

THE EFFECTS OF DEBT ON THE RELATIONSHIP TO PSYCHOLOGICAL AND
SOCIAL WELL-BEING

by

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Abstract

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Debt is negatively correlated with multiple health facets such as depression, anxiety, and suicidal thoughts. The serious consequences of debt can be utterly detrimental to success, both in school and beyond. This study examined the relationships between debt and well-being in a longitudinal sample of 7,104 adults measured at three time points between 1995 and 2014. Data were extracted from the Midlife in the United States (MIDUS) study waves one, two, and three conducted via telephone and mail surveys. Information regarding sex, age, income, student status, debt, psychological and social health, and attitudes toward debt and life satisfaction will be used for this project. We found relationships between debt and social and psychological well-being, as well as relationships between demographic characteristics of age, education, sex, and income on debt and well-being respectively. Additionally, we found a mediating role of financial satisfaction, and moderating effects of age, education, and student status. The present study illuminates the need for better financial education for young people and highlights the unique concerns of student populations, as well as the important role of attitudes on complicated concepts such as debt.

Keywords: psychological well-being, social well-being, debt, students, college students, mental health, costs of education, debt attitudes, financial well-being.

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Chapter 1

Introduction

Debt and credit are indispensable circumstances for adult consumers. Credit is necessary to secure a multitude of essentials, such as a home or a car. Whether by credit accounts, education related loans, mortgages, personal loans, or any number of ways to borrow, debts are a pervasive part of American culture. The United States Federal Reserve reported over 13.5 trillion dollars outstanding in consumer credit amounts as of 2018, citing more than 1 trillion in credit card debt, and over 1.5 trillion in student debt (Federal Reserve, 2019). Debt can have serious consequences on physical and psychological well-being, such as stress, anxiety, depression, relationship strain, and decreased life satisfaction (Andrews & Wilding, 2004; Archuleta, Dale & Spann, 2013; Bridges & Disney, 2010; Drentea, 2000; Jenkins, et. al., 2008; Joo, Durband & Grable, 2008; Norvilitis, et. al., 2006; Richardson, et. al., 2013; Roberts, Golding, Towell & Weinreb, 1999; Roberts, et. al., 2000; Shim, Xiao, Barber & Lyons, 2009).

Research has also shown a relationship between financial well-being and psychological well-being in the general population, noting financial satisfaction and security is integral to overall well-being (Archuleta, Dale & Spann, 2013; Hira & Mugenda, 1998; Joo & Grable, 2004; Norvilitis, Szablicki & Wilson, 2003; Plagnol, 2011). Furthermore, how or if young adults learn about financial variables, ranging from balancing a checkbook to investment strategies, is unknown in a vast majority of cases (Shim, et. al., 2009). While many attitudes can be traced back to parental influence, these beliefs can be highly individualized and, therefore, blur the definitions of financial success, satisfaction, and security (Arnett, 2000; Schoeni & Ross, 2005; Shim, et. al., 2009). However, given that parental influence diminishes as one ages, it is possible that the financial attitudes and beliefs learned from parents evolve with life experience, financial status, and life goals (Wang & Xiao, 2009).

Furthermore, a systematic review and meta-analysis by Richardson and colleagues (2013) included studies done with students and the general population, finding links between debt and poorer mental health, substance use, worse physical health, and increased stress. Understanding the role of debt and its role in any causal relationships with psychological and social well-being is of vital importance considering the current American debt crisis, rising costs of education, and the need to establish credit, as well as a need to borrow funds for large expenditures like a home.

This study aimed to define the relationships between debt and well-being, establishing directionality of these factors in predictive models. Furthermore, we assessed the mediating roles of life and financial satisfaction on the relationship between debt and well-being, and the moderating effects of demographic factors, education related debt, and student status. Delineation of how attitudes impact debt is important in terms of maintaining well-being. Findings from Bridges and Disney (2010) indicate that attitudes mediate the debt and well-being relationship, indicating that being well informed of the costs and benefits of borrowing as well as how positively one can relate being in debt to their outcome goal can have a measurable influence on mitigating the negative effects of being in debt. Furthermore, as differences between sexes, ages, and income exist in the debt literature, they likely strengthen the effects of debt on well-being and potentially the effects of attitudes on well-being. Additionally, determination if student debt further influences well-being is of great concern with the growing need for higher education and rising educational costs. The results from this study may also help influence institutional and federal policy decisions about student funding options and assistance. They may illuminate a need for better communication, education, and follow-up care for student borrowers. Research revealing the negative, potentially lasting, effects of debt in a student population may also lead to policy discussions about how we can continue promoting the pursuit of higher education without bankrupting students' financial futures.

Given that debt has severe physical and psychological consequences, we must strive to understand the relationships between debt and well-being. Debt is a financial state almost every individual will experience at some point in life; therefore, we should identify and communicate the health risks to future borrowers, especially young adults who may be less financially literate.

Debt or Investment?

How much debt is accrued is important, but the “why” may be an important factor in both the decision to take on the debt initially, but also how the financial burden is managed over time. For example, many are unconcerned with securing a mortgage. Despite being a large expenditure, they see this debt as necessary and are willing to accept any changes to credit scores, interest costs, or associated stress. However, there must be certain financial qualifications in order to secure most loans for large purchases, indicating repayment is likely and reasonably possible. Conversely, student loans do not consider one’s ability to repay the amount. Inability to pay, sometimes referred to as “problem debt”, is also related to severe psychological distress (Fitch, et. al., 2007; Gathergood, 2012; Hatcher, 1994; Maciejewski, et. al., 2000; Reading & Reynolds, 2001; Richardson, Elliott & Roberts, 2013). It is important to note that there is some evidence these relationships may be influenced by individual perception of the severity of their situation surrounding the debt. A study by Bridges and Disney (2010) found that household-specific perceptions mediated the relationship between financial and psychological well-being, indicating that individual differences in perception of their debt may be an important consideration when discussing how debt affects well-being.

