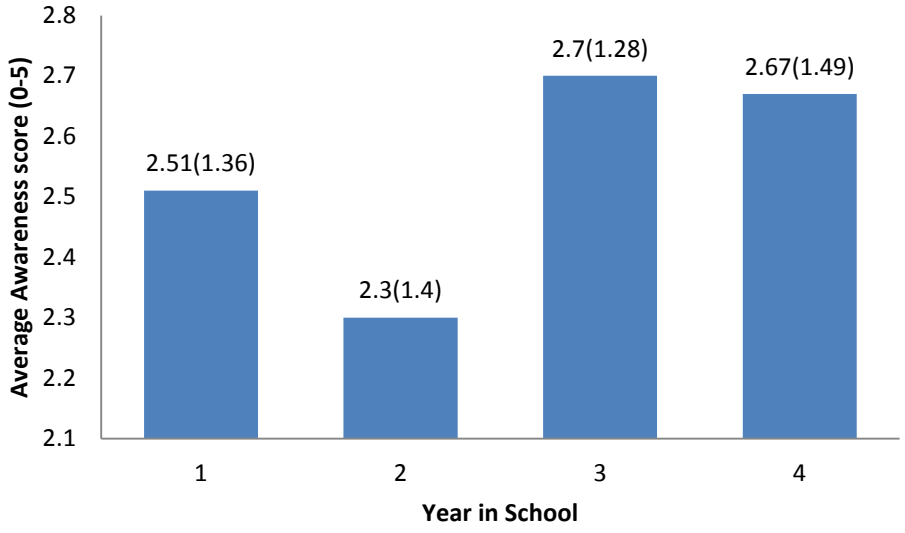

Figure 6. Awareness score by year in school. Awareness improves in the later years but is not significantly different than first and second years.

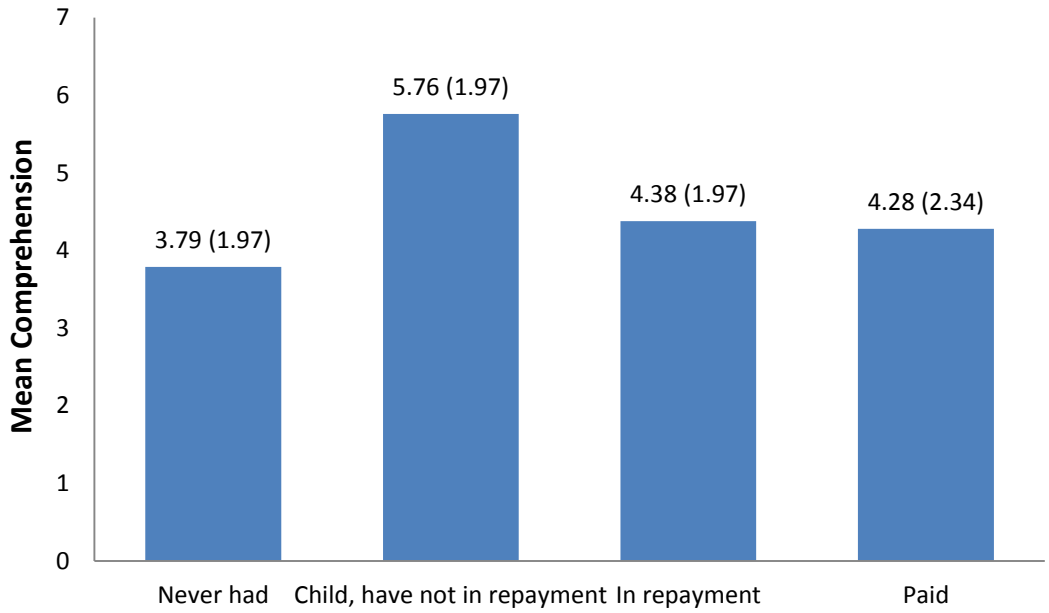

Figure 7. Comprehension by previous loan experience. Those with recent experience with loans demonstrated better recall of financial aid details, $F(1,69)=4.52$, $p<.01$, $d=0.38$

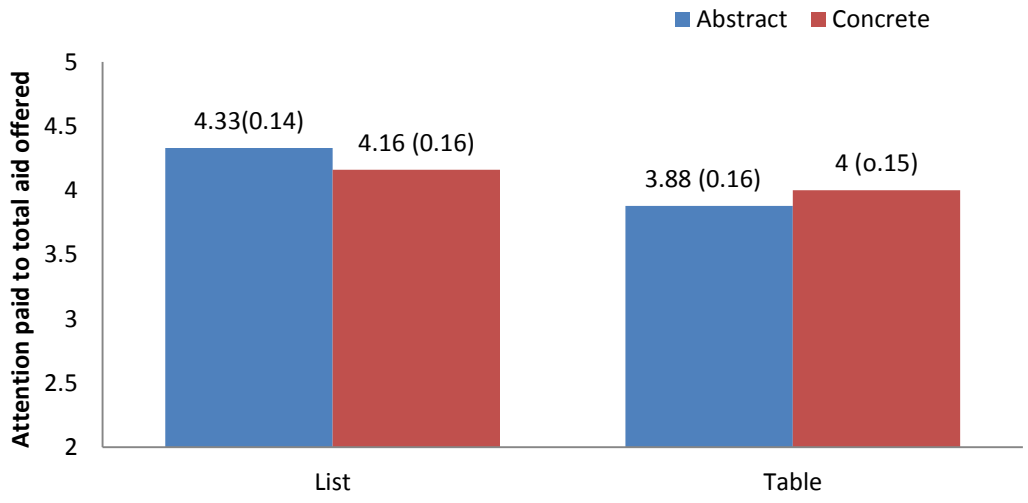

Figure 8. Participants in the list condition reported to pay more attention to the total amount of aid offered than those in the table condition, $F(1, 170)=4.01$, $p<.05$, $d=.31$.