While debt may be accrued to cover costs of needs, it is also accumulated for costs of wants. Credit card debt is a category that has exploded, especially in younger populations, over the years, particularly in times where credit terms were relaxed and more individuals meet lending criteria (Brown, et. al., 2005; Davies & Lea, 1995). Credit is a necessary component of financial well-being, as an individual without a credit history often has a similar credit score as an individual with a poor history. An increased tolerability of accumulating debt, unregulated

spending, lack of budgeting, and sometimes lack of understanding financial aspects, such as interest, have all contributed to a saturation of credit card companies targeting young adults and an increase in the number of cards held per household (Joo, Grable & Bagwell, 2003; Sullivan, Warren & Westbrook, 2000; Xiao, Noring & Anderson, 1995). Of great concern are the rising costs of education and pressure related to borrowing funds to cover these costs, which are compromising students' financial status and leading to increased debt and credit utilization (Chaker, 2009; Robb & Pinto, 2010; Sallie Mae, 2009). Financial satisfaction and security are factors often associated with education level, such that many believe that higher education will lead to better paying careers.

Costs of Higher Education

The costs of attending college have continued to rise over time, roughly tripling in price from 1995 to 2019. Table 1 contains data extracted from The College Board (2019) showing a breakdown of average tuition costs between public and private universities over time. The College Board (2018) also shows the average amount of federal monies borrowed ranged from \$6,570 to \$16,450 for undergraduates and \$18,860 to \$24,810 for graduate students in the 2017-2018 year. It is important to note that a wide variety of sources can be used to fund a college education, including private loans, scholarships, credit card usage, additional employment, and federal financial aid. However, federal aid is the most utilized in both grant and loan form (Archuleta, Dale & Spann, 2013; Fenske, Porter & DuBrock, 2000; O'Brien & Shedd, 2001). It is clear there is a trend of increasing debt occurring amongst students pursuing higher education, particularly graduate level degrees. The strain of rising expenses, coupled with the difficulty of holding additional employment and life responsibilities, can lead to financial insecurity. This insecurity can lead to stress, anxiety, depression, decreased physical health, suicidal thoughts and behaviors, as well as driving many students to leave academia prior to finishing their degree (Andrews & Wilding, 2004; Archuleta, Dale & Spann, 2013; Bridges & Disney, 2010; Drentea, 2000; Jenkins, et. al., 2008; Joo, Durband & Grable, 2008; Kim, Garman

& Sorhaindo, 2003; Norvilitis, et. al., 2006; O'Neill, et. al., 2006; Richardson, et. al., 2013; Roberts, Golding, Towell & Weinreb, 1999; Roberts, et. al., 2000; Sweet, et. al., 2013).

Table 1. Average tuition costs over time (in Dollars).

Academic Year	Public 4-Year	Private 4-Year
1995-1996	6,590	15,070
2013-2014	17,060	35,030
2018-2019	19,900	42,260

**Note:* Information taken from report by The College Board (2019).

A vicious cycle occurs with the desire to have a career, or higher paying profession, needing a degree, and having to pay for the necessary education. If the desired career cannot be secured without the corresponding degree, one is faced with omitting the career and pursuing another option, possibly less fulfilling or with lower earning potential, or to secure funds to obtain the degree. In the 1990's, roughly 75% of young Americans stated they needed to attend college to make more money, an increase from 40% in the 1970's. These individuals reported that increased income resulting from a college education was desirable, necessary, and their number one concern (Clapp, 1998; Delucchi & Korgen, 2002; Gardner, Jewler, & Barefoot, 2007; Phinney, Dennis & Osorio, 2006; Roberts & Jones, 2001; Schultz & Higbee, 2007; Twenge & Donnelly, 2016). As many are not financially secure enough to pay outright, and despite federal grant programs, the costs of attendance often exceed the available funds to the average student. This dilemma results in students taking loans with deferred payments until post-graduation, seemingly a normal and ideal option to allow them to pursue their degree without having the immediate financial strain.

Most know that the associated costs of pursuing a degree include more than tuition and books, there are numerous fees to add in, such as parking, transportation, supplies, and additional materials for special courses or labs. These costs are in addition to general living expenses, for example, housing, food, utilities, insurance, and integral internet access. Furthermore, should students seek graduate education, there is a lifetime cap on the amount a

graduate student can borrow in subsidized and unsubsidized federal funds in the amount of \$138,500, which includes any debt accrued as an undergraduate. Additionally, many graduate programs do not allow for outside employment, though some offer employment opportunities at the university or provide a stipend for expenses.

It is rare for a student to be financially able to cover all associated costs of an education up front, with or without family contributions. Most students require employment, savings, tuition assistance programs, military assistance, financial aid, or loans to cover costs of attendance. For some students, taking on loans to pay for school expenses is often viewed as investment in one's future, citing increased earning potential and increased job satisfaction as reasons why this burden is an acceptable risk. However, others have deep concerns about taking on such debt, and may be making choices on where and when to attend school to decrease costs of attendance (Archuleta, Dale & Spann, 2013; Callendar & Jackson, 2008; Perna, 2008).

Many students may not fully understand what it means to accrue these (sometimes astronomical) debts, thinking the amounts are remaining constant while in school, or misunderstanding interest accrual, as payments are often deferred. Online loan counseling is generally required prior to loan disbursement, but much like a software update agreement, one can scroll right to the bottom and hit the "accept" button without giving a second thought. That is, until repayment terms begin, and former students realize that this debt will likely take longer and at higher amounts than anticipated to fully discharge (Archuleta, Dale & Spann, 2013; Hayhoe, 2002). Programs such as loan forgiveness are often misunderstood, and some think if they simply take certain positions, often at lower pay rates, that their debt will be forgiven within a certain time-period. While this may be partly true, these programs are not guaranteed, and it can be rather difficult to qualify. Furthermore, it is not always explained that forgiven student debt can be taxed as income under certain circumstances, that student debt will not be discharged with bankruptcy, student debt will affect your credit score, and that there are a massive number of frauds targeting students seeking relief. Additionally, Seaward and Kemp

(2000) found that students tended to overestimate their future incomes and underestimate the time it would take to pay off student loans. Therefore, the “why” of incurring debt may be an essential determining factor in how the amount owed is managed psychologically and socially, as well as financially, contributing to the negative or positive outlook on both needing to acquire the debt and pay it off. Facing such large amounts of debt can be overwhelming and contribute to decreased physical, psychological, and social health factors (Kim, et. al., 2003; McEwen, 2004; McEwen & Seeman, 1999; Munster, Ruger, Ochsmann, Letzel & Toschke, 2009; O’Neill, et. al., 2006; Sweet, et. al., 2013).