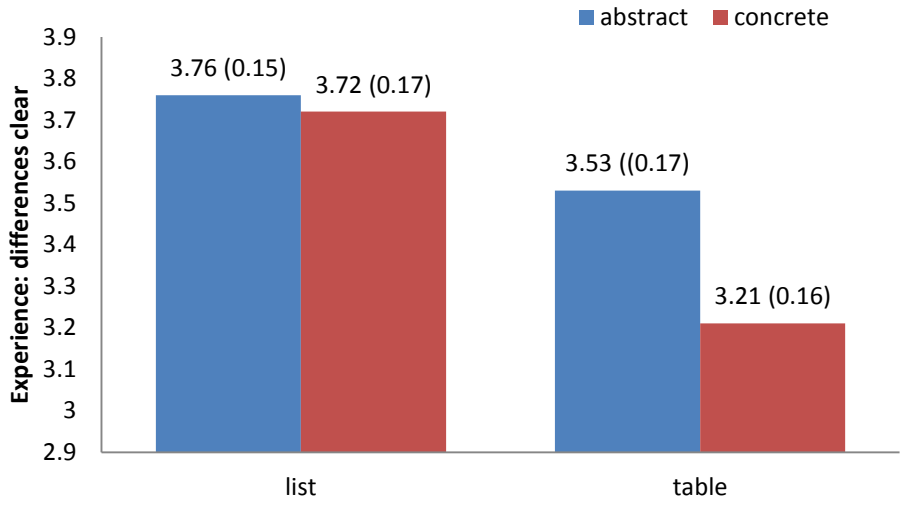

Figure 9. Participants in the list condition were more likely to report that the differences between the aid packages and loan types were clear, and felt more confident in their understanding of the aid packages than participants in the table condition, $F(1,166)=5.22$, $p<.05$.

Appendix A: Study 1

A. Informed consent

Thank you for agreeing to participate in this research study!

Background. The current study explores attitudes and knowledge of student loans.

What you will do in this study. If you agree to participate in this study, you will complete a survey on attitudes towards and awareness of student loans. Completing the survey should take no longer than 7-10 minutes

Risks. Some people find thinking about finances and debt anxiety inducing. If responding to the survey causes you distress at any time feel free to stop. Part of the experiment asks personal questions, such as income level, but you may skip these questions if they cause any discomfort.

Benefits. At the end of the session, you will be provided with information regarding the study background and predicted results, and how they can inform public policy on student loans. Any questions or concerns can be directed to the primary researcher, Sophia Sutcliffe, ss4734@bard.edu or Kristin Lane at lane@bard.ed**Compensation.** In exchange for participating in the experiment, you may provide your email to be entered into a raffle for $100.

Your rights as a participant. Your participation is completely voluntary. You may leave the experiment at any time with no questions asked. The experimenter will give you more information regarding the study after the session has ended. Any remaining questions or concerns can be directed to the primary researcher, Sophia Sutcliffe or adviser Kristin Lane.

Confidentiality. You will be asked for your e-mail address if you wish to enter the raffle. You may provide any e-mail as long as we can contact you only in the case that your e-mail is drawn as the winner. Your e-mail will be collected in a link separate from your responses in the study so that your data can not be matched to the e-mail address that you provide.

IP addresses are recorded in this process; these could potentially be used to identify a specific computer that was used to access the study. We will not use IP information in any capacity. We will be deleting email addresses and IP addresses from the data prior to analysis. No identifiable information will be kept or used, and is not connected to the responses you provide in this survey.

The report of this research will be physically stored in and in the online archives of the Stevenson Library at Bard College.

You must be 18 years of age or older to participate and currently live in the US, permanently or temporarily.

If you have questions, concerns or would like to know more about the study and its results please contact the primary researcher, Sophia Sutcliffe, ss4734@bard.edu or Kristin Lane at lane@bard.edu. If you have questions about your rights as a research participant, please contact the Bard College Institutional Review Board: irb@bard.edu.

A. Debt Attitude Questions

Perceived Control	**Financial Anxiety**	**Debt Necessity**	**Positive Financial attitudes**
I have the financial resources to be able to manage my borrowing/student debt.	Thinking about my personal finances can make me feel anxious. *Factor loading=0.85	Student loans are a necessary part of the contemporary system of higher education.	It is important to monitor your finances carefully while at university.
It is difficult for me to reduce or control my borrowing/debt. *Factor loading =-0.62	Discussing my finances can make me feel stressed.	Students have to go into debt. *Factor loading=0.80	It is wise to save money each month for the future.
Perceived Knowledge	I prefer not to think about the state of my personal finances.	Accruing student debt while at university is inevitable for getting a good degree.	It is important to understand how student loans affect your credit score.
I have the financial 'know-how' to be able to manage my student loans. *Factor loading=0.80			
I have adequate knowledge of money/financial products necessary to manage my finances.			

*Item used to measure psychological construct in Principal Component Analysis and the factor loading value of each based on Varimax Kaiser Normalization.

C. Principal Component Analysis

Rotated Component Matrix[a]

	Component		
	1	2	3
thinking_anxiety	.850		
stressed_anxiety	.809		
ability_control	-.618		
avoid_anxiety	.564		
resources_control	-.502		
have_to		.800	
necessary		.768	
inevitable		.712	
necessary_knowl			.864
smarts_control			.836

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

C. Comprehension Questions

18. I check my loan balance once a year or more.

- True
- False
- Unsure

21. What is your **current** student loan balance? Please only provide a number if you can estimate within approximately $1,000 of your actual balance. If you are not confident in your ability to estimate please respond 'Unsure'.

Comments

22. What will your student loan balance be when you **graduate,** approximately? If you are not confident in your ability to estimate please respond 'Unsure'.

23. What types of loans do you hold? Check all that apply.

- ☐ Federal subsidized
- ☐ Federal unsubsidized
- ☐ Private loans
- ☐ Federal Perkins
- ☐ Unsure

24. What interest rate do your **federal loans** carry?

Federal subsidized

Federal unsubsidized

Federal Perkins

25. When do you have to start repaying **federal loans**?

- ○ When you receive the loan
- ○ When you graduate
- ○ 6 months after you graduate
- ○ 1 year after you graduate
- ○ unsure

26. Have you made any payments on your student loans?

- ○ Yes
- ○ No
- ○ Unsure

Appendix B

A. Informed Consent

Thank you for agreeing to participate in this research study!

Background. The current study explores life goals and financial choices.

What you will do in this study. If you agree to participate in this study, you will complete a 10 minute thought experiment followed by a financial decision task that should take about 20 minutes.

Risks. Some people find financial tasks anxiety inducing. This particular task is *unrelated to your own finances and does not reflect your financial health, behavior, or require any choices regarding your personal finances*. Thus, this exercise should not cause any distress. Part of the experiment asks personal questions, such as income level, but you may skip these questions if they cause any discomfort.

Benefits. At the end of the session, you will be provided with information regarding the study background and predicted results, and how they can be used by policymakers. Any questions or concerns can be directed to the primary researcher, Sophia Sutcliffe, ss4734@bard.edu

Compensation. In exchange for participating in the experiment, you will receive $0.75 through the Mechanicalturk interface.

Your rights as a participant. Your participation is completely voluntary. You may leave the experiment at any time with no questions asked.

The experimenter will give you more information regarding the study after the session has ended. Any remaining questions or concerns can be directed to the primary researcher, Sophia Sutcliffe

Anonymity. The data collected in the study will remain anonymous. We cannot connect your name to your responses in this study.

You must be 18 years of age or older to participate and currently live in the US, permanently or temporarily.

If you have questions, concerns or would like to know more about the study and its results please contact the primary researcher, Sophia Sutcliffe, ss4734@bard.edu. If you have questions about your rights as a research participant, please contact the Bard College Institutional Review Board: irb@bard.edu.

B. Mindset Prime: Diagram-based task.

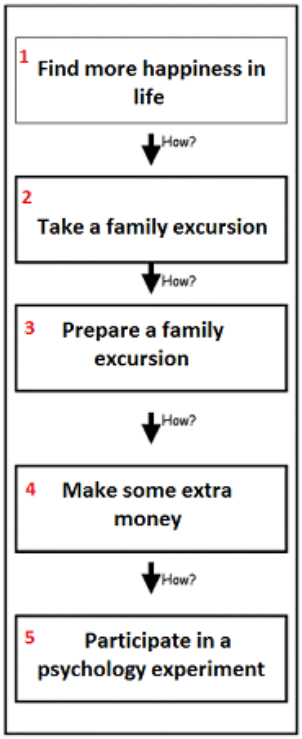

Figure A-1. Participants completed the following task based on this diagram.

Please fill in the boxes to show how you could meet the broader life goal of improving and maintaining your physical health. Similar to the diagram above, start with the top box and fill in the box below with progressively more specific life goals.

How↓

How↓

How↓

How↓

Specific life goal

C. Financial aid packages
List condition.

Take a few minutes to review *Aid Package 1* from University 1 and *Aid Package 2* from University 2. **Please take care to put yourself in the shoes of a high school student making this decision.**

Remember that tuition is $43,000 a year, and that you have a wealthy relative willing to help you pay up to $3,000.

Aid Package #1

Scholarships and Grants	$ 30,000
Subsidized Federal Loan	$ 5,000
Unsubsidized Federal Loan	$ 5,000
Total	$ 40,000

Additional Information
Subsidized federal loans have a 4.66% interest rate, but interest does not accrue until 6 months after you have graduated. The value of the subsidized loan after 10 years in a standard repayment plan is $6,264. The monthly payment for the subsidized federal loan is $52.

Unsubsidized federal loans have a 4.66% interest rate, but starts to accrue interest as soon as the loan is distributed to you/your school. The value of the unsubsidized federal loan under a standard 10 year repayment plan is $7,657. The monthly payment for the unsubsidized federal loan is $64.

The total value of the subsidized and unsubsidized federal loans under 10 year standard repayment is $13,921. The total monthly payment for these two federal loans is $116.

Aid Package #2

Scholarships and Grants	$ 30,000
Subsidized Federal loan	$ 4,500
Unsubsidized Federal loan	$ 5,500
Private Sallie Mae loan	$ 1,500
Total	$ 41,500

Additional Information
Subsidized federal loans have a 4.66% interest rate, but interest does not accrue until 6 months after you have graduated. The value of the subsidized loan after 10 years in a standard repayment plan is $5,638. The monthly payment for the subsidized federal loan is $47.

Unsubsidized federal loans have a 4.66% interest rate, but interest starts to accrue as soon as the loan is distributed to you/ your school. The value of the unsubsidized loan after 10 years in a standard repayment plan is $8,423. The monthly payment for the unsubsidized federal loan is $70.

The private Sallie Mae loan has an interest rate of 6% and accrues interest while you are in school. The value of the private Sallie Mae loan under a 10 year repayment plan is $2,587. The monthly payment for the private Sallie Mae loan is $22.

The total value of the two federal loans and one private loan at the end of a 10 year repayment plan is $16,648. Total monthly payments for the two federal loans and the private loan is $139.

Table condition.

Take a few minutes to review *Aid Package 1* from University 1 and *Aid Package 2* from University 2. **Please take care to put yourself in the shoes of a high school student making this decision.**

Remember that tuition is $43,000 a year, and that you have a wealthy relative willing to help you pay up to $3,000.

Package	Aid Item	Amount	Interest Rate	When interest starts to accumulate	Value after 10 years in standard repayment	Monthly payment in 10 yr. standard repayment
1	Scholarships and Grants	$30,000	0%	Never	No repayment	No repayment
	Subsidized loan	$5,00	4.66%	6 months after graduation	$6,264	$52
	Unsubsidized loan	$5,000	4.66%	When loan is distributed	$7,657	$64
Total		$40,000			$13,921	$116

2	Scholarships and Grants	$30,000	None	NA	NA	None
	Subsidized loan	$4,500	4.66%	6 months after graduation	$5,638	$47
	Unsubsidized loan	$5,500	4.66%	When loan is distributed	$8,423	$70
	Private loan	$1,500	6.00%	When loan is distributed	$2,587	$22
Total		$41,500			$16,648	$139

D: Comprehension

1. How much of the aid package you chose was made up of loans?

- ○ $9,000
- ○ $10,000
- ○ $11,500
- ○ $12,000
- ○ Unsure

2. Which type of loan accrues interest while you are in school? Check all that apply.

- ☐ Federal subsidized
- ☐ Federal unsubsidized
- ☐ Private loans
- ☐ Unsure

3. When does interest start accruing on Federal Unsubsidized Loans?

- As soon as the loan is distributed
- 6 months after you graduate
- Never
- Unsure

4. What was the interest rate on the federal loans in the packages?

- 4%
- 4.6%
- 5.2%
- 6%
- Unsure

5. When does interest start accruing on Federal Subsidized Loans?

- As soon as the loan is distributed
- 6 months after you graduate
- Never
- Unsure

6. How are federal subsidized and federal unsubsidized loans different? Check all that apply.

- Interest rates higher on subsidized loans
- Interest rates higher on unsubsidized loans
- Interest accrues on subsidized loans while you are enrolled
- Interest accrues on unsubsidized loans while you are enrolled
- Unsure

7. What was the interest rate on the private loan included in Package 2?

- 4%
- 4.6%
- 5%
- 6%

- Unsure

8. How much of the aid package you chose was made up of **scholarships and grants**?

- $5,000
- $15,000
- $30,000
- $35,000
- Unsure

D. Processing Questions

How much did you pay attention to the **interest rates** charged on loans?

monthly payments
ten-year value of loans
amount of scholarships and grants
when interest began accruing
total amount of aid offered

Did not pay attention (1) (7) Paid a lot of attention

E. User Experience Questions

Difficult α=0.9	**Clear** α=0.86
I found it difficult to navigate the aid packages and information about each aid item.	It was clear how the two aid packages were different.
Looking at the aid packages was very confusing.	In viewing the two aid packages, it was clear how the various types of loans were different.
Viewing the aid packages made me anxious and/or uncomfortable.	I felt confident in my understanding of the different aid items when I viewed the packages.
I felt a little lost when I was looking over the aid packages.	