Social Impact

In the context of debt, social aspects may be impacted by a hesitation or inability to participate in activities due to associated costs. Additionally, one may feel excluded by peers as a result of financial inability to participate in numerous activities, experience social embarrassment, or experience shame and feelings of failure (Fitch, et. al., 2007; Hayes, 2000). However, Lea and colleagues (1993, 1995) stated that those who were in debt believed that debt was common and more acceptable in their community than those not in debt. They found that debtors were discussing their financial situations with others and were likely more comfortable knowing they were not the only debtor. However, social support has shown to mitigate negative health consequences of debt, such that those with more social contacts and support improve mental health decline associated with financial strain (Selenko & Batinic, 2011). Additionally, Sumer, Poyrazli and Grahame (2008) found that social support had a significant contribution to depression levels in international students. Mori (2000) reported that depression might be caused by difficulty adjusting to a new cultural environment and the resulting lack of social frameworks.

This may also hold true for college students in general, in that they may find solidarity in knowing they are not the only one who had to secure funds to attend school or feel more inclusive with those that share similar financial struggles. Furthermore, college provides

increased access to support, in the sheer number of students attending any given campus and the access to resources such as counseling services, support groups, or extracurricular activities. College is a transitional time in life for many young adults, some becoming financially responsible for the first time, with new opportunity and greater associated costs (Archuleta, Dale & Spann, 2013; Shim, et. al., 2009). As such, an increase in credit card utilization occurs, both for essentials and luxuries, sometimes resulting in problem debt and a necessary withdrawal from social situations for lack of funds (Fitch, et. al., 2007; Shim, et. al., 2009; Wang & Xiao, 2009).

The psychosocial impacts of indebtedness can lead to social isolation, further exacerbating a decline in overall well-being (Cacioppo & Hawkley, 2003; Fitch, Chaplin, Trend & Collard, 2007). Furthermore, the importance of social support in mental and physical health has been documented in many different settings (Adams, Bowden, Humphrey & McAdams, 2000; Fitch, et. al., 2007; Letvak, 2009; Martin & Panicucci, 1992; Taylor, 1995; Van Servellen, Sarna, Padilla & Brecht, 1996). While social isolation can be particularly concerning for older adults and has been identified as a contributor to mortality, this is an issue that people at all ages can experience and suffer the consequences (Cacioppo & Hawkley, 2003; Fitch, et. al., 2007; Steptoe, Shankar, Demakakos & Wardle, 2013). Social isolation and exclusion can exacerbate underlying mental health issues and contribute to the development of depression, anxiety, loneliness, and require professional intervention (Fitch, et. al., 2007, 2011; Reading & Reynolds, 2001; Richardson, Elliott & Roberts, 2013).

Psychological Impact

Debt can create or exacerbate a host of negative outcomes. Even controlling for mental illness, debt is associated with depression, anxiety, stress, as well as suicidal ideations, attempts, and completion (Andrews & Wilding, 2004; Archuleta, Dale & Spann, 2013; Bridges & Disney, 2010; Chan, et. al., 2009; Chen, et. al., 2006; Drentea, 2000; Fitch, et. al., 2007; Jenkins, et. al., 2008; Joo, Durband & Grable, 2008; Murali & Oyeboode, 2004; Norvilitis, et. al.,

2006; Richardson, Elliott & Roberts, 2013; Roberts, Golding, Towell & Weinreb, 1999; Roberts, et. al., 2000; Wong, et. al., 2008). Several empirical works have shown that debt predicts poorer mental health, noting that debt is a heavy burden to bear and often leads to psychological distress (Bridges & Disney, 2010; Jenkins, et. al., 2008; Reading & Reynolds, 2001; Richardson, et. al., 2013; Sweet, et. al., 2013). In addition, debt can lead to household stress and strain on relationships, disrupting life satisfaction, happiness, and well-being (Bridges & Disney, 2010; Brown, et. al., 2005; Drentea, 2000; Reading & Reynolds, 2001; Selenko & Batinic, 2011).

Furthermore, it should be noted that having experienced debt can lead one to be more tolerant of owing in the future, and that obtaining debt for a purpose deemed worthy by the debt holder can be a stepping stone for current and/or future happiness both psychologically and financially (Boddington & Kemp, 1999; Davies & Lea, 1995; Lea, Webley & Bellamy, 2001; Zhang & Kemp, 2009). Tolerance, in terms of debt, describes the process by which one is inclined to believe that holding debt is personally and/or socially acceptable (Davies & Lea, 1995; Lea, Webley & Bellamy, 2001; Lea, Webley & Levine, 1993; Lea, Webley & Walker, 1995; Zhang & Kemp, 2009). Rather than the persistent urge to be “debt-free” and pay all amounts owed, the tolerant individual believes that they are not the only one who owes money to creditors and therefore sees the amounts as acceptable collateral for items or lifestyle. Although, becoming increasingly tolerant of being indebted could lead to a cycle of accruing more and more debt, potentially leading to more negative outcomes than positive (Brown, Taylor & Price, 2005).

Within a student sample, Zhang & Kemp (2009) found no significant differences in happiness between students with debt and those without, also finding that those with debt were more motivated to perform better academically. Contrastingly, they found that those who were more debt tolerant had lower grade point averages (GPA) in their sample of New Zealand undergraduates (Zhang & Kemp, 2009). These results indicate that while students who take

loan funds may be more motivated, they may lack the ability to perform at a top level academically. It is also possible that this may be due to differences in program of study, outside factors like additional employment or family obligations, or length of time spent in school. This study also reported that financial concerns diminished overall life satisfaction, though the debt itself did not have a significant impact on academic performance as assessed by GPA (Scott & Lewis, 2002; Zhang & Kemp, 2009).

Consequences of debt extend beyond student status or performance and debt may be blamed for psychological unrest and mental illness, especially if a traumatic event occurs due to consequences of the debt, such as foreclosure on a home, job loss, relationship problems, substance abuse, or injury (Bridges & Disney, 2010; Hatcher, 1994; Sweet, et. al., 2013). Furthermore, a study of British heads of household with unsecured debt revealed they were less likely to report psychological well-being, particularly if the debt was accrued at an individual, rather than family unit, level (Brown, Taylor & Price, 2005). Additionally, Sweet and colleagues (2013) found that household debt also contributes negatively to health, including depression and stress, in a young sample of 24-32 year olds. It is clear that debt can lead to decreased well-being, even at younger ages. Consideration of how anxiety and depression can affect overall well-being is critical for happiness and functionality across the lifespan (Kiely, Brady & Byles, 2019; Whiteford, et. al., 2013).