Appendix D

A. Debriefing statement- Study 1

Thank you for participating! The primary goal of this study was to explore how people view their student loans. Whether they see them as an investment, something they have control over, or something they just have to take.

Why student loans?

The national student loan balance at 1.3 trillion recently surpassed all other forms of consumer credit, and delinquency rates have continually risen. Many are concerned that students are not making informed decisions when taking out student loans and are ill-informed on how to manage their new debts.

Financial literacy

Financial literacy has been a primary concern of policymakers since the financial crisis. Many efforts have been made at early financial education to help students make informed financial decisions when enrolling in college and after they have taken on student loans. In designing these programs, it is important to understand how students think about student loans. If there are prevalent negative attitudes towards debt that keep students from managing their debt, the messages and framing of the educational programs should promote more positive attitudes and a sense of control over one's personal finances.

Debt attitudes

What attitudes toward student loans might keep them from managing their loans? Do they feel that student loans are a necessary evil of today? Do they see it as a financial investment, one that will help them build credit and a better future? Seeing educational debt as mandatory and anxious attitudes towards debt have been related to a weaker intentions to repay and lesser awareness of one's own loan commitments. The positive debt attitude of seeing educational debt as a worthwhile investment in the future has been related to greater awareness and management of debt. This research posits that a potential link is how much control students feel they have over their borrowing and financial behavior. Financial educational programs could use this information to guide how managing student loans is presented; to present them as an opportunity to build and manage your personal finances and improve future opportunities.

Important considerations

The amount that you pay for an education must be viewed alongside the benefits you expect to get from this education. $30,000 in student debt sounds very intimidating, but people with a

bachelors degree make much more than people without a bachelors degree. College is a long-term investment which you will pay for over a long period of time, but you will also continue to receive the benefits across your lifetime.

If you have any questions, concerns or would like to learn more about the study and it's results, contact Sophia Sutcliffe at ss4734@bard.edu or Kristin Lane at lane@bard.edu. If you have any questions about your rights as a participant, contact Pavlina Tcherneva, Chair of the Institutional Review Board, Bard College, irb@bard.edu.

B. Debriefing statement- Study 2

Thank you for participating! The primary goal of this study was to examine how an abstract or concrete mindset impacts the processing of the same financial aid information when presented differently.

Why does presentation format matter?
Policymakers have traditionally assumed that providing information is sufficient to help people understand a topic and make an informed decision. Decision-making research suggests that this is not the case. Peoples' understanding and use of information is strongly guided by how that information is presented. A landmark example of this is that unit price information helps shoppers make better decisions when it is presented in a summarized list, but people are less likely to use this information when it is scattered across the aisle and item prices are viewed in isolation from one another. Summary tables which show how items vary on particular important attributes are a suggested format to compare how options compare to one another. In this study you either compared two aid packages in a list format or in a table summarizing important attributes of aid items. The summary table was expected to bring your attention to important details such as monthly payment and 10 year loan value.

What is an abstract or concrete mindset?
People can interpret the same event or item in different ways depending on the mindset that they approach it with. An abstract mindset focuses on the primary, defining features of an object while a concrete mindset focuses on specific, contextual details. For example, a basketball can be abstractly viewed as a toy, or concretely viewed as a large, orange ball. Similarly, a federal subsidized loan could be viewed as a loan which the government helps pay interest on, or it could be viewed as a loan whose value is $600 less than an equal unsubsidized loan under a particular repayment plan. In this study you were either primed to think abstractly by considering why you do the things you do, primed to think concretely by considering how you do the things

you do. The control condition wrote about a life goal in general. The concrete mindset prime was expected to make processing of aid information in the summary table easier, and the abstract mindset was expected to make processing the list format easier.

Why financial aid information?

Students and parents alike say that the financial aid process is the most confusing part of applying to and enrolling in college. Going to a college is an important decision in ones life, and is an increasingly large investment. In taking a student loan to fund your education you are agreeing to pay back that amount at a given interest rate, and if you don't pay it back it is increasingly difficult to borrow to buy a car or a house. As a long-term commitment towards the start of adulthood it is very important that students understand the terms of different loan agreements so they can choose the package with the best terms.

Important considerations

The amount that you pay for an education must be viewed alongside the benefits you expect to get from this education. $30,000 in student debt sounds very intimidating, but people with a bachelors degree typically make much more than people without a bachelors degree. College is a long-term investment which you will pay for for a long time, but you will also continue to receive the benefits across your lifetime.

If you have any questions, concerns or would like to learn more about the study and it’s results, contact Sophia Sutcliffe at ss4734@bard.edu or Kristin Lane at lane@bard.edu. If you have any questions about your rights as a participant, contact Pavlina Tcherneva, Chair of the Institutional Review Board, Bard College, irb@bard.edu.

Appendix D

A. IRB Application: Study 1

Sophia Sutcliffe ss4734@bard.edu

(845)901-4613

Joint- Psychology, Economics

Undergraduate

Kristin Lane lane@bard.edu

Dimitri Papadimitriou dpapadimitriou@bard.edu

February 1, 2015

Expedited Review

Funding $100 Psychology Senior Project Award

$100 Psychology Department

$100 Economics Department

Start Date February 17, 2015

End Date January 15, 2016

Title

Making student loans more salient: Effects of presentation format and mindset on student loan comprehension

Research Question

As the national student loan balance climbs and delinquency and default rates continually rise there is much talk about a student loan bubble. There are policy efforts aimed at informing students about student loans and loan repayment plans, but these efforts could be improved.

In designing these programs, it is important to understand how students think about loans, or why they fail to think about them. Do they think about student loans as a financial investment in their future? Do they think about them as a necessary evil of today? How do these attitudes impact debt management?

Viewing student loans as a useful and worthy investment in the future is the one attitude that seems to relate to greater awareness of one's debts (Harrison, Agnew, Serido, 2015). Seeing debt

as necessary and having anxious attitudes towards debt both show a negative relationship to awareness of one's own debts (Harrison et al., 2015). The present research posits that these attitudes lead to greater or lesser awareness, in part, due to whether the student feels they have control over their loans and/or borrowing behavior. While we can not manipulate demographicfactors which may cause such attitudes, we can build educational programs which pose loans as a manageable, financial investment which needs attention and care in order to provide the best return.

Recruitment

Participants will primarily be recruited online through an email blast to all Bard undergraduates, which dually serves to advertise a workshop on student debt management. In order to ensure an ample sample size the link to the survey will also be posted on social media. It is important that I recruit a significant younger cohort who are around the typical college age or in early repayment. This is imperative because information and perceptions about college decisions, the labor market, and loan repayment changes with age and experience.