Sex, Age, and Financial Differences

Debt and income are often correlated, though there are several proposed explanations for this relationship (Cameron & Golby, 1990; Duesenberry, 1949; Fitch, et. al., 2007; Livingstone & Lunt, 1992; Prenda & Lachman, 2001). Lower income professions and loss of income clearly contribute to debt problems, and interestingly, caregivers may also face problem debt as they accumulate expenses from providing care or have their employment and income limited due to this role (Fitch, et. al., 2007). Furthermore, those in lower income brackets and

younger adults are more likely to have debt and debt problems (Fitch, et. al., 2007; Lenton & Mosley, 2008; Tudela & Young, 2003).

Students who come from wealthier families tend to have more debt, but also tend to make more than the monthly minimum payments whereas students from lower socioeconomic households are more likely to be burdened by carrying debt by making only minimum payments (Davies & Lea, 1995; Lewis & van Venrooij, 1995; Wang & Xiao, 2009). Furthermore, parental sway begins to lessen when most young adults leave home, a time where they generally become familiar with what it means to be financially responsible and become eligible for credit opportunities not extended to minors (Palmer, et. al., 2001; Wang & Xiao, 2009). A lack of supervision may lead to indiscriminate spending habits, however, this change coupled with inadequate social support may lead to problem debt, further exacerbating social isolation and influencing poorer social health (Fitch, et. al., 2007; Wang & Xiao, 2009).

Several reasons are proposed for debt and problem debt, including the “keeping up with the Joneses” social desirability, preservation of savings funds, compulsive and impulsive buying behaviors, future investment, and necessary spending (Fitch, et. al., 2007; Hanley & Wilhelm, 1992; Henry, Weber & Yarbrough, 2001; Joo, Grable & Bagwell, 2003). While the historical perspective has been that debt equates recklessness and materialism, newer evaluations show these traits alone are not the sole reasons people go into debt (Cameron & Golby, 1991; Lea, et. al., 1995; Norvilitis, et. al., 2003, 2006; Watson, 2003). Some studies have hinted that men may be more future minded in terms of financial security and planning. Prenda & Lachman (2001) found sex, age, and income to be predictors of future planning styles, with men, older adults, and those with higher achieved education levels as more invested in their financial strategies. Additionally, age, income, and future planning style predicted overall life satisfaction. Life satisfaction is a cognitive component of subjective well-being and is also positively related to income (Yeniaras, Akkemik & Yucel, 2016).

Furthermore, previous research has shown some sex differences in attitudes concerning money, such that college aged males were more financially knowledgeable and confident in handling finances whereas females had more anxiety toward money management and had more credit cards on average (Borden, Lee, Serido & Collins, 2008; Chen & Volpe, 1998, 2002; Edwards, Allen & Hayhoe, 2007; Hayhoe, Leach & Turner, 1999; Jones, 2005; Lusardi & Mitchell, 2005; Newcomb & Rabow, 1999; Steinrock, Stern & Solomon, 1991; Xiao, Noring & Anderson, 1995). However, Gibb, Fergusson & Horwood (2008) found that females outperformed males academically, a finding replicated by Zhang & Kemp (2009). Interestingly, students in New Zealand outperformed those in the United Kingdom on financial literacy quizzes about credit card interest and taxes (Agnew & Harrison, 2015). Although females are generally reported to have more credit cards than males, there is mixed evidence on which sex has more debt, some reporting males (Davies & Lea, 1995) and others reporting females (Armstrong & Craven, 1993; Lawrence, et. al., 2003; Robb & Sharpe, 2009).

Previous research has shown that females tend to experience anxiety and depression more than males (Asnaani, Richey, Dimaite, Hinton & Hofmann, 2010; Bijl, De Graaf, Ravelli, Smit & Vollebergh, 2002; Bracken & Reintjes, 2010; Bruce, et. al., 2005; Cyranowski, Frank, Young & Shear, 2000; Faravelli, Scarpato, Castellini & Lo Sauro, 2013; Ferrari, et. al., 2013; Kessler, 2003; Kessler, et. al., 1994; Leach, Christensen, Mackinnon, Windsor & Butterworth, 2008; McLean, Asnaani, Litz & Hofmann, 2012; Reading & Reynolds, 2001; Regier, Narrow & Rae, 1990; Salk, Hyde & Abramson, 2017; Scheibe & Albus, 1992). Anxiety disorders are incredibly common in the United States, showing lifetime prevalence rates of 30.5% in women and 19.2% in men, highlighting the disparity between sexes (Bijl, et. al., 2002; Cyranowski, et. al., 2000; Faravelli, et. al., 2013; Kessler, 2003; McLean, et. al., 2012). An increased number of young adults experience anxiety, partly due to economic circumstances, including starting a family, school, recent graduation, and beginning a career (Belsky & Kelly, 1994; Blazer, et. al., 1991; Drentea, 2000; Mirowsky & Ross, 1999). Additionally, the prevalence of depression is

roughly twice that in females than in males, a trend that begins in adolescence and persists through adulthood (Cairney & Wade, 2002; Faravelli, et. al., 2013; Ferrari, et. al., 2013; Kessler, et. al., 2003, Leach, et. al., 2008; Salk, Hyde & Abramson, 2017). International students also face higher levels of depression and stress, possibly due to cultural differences and social adjustment. Furthermore, loneliness is more prevalent in female international students than in males (Mori, 2000; Rajapaksa & Dundes, 2002; Sumer, Poyrazli & Grahame, 2008). Loneliness contributes to life satisfaction, and in fact the need to belong is related to well-being, such that having a sense of belonging is a buffer to poorer well-being (Baumeister & Leary, 1995; Mellor, et. al., 2008).

Overall, income, age, and sex seem to affect how we may accrue and manage debt. It is important that we continue to parse out these relationships to develop the best strategies for financial education and planning, to help mitigate the negative consequences of carrying debt, and advise students in an efficient and honest way about their financial options while in school and how these debts can impact them after school.

Theoretical Background

Shim and colleagues (2008) proposed a conceptual model of financial well-being in young adults incorporating financial values, social aspects, and overall life success. They define financial well-being as debt, financial coping, and the relationship between debt and financial satisfaction. The authors propose that attitudes play an important role in financial satisfaction, as well as their perceived control, and that these factors couple with their financial well-being is linked to life success. They integrated several theories to create the interdisciplinary model, including the theory of lifespan development (Baltes, 1987), consumer socialization theory (Moschis, 1987), theory of planned behavior (Ajzen, 1991), and the hierarchical model of personal values, attitudes, and behavior (Homer & Kahle, 1988).