Procedure

After consenting to participate, participants will complete the survey which asks them to report on their attitudes towards debt, report awareness of their own debt, and demographic items

Upon completing the survey a debriefing statement will be displayed. Finally, participants will be offered the chance to enter their email into a raffle for $100. If participants wish to enter the raffle they will click a button that will link them to another survey form in which they simply enter the email address at which they can be contacted in the case that their name is drawn.

Participants

I expect to recruit at least 50 participants from the email blast and social media

Risks and Benefits

Thinking about personal finances can cause some people anxiety. This survey asks participants to recall how much they owe in student loans,which might cause minor temporary distress.

Potential benefits of this study are to enhance policy efforts to increase financial educational efforts regarding student loans and financial aid to improve informed decision-making.

Consent Form att.

For online studies, consent is communicated by a button click indicating that the participant has read, understands, and agrees to participate.

Confidentiality

Participants are not providing any specific identifying information such as name or phone number in the survey. Participants' data will be stored according to a random coding identification number.

After participants are debriefed on the study they will be asked if they wish to enter a raffle for $100. In order to enter they will click a link to an external survey where they simply enter their email address. Thus, participants email address is not connected to their data it is stored in a completely separate file.

IP addresses are recorded when clicking from one link to the next. These could potentially be used to identify a specific computer that was used to access thestudy. We will not use IP information in any capacity. We will be deleting IP addresses from the data set prior to analysis so that this confidential information is not linked to participants' data. A raffle winner will be chosen immediately upon the completion of data collection and all email addresses will be deleted. As such, no identifiable information is connected to participant data.

Deception No

B. IRB Approval: Study 1

Date: February 13, 2014
To: Sophia Sutcliffe
Cc: Dimitri Papadimitriou, Kristin Lane, Megan Karcher
From: Pavlina R. Tcherneva, IRB Chair
Re: 2015 IRB Proposal

DECISION: APPROVED

Dear Sophia,

The Bard Institutional Review Board reviewed the revisions to your proposal. Your proposal is approved through February 13, 2016.

Please notify the IRB if your methodology changes or unexpected events arise.

We wish you the best of luck with your research.

Pavlina R. Tcherneva
tchernev@bard.edu
IRB Chair

C. IRB Application: Study 2

Sophia Sutcliffe ss4734@bard.edu

(845)901-4613

Joint- Psychology, Economics

Undergraduate

Kristin Lane lane@bard.edu

Dimitri Papadimitriou dpapadimitriou@bard.edu

December 1, 2014

Expedited Review

Funding

$100 Psychology Senior Project Award

$100 Psychology Department

$100 Economics Department

Start Date January 15, 2015

End Date January 15, 2016

Title

Making student loans more salient: Effects of presentation format and mindset on financial aid comprehension

Research Question

Student loans are of direct policy concern at both the microeconomic and macroeconomic level. The majority of loans are federally provided, and poor loan performance significantly hurts individuals access to future credit. There are policy efforts aimed at informing students about student loans and loan repayment plans, but these efforts could be improved. Information about student loans is often presented loan by loan and using abstract financial concepts which could be difficult for young adults to grasp. A federal subsidized loan could be viewed as a loan which the government helps pay interest on, or it could be viewed as a loan whose value is $600 less than an equal unsubsidized loan under a particular repayment plan. Concrete examples of how abstract financial concepts play out should facilitate comprehension of underlying terms of loans.

Consumer decision-making research further emphasizes that presentation format should be conducive to how that information is processed.

Peoples' understanding and use of information is strongly guided by how that information is presented. A landmark example of this is that unit price information helps shoppers make better decisions when it is presented in a summarized list, but people are less likely to use this information when it is scattered across the aisle and item prices are viewed in isolation from one another. Summary tables which show how items vary on particular important attributes are a suggested format to compare how options compare to one another. Priming an abstract mindset should aid processing of financial information presented in written explanations, but might cause participants to overlook important contextual details such as the cost of a loan after 10 years. Priming a concrete mindset should encourage participants to pay special attention to contextual details and how different loans compare on important attributes, and these comparisons are made easier when presented concrete examples in a table. The present study aims to examine how mindset and format interact to improve or dampen understanding and comparison of financial aid packages.

Specific population This experiment will be restricted to US citizens

Recruitment

Participants will be recruited online through Amazon's Mechanical Turk. Participants will be compensated $0.75 for their participation

Procedure

After consenting to participate, participants will complete the construal level prime (10 minutes). Participants in the low level construal/ concrete mindset condition will do a thought experiment in which they think about *how* a life goal could be reached. Participants in the high level construal abstract mindset condition will do a thought experiment in which they think about *why* this life goal is important. This manipulation is adapted from Freitas, Gollwitzer, and Trope (2004). Participants in the control condition will free-write about the life goal of improving and maintaining one's physical health. Please see appendices (p.1) for priming materials.

Participants will then be presented a choice situation in which they must evaluate and choose a financial aid package (8 minutes). Participants in the matrix condition will view the two aid packages formatted into a summary table, while participants in the traditional list condition will view the two aid packages in a list with additional information provided at the bottom. Both conditions receive the same information, but in different presentation formats. Please see appendices (p. 3) for the two presentation formats.

All participants will be given a few minutes to look over both aid offers, choose a package, and provide an explanation for their choice. On the next page participants will be asked conceptual

questions about different aid items and to reflect on their decision. They will also be given the opportunity to change their aid package by denying or requesting less of any item, and explain where they could find other funds.

On the next page participants will report how comfortable, easy, and confusing this task was in order to examine the ease of processing the information in each condition. Finally participants will be asked to provide some demographic information including experience with the financial aid process (See appendices p.6). Participants will then be debriefed (See appendices p. 8) and receive their compensation.

Participants

I expect to recruit 300 participants on Mechanical Turk, with 50 participants in each group 3 (abstract, control, concrete) X 2 (matrix, list)

Risks and Benefits

Thinking about life goals and financial decisions can cause some people anxiety. The goals and decisions are not relevant to ones own financial situation and thus should not cause any major distress.

Potential benefits of this study are to enhance policy efforts to increase financial literacy surrounding student loans and aid informed decision-making.

Consent Form att. Yes

For online studies, consent is communicated by a button click indicating that the participant has read, understands, and agrees to participate.

Confidentiality

Participants are not providing any specific identifying information such as name, phone number, or e-mail address. Participants data will be stored according to a random coding identification number.

Deception No

Debriefing Statement

Please see emailed attachment: Sutcliffe_StudyMaterials.December2014

D. IRB Approval: Study 2

Date: December 17, 2014
To: Sophia Sutcliffe
Cc: Dimitri Papadimitriou, Kristin Lane, Megan Karcher
From: Pavlina R. Tcherneva, IRB Chair
Re: 2014 IRB Proposal

DECISION: APPROVED

Dear Sophia,

The Bard Institutional Review Board reviewed the revisions to your proposal. Your proposal is approved through May 30, 2014.

Please notify the IRB if your methodology changes or unexpected events arise.

We wish you the best of luck with your research.

Pavlina R. Tcherneva
tchernev@bard.edu
IRB Chair

References

Alter, A. L., Oppenheimer, D. M., & Zemla, J. C. (2010). Missing the trees for the forest: A construal level account of the illusion of explanatory depth.*Journal of Personality and Social Psychology*, *99*(3), 436.

Amit, E., Algom, D., & Trope, Y. (2009). Distance-dependent processing of pictures and words. *Journal of Experimental Psychology: General*, *138*(3), 400.

Andrews, B., & Wilding, J. M. (2004). The relation of depression and anxiety to life-stress and achievement in students. *British Journal of Psychology*, *95*(4), 509-521.

Archuleta, K. L., Dale, A., & Spann, S. M. (2013). College students and financial distress: Exploring debt, financial satisfaction, and financial anxiety.*Journal of Financial Counseling and Planning*, *24*(2), 50-62.

Areni, C.S., Duhan, D.F., & Kiecker, P. (1999). Point-of-purchase displays, product organizations, and brand purchase likelihoods. *Journal of the Academy of Marketing Science, 27* (4), 428-441.

Ariely, D. (2000). Controlling the information flow: Effects on Consumer Decision-making and Preferences. *Journal of Consumer Research (27)* 2, 233-248.

Arthur, W. B. (1994). Inductive reasoning and bounded rationality. *The American economic review*, 406-411.

Attanasio, O. P., & Kauffman, K. (2011). Educational Choices and Subjective Expectations of Returns: Evidence on Intra-Household Decision Making and Gender Differences. *NBER Working Paper, 15087*.

Aud, S., Wilkinson-Flicker, S., Kristapovich, P., Rathbun, A., Wang, X., & Zhang, J. (2013). The Condition of Education 2013. NCES 2013-037. *National Center for Education*

Statistics.

Autor, D. (2010). The polarization of job opportunities in the US labor market: Implications for employment and earnings. *Center for American Progress and The Hamilton Project*.

Avery, C., & Hoxby, C. M. (2004). Do and should financial aid packages affect students' college choices?. In *College choices: The economics of where to go, when to go, and how to pay for it* (pp. 239-302). University of Chicago Press.

Avery, C., & Kane, T. J. (2004). Student perceptions of college opportunities. The Boston COACH program. In *College choices: The economics of where to go, when to go, and how to pay for it* (pp. 355-394). University of Chicago Press.

Avery, C., & Turner, S. (2012). Student Loans: Do College Students Borrow Too Much—Or Not Enough?. *The Journal of Economic Perspectives*, 165-192.

Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *Quarterly journal of Economics*, 261-292.

Baum, S., & Steele, P. (2010). Who borrows most?: bachelor's degree recipients with high levels of student debt.

Baum, S. (2014). Higher Education Earnings Premium: Value, Variation, and Trends. *Urban Institute*.

Belley, P., & Lochner, L. (2007). *The changing role of family income and ability in determining educational achievement* (No. w13527). National Bureau of Economic Research.

Bettinger, E. P., Long, B. T., Oreopoulos, P., & Sanbonmatsu, L. (2009). *The role of simplification and information in college decisions: Results from the H&R Block FAFSA experiment* (No. w15361). National Bureau of Economic Research.

Bettman, J.R., Johnson, E. J., & Payne, J.W. (1991). Consumer decision making. In T.S. Robertson & H.H. Kassarjian (Eds.), *Handbook of consumer research* (pp. 50-84). Englewood Cliffs: Prentice Hall.

Bettman, J. R., & Kakkar, P. (1977). Effects of Information Presentation Format on Consumer Information Acquisition Strategies. *Journal of Consumer Research*, *3*(4), pp. 233–240.

Bettman, J. R., & Zins, M. A. (1979). Information format and choice task effects in decision making. *Journal of Consumer Research*, 141-153.

Bettman, J.R., Luce, M.F., & Paybe, J.W. (1998). Constructuve consumer choice process. *Journal of Consumer Research*, *25,* 187-217.

Betts, J. R. (1996). What do students know about wages? Evidence from a survey of

Boddington, L., & Kemp, S. (1999). Student Debt, Attitudes Towards Debt, Impulsive Buying, and Financial. *New Zealand Journal of Psychology*, *28*(2).

Booij, A. S., Leuven, E., & Oosterbeek, H. (2012). The role of information in the take-up of student loans. *Economics of Education Review*, *31*(1), 33-44.

Botti, S., & Iyengar, S. S. (2006). The dark side of choice: When choice impairs social welfare. *Journal of Public Policy & Marketing*, *25*(1), 24-38.

Bowen, W. G., Chingos, M. M., & McPherson, M. S. (2009). Crossing the finish line.

Bureau of Labor Statistics (2015). Earnings and employment rates in 2014 by educational attainment. Retrieved from http://www.bls.gov/emp/ep_chart_001.htm on April 19, 2015.

Burchell, B. J. (2003). Identifying, describing and understanding financial aversion: Financial phobes.

Chen, H., & Volpe, R. P. (2002). Gender differences in personal financial literacy among college students. *Financial services review*, *11*(3), 289-307.

Compas, B. E., Malcarne, V. L., & Fondacaro, K. M. (1988). Coping with stressful events in older children and young adolescents. *Journal of consulting and clinical psychology*, *56*(3), 405.

Caplan, L. J., & Schooler, C. (2007). Socioeconomic status and financial coping strategies: The mediating role of perceived control. *Social Psychology Quarterly*, *70*(1), 43-58.

Carnevale, A. P., Rose, S. J., & Cheah, B. (2011). The College Payoff: Education, Occupations, Lifetime Earnings. *Georgetown University Center on Education and the Workforce*.

Catsiapis, G. (1987). A model of educational investment decisions. *The Review of Economics and Statistics*, 33–41.

Christie, H., & Munro, M. (2003). The Logic of Loans: students' perceptions of the costs and benefits of the student loan. *British Journal of Sociology of Education*, *24*(5), 621-636.

Clements, D. H., & McMillen, S. (1996). Rethinking" concrete" manipulatives. *Teaching children mathematics*, 270-279.

College Board (2013). *A majority of students only look at the sticker price.* studentPOLL (10), 1.