Lifespan development psychology relates to age-related differences and development across the lifespan, focusing on inter-individual regularities, inter-individual differences, and

intra-individual plasticity in development (Baltes, Staudinger & Lindenberger, 1999). Essentially, behavioral change or consistency across the lifespan is considered, and as an important component, the belief that adulthood is not a stage to be reached but rather an ongoing process over the bulk of one's lifespan (Baltes, 1987). Consumer Socialization Theory is about how people form attitudes and acquire knowledge or skills about how to function as a consumer (Moschis, 1987). This area of research is largely based on social learning models and cognitive development models of learning, in terms of adjustment, and personal and environmental factors (Moschis & Churchill, 1978). The theory of planned behavior proposes that behavior is preceded by intentions to perform the behavior, and both intentions and behaviors are predicted by attitudes about the behavior, the subjective norms by which people are expected and want to behave, and the individual's perceived behavioral control (Ajzen, 1991). The hierarchical model of personal values, attitudes, and behavior discusses how individual values have both internal and external dimensions that affect attitudes, and these attitudes influence behavior (Homer & Kahle, 1988). They found that attitudes were a mediating factor between values and behavior. Although this study was done with food attitudes and shopping behaviors, the implication remains that attitudes toward the outcome measure may mediate relationships. Each of these four theories provides a solid framework for exploring the relationships of debt and well-being, and the mediating effect of attitudes toward debt and personal well-being. Additionally, the study conducted by Bridges and Disney (2010) found a mediating role of attitudes on the debt and well-being relationship, further supporting this theory.

Taking all these approaches into consideration, Shim and colleagues (2009) developed a model in which socialization, demographics, and personal values relate to financial knowledge and attitudes. The knowledge and attitudes combined with subjective norms and perceived behavioral control forms one's financial behavioral intention. This intention influences debt, satisfaction with financial status, and financial coping skills, and leads to interrelated outcome measures of overall life satisfaction, academic success, physical health, and psychological

adjustment. Shim's model provided a base for this study, to replicate a mediating effect of attitudes, and examine if these effects are present at advanced age groups as well as students and parse out the role of debt in well-being. As shown in Figure 1, our model removed intention and norms, focusing on how attitudes can influence debt and the role it plays in psychological and social well-being, expecting that how one feels about their debt makes a difference in how they perceive its consequences.

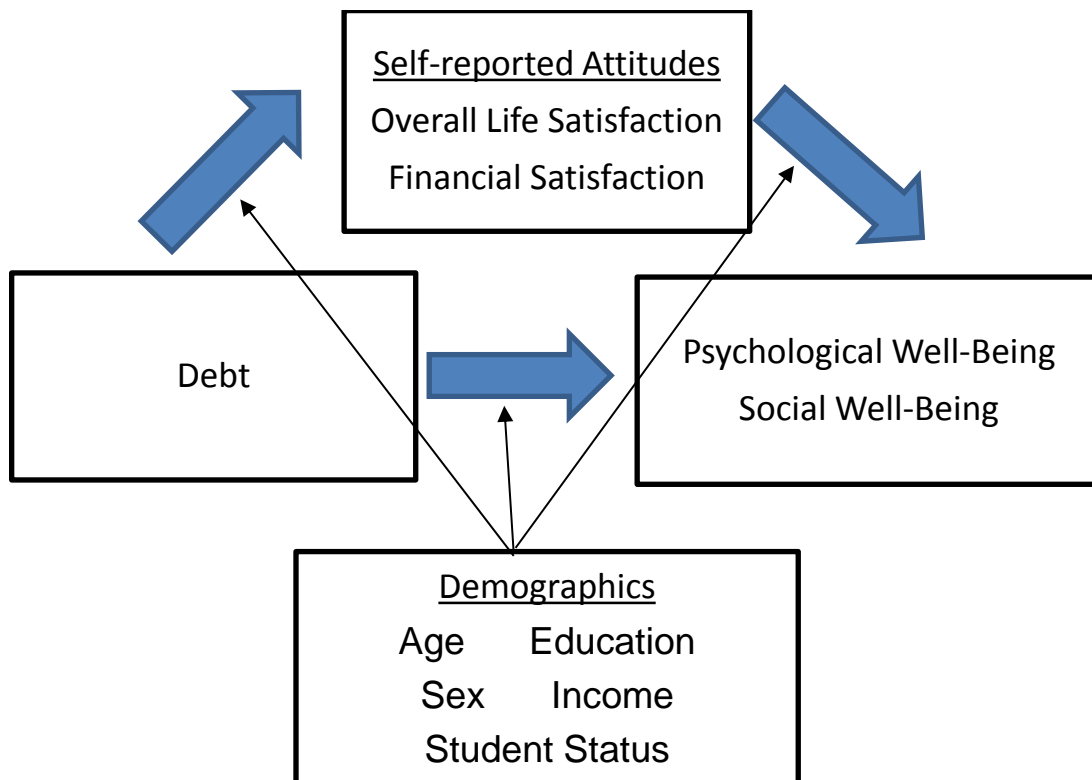


Figure 1. Conceptual model for analysis based on Shim and colleagues (2009) and Bridges and Disney (2010) examining the relationships between debt and well-being mediated by personal attitudes and moderated by demographic factors.

Overview

Overall, it is clear there are relationships between demographic variables, well-being, and debt. However, the direction and strength of these psychological and social variables, debt, and student status are less established and require further investigation. Additionally, further

evidence is needed to establish attitudes regarding debt as an intervening variable in the debt and well-being relationships. It is important to establish these relationships, both in direction and strength, while considering how demographic information can influence these predictive factors in well-being. We know that debt and health are related, such that debt can lead to or exacerbate numerous conditions, and we can see there are differences in mental health between the sexes. In addition, there is some evidence the sexes differ in spending and financial attitudes and these beliefs could influence the relationships between debt and well-being. Furthermore, considering younger adults are more likely to experience problem debt, this could be due to borrowing for education related costs and potentially be heavily influenced by their financial attitudes and (typically) lower income.

Using secondary longitudinal data from the Midlife in the United States (MIDUS) study allowed for assessment of links between debt and well-being and mediating effects of self-reported attitudes about life and financial satisfaction (see Figure 1). This dataset allowed for examination of demographic factors, such as age, sex, student status, education level, and income, on the debt and well-being relationships. Determination of whether these factors influence the well-being relationships may help counselors, financial advisers, and health professionals provide more individualized and structured care of debtors dealing with the negative consequences of their financial situations. Additionally, analyzing the role of student status and education debt on the well-being relationships could help students and educational advisers plan how to best manage their education debts, be more psychologically aware and prepared of the potential effects, and be more realistic about the cost-benefit analysis of attending college, their potential future incomes, and future ability to repay the debt. Currently, we are beginning to provide support of how the heavy burden of pursuing higher education is affecting students, physically, psychologically, and socially. It is important to understand how many factors such as debt and psychological unrest that are related to pursuing education, and often experienced as a student, so we can best serve those pursuing advanced degrees by

accurately conveying information and managing expectations. These results could help career and academic counselors provide important information about the “costs” of education and possibly, influence policy at institutional, state, and federal levels. Those that set limits and amounts awarded for education funding, or determine “appropriate” amounts for graduate student and post-doctoral researcher funding should pay particular attention to how these amounts are covering necessary expenses, allowing for an acceptable standard of living for those that take on these educational pursuits. The consequences of debt can be severe, and the need for and costs of education are continuing to rise. Therefore, it is pertinent we parse out relationships of debt and well-being in students to keep fields of science, research, education, technology, engineering, mathematics, physics, and many others going, growing, and producing.

Furthermore, a deeper understanding of how debt is carried over time, and how debt earlier in life can affect psychosocial and health factors later in life, is an important consideration. It is unlikely that debt is a problem we can “solve” or get rid of, but research indicating the consequences of debt being as severe as having relationships with suicide, is something to which we must pay attention. The present study attempted to address relationships of debt on well-being in relation to attitudes and demographic factors in a longitudinal study of adults in America. Results from the study could potentially influence financial policy for students, counseling for adults and students, and encourage better financial education in young people to better prepare for the financial responsibilities of adulthood.

Aims and Hypotheses

This project examined psychological and social well-being and debt in relation to student status, age, income, attitudes, and sex (see Figure 1). Using data from the MIDUS 1, 2, and 3, we generated three study aims. Our first aim was to examine the psychological and social outcomes of debt. We expected that presence of overall debt would predict lower psychological and social well-being. We expected that these relationships would be stronger

within those who were students at the time of data collection than those who were not, as students tend to have low or no true income and can accumulate high levels of debt rapidly. We also expected the relationship to be stronger for those with education debt due to being related to the stress and anxiety often associated with being a student, as well as debt accumulation with often little or no income (Andrews & Wilding, 2004; Archuleta, Dale & Spann, 2013; Bridges & Disney, 2010; Drentea, 2000; Jenkins, et. al., 2008; Joo, Durband & Grable, 2008; Kim, Garman & Sorhaindo, 2003; Norvilitis, et. al., 2006; O'Neill, et. al., 2006; Richardson, et. al., 2013; Roberts, Golding, Towell & Weinreb, 1999; Roberts, et. al., 2000; Sweet, et. al., 2013). Based on previous literature, we also expected that females would have strong, negative relationships with well-being scores. Additionally, based on Prenda & Lachman (2001), we expected that older age, more education, and higher income would be positively related to well-being. Furthermore, we examined debt as an outcome of reported psychological and social well-being, out of interest to assess if bi-directional relationships occur.

Our second and third aims explored additional mediators and moderators of the psychological and social outcomes of debt, respectively. Life satisfaction and financial satisfaction were the representative self-reported attitudes in the following analyses. We expected that overall life satisfaction and financial satisfaction would mediate the relationship between debt and well-being, replicating findings from Bridges and Disney (2010). Additionally, we expected that student status, sex, age, education level, and income would individually moderate the relationship between debt and well-being, the relationship between debt and attitudes, and the mediational effects of the self-reported attitudes, while controlling for the other proposed moderators and time, based on the model established in Shim and colleagues (2009). Due to previous research indicating age, sex in attitudes, debt behaviors, and well-being, we expect each of these characteristics to strengthen relationships between the test variables and affect their relationships at each path.

Chapter 2

Method

Participants

Data from the longitudinal studies of the National Survey of Midlife Development in the United States (MIDUS) waves 1, 2, and 3 were used for comparison. Data from the MIDUS wave 1 were collected from 1995-1996 and included a sample of 7,108 adults aged 20-75 years. Data from the MIDUS wave 2 included 4,963 adults aged 28-84 years collected from 2004-2006. Data from the MIDUS wave 3 included 3,294 adults aged 39-93 years and was collected in 2013-2014. All data in the MIDUS datasets were de-identified prior to downloading of materials, no participants could be identified through the responses with the information provided. Table 2 shows demographic data extracted by each wave of the MIDUS study.

Procedure

The MIDUS study (wave one) utilized a random digit dialing (RDD) strategy from working phone banks to contact English-speaking adult Americans in the United States in 1995. Selected participants were informed that the MacArthur Midlife Research Network, via Harvard Medical School, was conducting a survey regarding health and well-being in midlife and would consist of one telephone interview and two questionnaires completed by mail. A brochure about the study was mailed to the participant if they asked for more information. Upon explanation, the make-up of eligible adults in the household was determined and one respondent was selected at random. However, oversampling of older adults and men occurred in an attempt to have a normally distributed sample that would finish the surveys completely. If the chosen respondent did not complete the interview, no replacement from the household was selected. Upon agreement to participate, a telephone interview was scheduled and lasted an average of 30 minutes. A questionnaire was also mailed with a pen and \$20 compensation. An estimated two hours was needed to complete the mailed survey. A reminder postcard was mailed two weeks

later if the survey had not been returned. Additionally, a phone call reminder was placed two more weeks afterward if the questionnaire had not been returned.

The procedure was repeated with successfully contacted wave one participants, offering \$60 compensation to complete all phases of data collection for waves two and three. Every attempt was made to contact wave one participants and adjusting for mortality roughly 75% of the sample was retained. According to reports, the main reasons for not completing follow-up measurements were death, serious illness, refusal, or an inability to contact the individual (Assari, Preiser & Kelly, 2018; Radler & Ryff, 2010). The National Institute of Aging funded waves two and three.