College Board (2014). Trends in Student Aid 2014. *College Board: Trends in Higher Education.* Retrieved from: trends.collegeboard.org. Print.

Cooke, R., Barkham, M., Audin, K., Bradley, M., & Davy, J. (2004). Student debt and its relation to student mental health. *Journal of Further and Higher Education*, *28*(1), 53-66.

Department of Education (2013, September 30). *Default rates continue to rise for federal student loans* [Press release]. http://www.ed.gov/news/press-releases/default-rates-continue-rise-federal-student-loans

Department of Education (2014). Student Loans Overview, Fiscal Year 2014 Budget Proposal. https://www2.ed.gov/about/overview/budget/budget14/justifications/s-loansoverview.pdf. Retrieved on April 19, 2015.

Diehl, K. (2005). When two rights make a wrong: searching too much in ordered enevironments. *Journal of Marketing Research*, *42*, 312-322.

Dowd, A. C. (2008). Dynamic interactions and intersubjectivity: Challenges to causal modeling in studies of college student debt. *Review of Educational Research, 78*(2), 232-259.

Dynarski, S. (2004). The new merit aid. In *College choices: The economics of where to go, when to go, and how to pay for it* (pp. 63-100). University of Chicago Press.

Dynarski, S., & Wiederspan, M. (2012). Student Aid Simplification: Looking Back and Looking Ahead. *National Tax Journal*, *65*(1), 211–234.

Edmiston, K. D., Brooks, L., & Shepelwich, S. (2012). Student loans: overview and issues. *Federal Reserve Bank of Kansas City Research Working Paper*, (12-05).

Elliott, W., Grinstein-Weiss, M., & Nam, I. (2013). Is student debt compromising homeownership as a wealth building tool. *Center for Social Development Working Paper*, (13-33).

Federal Reserve Bank of New York, *Quarterly Report on Household Debt and Credit*, 2012 Q3. Retrieved on December 6, 2014, fromhttp://www.newyorkfed.org/householdcredit/.

Federal Reserve Bank of New York, *Federal Funds Data.* Retrieved April 29, 2015, from http://newyorkfed.org/markets/omo/dmm/fedfundsdata.cfm

Federal Student Aid (2014). Interest rate and fees, federal loans. Retrieved April 29, 2015 from https://studentaid.ed.gov/types/loans/interest-rates .

Financial Aid Shopping Sheet. (2013, December 1). Retrieved March 30, 2015, from

http://www2.ed.gov/policy/highered/guid/aid-offer/index.html

Freitas, A. L., Gollwitzer, P., & Trope, Y. (2004). The influence of abstract and concret mindsets on anticipating and guiding others' self-regulatory efforts.*Journal of experimental social psychology*, *40*(6), 739-752.

Fujita, K., Gollwitzer, P.M., Oettingen, G. (2007). Mindset and pre-conscious open-mindedness to incidental information. *Journal of Experimental Social Psychology*

Gerardi, K., Goette, L., & Meier, S. (2010). Financial literacy and subprime mortgage delinquency: Evidence from a survey matched to administrative data. *Federal Reserve Bank of Atlanta Working Paper Series*, (2010-10).

Harrison, N., Chudry, F., Waller, R., & Hatt, S. (2015). Towards a typology of debt attitudes among contemporary young UK undergraduates. *Journal of Further and Higher Education*, *39*(1), 85-107.

Harrison, N., Agnew, S., & Serido, J. (2015). Attitudes to debt among indebted undergraduates: A cross-national exploratory factor analysis. *Journal of Economic Psychology*, *46*, 62-73.

Haughwout, Lee, Scally, & van der Klaauw, (2015). *Student loan borrowing and repayment trends, 2015*. Federal Reserve Bank of New York. Retrieved from http://www.newyorkfed.org/newsevents/mediaadvisory/2015/Student-Loan-Press-Briefing-Presentation.pdf. Presentation.

Heckman, J. J., Lochner, L. J., & Todd, P. E. (2008). *Earnings functions and rates of return* (No. w13780). National Bureau of Economic Research.

Hemelt, S. W., & Marcotte, D. E. (2011). The impact of tuition increases on enrollment at public colleges and universities. *Educational Evaluation and Policy Analysis*, *33*(4), 435-457.

HigherOne (2014). Money Matters on Campus, 2014 Report. Retrieved on January 28, 2015, From https://www.cgsnet.org/ckfinder/userfiles/files/Money-Matters-on-Campus-Final-Report.pdf

Hogarth, J. M., & Merry, E. A. (2011). Designing disclosures to inform consumer financial decisionmaking: lessons learned from consumer testing. *Federal Reserve Bulletin*, (August).

Hoxby, C., & Turner, S. (2015). *What High-Achieving Low-Income Students Know About College* (No. w20861). National Bureau of Economic Research.

Huggett, M., Ventura, G., & Yaron, A. (2006). Human capital and earnings distribution dynamics. *Journal of Monetary Economics*, *53*(2), 265-290.

Ionescu, F. (2009). The Federal Student Loan Program: Quantitative implications for college enrollment and default rates. *Review of Economic Dynamics*, *12*(1), 205-231.

Janiszewski, C. (1998). The influence of display characteristics on visual exploratory search behavior. *Journal of Consumer Research, 25,* 290-301.

Jarvenpaa, S. (1989). Effect of task demand and graphical format on information processin strategies. *Management Science, 35* (3), 285-303.

Kane, T.J. (1996). "Lessons from the largest school voucher program ever: Two decades of experience with Pell Grants, " in B. FUller, R. Elmore, & G. Orfield (eds.), *Who chooses? Who loses? Culture, institutions, and the unequal effects of school choice,* New York: Teachers College Press.

Kraus, M. W., Piff, P. K., & Keltner, D. (2009). Social class, sense of control, and social explanation. *Journal of personality and social psychology*, *97*(6), 992.

Kray, L., & Gonzalez, R. (1999). Differential weighting in choice versus advice: I'll do this, you

do that. *Journal of Behavioral Decision Making, 12.* 201-217.

Lapp, W. M. (2010). Behavioral Models for Prosperity: A Statistical Assessment of Savings and Behavioral Change. EARN Research Brief, EARN Institute. November 2010 Issue.

Lewin, T. (2013). Obama's plan aims to lower cost of college. *The New York Times. Retrieved from: http://www. nytimes. com.*

Lurie, N. (2002). Decision Making in Information-Rich Environments: the Role of Information Structure. *Advances in Consumer Research, 29,* 91-92.

Liberman, N., Sagristano, M. D., & Trope, Y. (2002). The effect of temporal distance on level of mental construal. *Journal of Experimental Social Psychology*, *38*(6), 523–534.