Measures

Demographic information. Demographic data on age, sex, race, income, housing status (rent or own), education, and student status were evaluated (see Table 2). Age was recorded at the time of each evaluation. Sex was reported as a binary measurement, male or female. Race was recorded by participants indicating which category best fit between “White”, “Black/African American”, “Native American/Aleutian Islander/Eskimo”, “Asian/Pacific Islander”, or “Other”. Income was reported as a whole number on a continuous scale. Incomes for waves 1 and 2 were adjusted for inflation to reflect 2013 dollars using The Bureau of Labor Statistics’ Consumer Price Index Research Series (CPI-U-RS) formula in analyses that compared more than one time point in the model (U. S. Census, 2018). Education level was reported as highest level completed, ranging from primary education through professional degree. The original education level variable contained twelve levels, including “no school/some grade school”, “eighth grade/junior high”, “some high school”, “GED”, “high school graduate”, “1-2 years of college, no degree”, “3-4 years of college, no degree”, “2 year degree”, “4-5 year degree”, “some graduate school”, “master’s degree”, “professional or doctoral degree”. The education variable was recoded to include four categories to reduce noise in the analyses and included “high school education or less” which included the first five original levels; “some college” which

included college experience without a degree; “undergraduate degree” which included 2 and 4 year degrees and some graduate school; and “graduate degree” which included the top two original levels. Student status was reported as current, former (attended in the last 10 years), or intending to attend in the next 10 years, both full time and part time. Only those who reported being full or part time enrolled students at the time of data collection at each wave were considered a student in the current study, future intention and previous attendance were not considered.

Table 2. Demographic Information of MIDUS participants.

Measure	Wave 1			Wave 2			Wave 3		
	Range	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>
Age	20-75	46.38	13.00	28-84	55.43	12.45	39-93	63.64	11.35
Income	0-250,000	27,767.89	31,996.12	0-200,000	42,124.16	40,450.56	0-300,000	56,446.16	58,985.21

Measure		Wave 1		Wave 2		Wave 3	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Sex	Female	3666	51.60	2647	53.30	1810	54.90
	Male	3440	48.40	2316	46.70	1484	45.10
Education	HS Diploma or Below	2741	38.60	1636	33.00	955	29.10
	Some College	1635	23.00	1094	22.10	615	18.70
	Undergraduate Degree	1975	27.80	1499	30.20	1132	34.50
	Graduate Degree	744	10.50	727	14.70	581	17.70
Race	White	5600	78.80	4473	90.10	2923	89.50
	Black/African American	321	4.50	229	4.60	122	3.70
	Native American/Eskimo	37	0.50	77	1.60	29	0.90
	Asian/Pacific Islander	57	0.80	34	0.60	1	0.40
	Other	161	2.30	126	2.50	180	5.50
	Refused to Identify	932	13.10	24	0.50	27	0.80
Student Status	Student	201	2.80	32	0.64	13	0.40
	Non-Student	6905	97.20	4931	99.36	3281	99.60
Housing	Rent	1384	22.40	458	11.70	372	13.10
	Own	1503	24.40	1400	35.60	1252	44.10
	Mortgage	3281	53.20	2071	52.70	1213	42.80

Debt. Debt was recorded in several different ways. The first was a categorical question that asked participants if they cashed in their assets would they have money left over, owe money, or break even (see Table 3). Wave 1 participants were asked to report the amount they would have left if the previous scenario were true in \$1,000 increments beginning with “less than \$0/loss” and “\$0”, then every one thousand dollar increment up to \$20,000. Then categories ranged in \$5,000 increments through \$50,000. There, the brackets increased to \$25,000 increments until \$100,000. At \$100,000 brackets increased to \$50,000 increments until \$200,000 where they then increased to \$100,000 each bracket. Finally, the last two categories were “\$500,000 - \$999,999” and “1,000,000 or more”. Participants also reported their assets by every \$100 ranging from 0 to 10,000. Waves 2 and 3 allowed participants to report their assets on a continuous scale ranging from \$0 - \$15,000,000. These waves also reported debt amounts owed by type of credit including mortgage, home improvement/equity, other real estate loans, business/farm, vehicle, credit cards, installment loans, educational loans, and personal loans. These amounts were added together to create a dollar amount of debt for each participant. Amount owed for education loans was also used individually in the current study. The dates of which the education debt was accrued were not available. Table 4 contains information regarding debt amounts. This study will use the categorical measurement of debt, breaking even, or retaining funds, the total debt amounts, and education loan amounts reported. Debt amounts were adjusted for inflation using the CPI-U-RS formula (U.S. Census, 2018).

Table 3. Categorical Measure of Reported Debt.

	<u>Wave 1</u>			<u>Wave 2</u>			<u>Wave 3</u>		
	Total <i>N</i>	Male <i>n</i>	Female <i>n</i>	Total <i>N</i>	Male <i>n</i>	Female <i>n</i>	Total <i>N</i>	Male <i>n</i>	Female <i>n</i>
Owe	959	430	529	419	161	258	170	57	113
Break	658	247	411	299	101	198	396	148	248
Even	4374	2205	2169	3061	1459	1602	1909	959	950
Money									
Left									

Table 4. Type of Debt by Category for MIDUS Waves 2 & 3 (In Dollars).

Type of Debt		Wave 2 (2004)	Wave 3 (2013)
Total	<i>M</i>	86,968.02	75,863.96
	<i>SD</i>	190,629.73	133,152.93
	Range	0-6,887,598	0-1,360,000
Mortgage	<i>M</i>	65,434.17	69,270.20
	<i>SD</i>	149,457.55	117,846.63
	Range	0-6,863,798	0-1,000,000
Home Equity	<i>M</i>	6,342.46	7,514.32
	<i>SD</i>	20,414.47	27,020.43
	Range	0-500,000	0-300,000
Real Estate	<i>M</i>	8,929.86	9,715.24
	<i>SD</i>	67,744.06	44,049.24
	Range	0-1,700,000	0-300,000
Business or Farm	<i>M</i>	6,254.25	4,168.78
	<i>SD</i>	65,087.11	28,740.90
	Range	0-2,000,000	0-300,000
Vehicle	<i>M</i>	6,175.47	5,358.70
	<i>SD</i>	14,490.58	9,766.04
	Range	0-500,000	0-50,000
Credit Cards	<i>M</i>	4,033.27	4,060.07
	<i>SD</i>	9,493.46	8,608.88
	Range	0-200,000	0-50,000
Education	<i>M</i>	1,479.36	2,074.43
	<i>SD</i>	8,201.22	8,302.96
	Range	0-125,000	0-50,000
Installment	<i>M</i>	243.91	225.36
	<i>SD</i>	1,735.12	1,372.11
	Range	0-50,000	0-30,000
Personal	<i>M</i>	793.26	661.79
	<i>SD</i>	7,940.44	3,971.23
	Range	0-345,420	0-50,000

*Note: Data not available for wave 1.