Liberman, N., & Trope, Y. (2003). Construal level theory of intertemporal judgment and decision.

Lu, F. C., & Nayakankuppam, D. (2011). The Effects of Mindset Abstraction on Memory-Based Consideration Set Formation. *BUILDING CONNECTIONS*, *39*, 643.

Lusardi, A., Mitchell, O. S., & Curto, V. (2010). Financial literacy among the young. *Journal of Consumer Affairs*, *44*(2), 358-380.

Lynch, J. G., & Zauberman, G. (2007). Construing consumer decision making.*Journal of Consumer Psychology*, *17*(2), 107-112.

Malhotra, N. K. (1982). Information load and consumer decision making. *Journal of Consumer Research*, 419–430.

Mayer, C., Pence, K., & Sherlund, S. M. (2009). The rise in mortgage defaults.*The Journal of Economic Perspectives*, *23*(1), 27-50.

McGuigan, M., McNally, S., & Wyness, G. (2012). Student awareness of costs and benefits of educational decisions: effects of an information campaign. *CEP Discussion Paper*, *139*.

Mincer, J. (1997), The Production of Human Capital and the Life Cycle of Earnings: Variations on a Theme, Journal of Labor-Economics, 15 (1), Part 2.

Moretti, E. (2004). Estimating the social return to higher education: evidence from longitudinal and repeated cross-sectional data. *Journal of econometrics*,*121*(1), 175-212.

Mueller, T. (2014). Changes to The Student Loan Experience: Psychological Predictors and Outcomes. *Journal of Student Financial Aid*, *43*(3), 4.

Oreopoulos, P., & Petronijevic, U. (2013). *Making college worth it: A review of research on the returns to higher education* (No. w19053). National Bureau of Economic Research.

Palley, T. (2012). From financial crisis to stagnation. *Cambridge: Cambridge University Press*, *3*(141), 53.

Perry, V. G., & Morris, M. D. (2005). Who is in control? The role of self-perception knowledge, and income in explaining consumer financial behavior. *Journal of Consumer Affairs*, *39*(2), 299-313.

Pew Center (February 11, 2014). The Rising Cost of Not Going to College. *Pew Research Reports,* Retrieved March 20, 2015, From: http://www.pewsocialtrends.org/2014/02/11/the-rising-cost-of-not-going-to-college/

Prelec, D., & Loewenstein, G. (1991). Decision making over time and under uncertainty: A common approach. *Management science*, *37*(7), 770-786.

Rabin, M. (1998). Psychology and economics. *Journal of economic literature*, 11-46.

Rick, S., & Loewenstein, G. (2008). Intangibility in intertemporal choice.*Philosophical transactions of the royal Society B: Biological Sciences*,*363*(1511), 3813-3824.

Roderick, M., Nagaoka, J., Coca, V., & Moeller, E. (2009). From high school to the future:

Making hard work pay off. *Consortium on Chicago School Research*.

Rothstein, J., & Rouse, C. E. (2011). Constrained after college: Student loans and early-career occupational choices. *Journal of Public Economics*, *95*(1), 149-163.

Rozenblit, L., & Keil, F. (2002). The misunderstood limits of folk science: An illusion of explanatory depth. *Cognitive Science*, *26*(5), 521-562.

Russo, J. E., Krieser, G., & Miyashita, S. (1975). An effective display of unit price information. *The Journal of Marketing*, 11-19.

Russo, J.E. (1977). The value of unit price information. *Journal of Marketing Research, 14*, 193-201.

Scott-Claytn, J. (2012). *Information constraints and financial aid policy* (No. w17811). National Bureau of Economic Research.

Shapiro, G. K., & Burchell, B. J. (2012). Measuring financial anxiety. *Journal of Neuroscience, Psychology, and Economics*, *5*(2), 92.

Shim, S., Xiao, J. J., Barber, B. L., & Lyons, A. C. (2009). Pathways to life success: A conceptual model of financial well-being for young adults. *Journal of Applied Developmental Psychology*, *30*(6), 708-723.

Shim, S., Barber, B. L., Card, N. A., Xiao, J. J., & Serido, J. (2010). Financial socialization oF first-year college students: The roles of parents, work, and education. *Journal of youth and adolescence*, *39*(12), 1457-1470.

Simon, H. A. (1972). Theories of bounded rationality. *Decision and organization*, *1*(1), 161-176.

Simon, M., Houghton, S. M., & Aquino, K. (2000). Cognitive biases, risk perception, and venture formation: How individuals decide to start companies.*Journal of business venturing*, *15*(2), 113-134.

Simpson, L., Smith, R., Taylor, L., & Chadd, J. A. (2012). College debt: An exploratory study of risk factors among college freshmen. *Journal of Student Financial Aid*, 16.

Snow, A., & Warren Jr, R. S. (1990). Human capital investment and labor supply under uncertainty. *International Economic Review*, 195-206.

Stone, D. N. (1994). Overconfidence in initial self-efficacy judgments: Effects on decision processes and performance. *Organizational Behavior and Human Decision Processes*, *59*(3), 452-474.

Stone, D. N., & Schkade, D. A. (1991). Numeric and linguistic information representation in multiattribute choice. *Organizational Behavior and Human Decision Processes*, *49*(1), 42-59.

Thoits, P. A. (1995). Stress, coping, and social support processes: Where are we? What next? *Journal of health and social behavior*, 53-79.

Trope, Y., Liberman, N. (2000). Temporal construal and time-dependent changes in preference. *Journal of Personality and Social Psychology, 79,* (876-889).

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124-1131.

US Census Bureau, 2013d. Income, Poverty and Health Insurance in the United States: 2012, table PINC-03. http://www.census.gov/hhes/ www/income/data/index.html. Retrieved on April 19, 2015.

U.S. Department of Education, Federal Student Aid, *Title IV Program Volume Reports*, Direct Loan Program, Federal Family Education Loan Program, Grant Programs. Retrieved December 6, 2014, from http://studentaid.ed.gov/about/data-center/student/title-iv.

Webber, D. (2014). Is the return to education the same for everybody?. *IZA World of Labor*.

Wigger, B. U., & von Weizsäcker, R. K. (2001). Risk, resources, and education: Public versus private financing of higher education. *IMF Staff Papers*, 547-560.

Wilensky, U. (1991). *Abstract meditations on the concrete and concrete implications for mathematics education*. Epistemology and Learning Group, MIT Media Laboratory.

Willging, T. E. (1966). Installment Credit: A Social Perspective. *Cath. UL Rev.*,*15*, 45.

Williams, E.F., Gilovich, T. (2008) Do people really believe they are above average? Journal of Experimental Social Psychology, 44, 1121-1128.