Psychological outcomes. Psychological outcomes were captured using measures of depression, anxiety, and psychological wellbeing. Items indicating presence or absence of depression and anxiety were evaluated via DSM-III-R (American Psychiatric Association, 1987) criteria as described in Wang, Berglund and Kessler (2000). Depressed affect was scored by taking the number of “yes” responses to 7 survey items respectively, and an overall continuous variable was computed, ranging from 0-7, based on the average scores from the depressed affect responses. An additional variable was created to indicate presence or absence of depression as a binary measurement (“yes” or “no”) according to whether the participant has a zero sum score (“no”) or a score exceeding zero (“yes”). Anxiety was assessed via responses to 10 items with possible answers of 1 “most days”, 2 “about half the days”, 3 “less than half the days”, and 4 “never”. The anxiety score was constructed by taking the number of “most days” responses to the survey items, computing a continuous variable ranging from 0-10. An additional variable was created to indicate presence or absence of anxiety as a binary measurement (“yes” or “no”) according to whether the participant has a zero sum score (“no”) or a score exceeding zero (“yes”). The depression and anxiety continuous measures were highly skewed (as expected) and were not corrected with transformations, thus, the binary measurements were used in analysis (Boone & Kim, 2019; Rottenberg, et. al., 2019).

Psychological well-being included three statements for each of the following domains: autonomy, environmental mastery, personal growth, purpose in life, self-acceptance, and positive relations with others (Ryff, 1989). These six domains were generated by multiple theoretical accounts of positive functioning, initially validated by Ryff (1989) called the well-being index. The MIDUS study chose three statements of the original 20 per domain that correlated well as subscales with the original parent scales

(Ryff & Keyes, 1995). Responses were coded as 1 “strongly agree”, 2 “somewhat agree”, 3 “a little agree”, 4 “don’t know”, 5 “a little disagree”, 6 “somewhat disagree”, and 7 “strongly disagree”. Each domain was scored by calculating the sum of each set (3 questions) where the higher scores reflected greater levels of well-being. Missing items were omitted, and a mean value of the remaining items was imputed in calculating the sum score. Positive items were recoded so that higher scores reflected higher levels of well-being. Psychometrics were assessed on each domain, resulting in the following Cronbach’s Alphas: Positive relations with others: alpha = .58; Self-Acceptance: alpha = .59; Autonomy: alpha = .48; Personal Growth: alpha = .55; Environmental Mastery: alpha = .52; Purpose in Life: alpha = .36 (Ryff, 1989; Ryff & Keyes, 1995).

Social outcomes. Social outcomes were assessed using the social well-being scale developed by Keyes (1995). Participants answered three statements for each of five domains, which included acceptance of others, meaningfulness of society, social actualization, social contribution, and social integration (Keyes, 1995, 1998). Responses were coded as 1 “strongly agree”, 2 “somewhat agree”, 3 “a little agree”, 4 “don’t know”, 5 “a little disagree”, 6 “somewhat disagree”, and 7 “strongly disagree”. Each domain was scored by calculating the sum of each set (3 questions) where the higher scores reflected a higher sense of social well-being, with the exception of meaningfulness of society, which was calculated using the first two statements for the item (per MIDUS protocol). The MIDUS study also determined the third question responses be omitted due to low correlation values with the other two items. Missing items were omitted, and a mean value of the remaining items was imputed in calculating the sum score. Psychometrics were assessed on each domain, resulting in the following Cronbach’s Alphas: Meaningfulness of society: alpha = .65; Social integration: alpha = .73; Acceptance of

others: alpha = .42; Social contribution: alpha = .67; Social actualization: alpha = .64 (Keyes, 1995, 1998)

Attitudes. Life satisfaction was coded on a scale from 0 (worst possible) to 10 (best possible). Participants self-reported their satisfaction on five questions extracted from the surveys created by Prenda and Lachman (2001), regarding overall life, work, health, and relationship (spouse and children) satisfaction. The two questions about relationships (child and spouse) were averaged to create one score. Then, this score was averaged with the remaining three scores from the other questions to create an overall mean satisfaction score. Higher scores reflect higher satisfaction. Psychometric analysis for this scale resulted in a Cronbach's Alpha = .67 (Prenda & Lachman, 2001).

Additionally, researchers assessed financial satisfaction separately using the same 0 (worst possible) to 10 (best possible) self-reported scale as demonstrated in Fleeson (2004).

Statistical Analyses

To analyze the data for this project a combination of R (version 3.6.3) and IBM SPSS (version 26), including PROCESS 3.4 were used. R was used primarily for execution of multilevel models, whereas SPSS was used for data screening and cleaning, descriptive analysis, missing value analysis, and PROCESS for the mediation analyses. Multinomial regressions and multiple regressions for wave 1 data (using categorical debt), controlling for sex, education level, income, age, and student status. Multilevel regression models were used to assess data at waves 2 and 3. Each covariate was tested to determine best model fit and significant contributors were included in the final models and described in detail in the results section. For moderated mediations, the mediation was tested first, using PROCESS model 4, controlling for time. Then, the moderators were added individually using PROCESS model 59. The other moderators

were used as covariates. Each well-being outcome was tested separately, while both mediators were tested in parallel.

Note about analyses. The original proposal was amended for a few reasons. Firstly, we wanted to explore both measures of debt, and unfortunately the continuous measure of debt was not available for wave 1, only at waves 2 and 3, thus, the analyses were broken up to test the effects of the continuous measure of debt. This was to potentially explore the extreme variation in reported debt and predictive effects of debt by the amount rather than only the categorical measure which would explore likelihood of group membership. Furthermore, the categorical measure was used in the mediational models to assess the role, if any, of time, across all three measurements and as we were evaluating attitudes, the focus was on the “why” of debt group membership as opposed to the magnitude of debt. Additionally, the cross-lagged effects were not significant and therefore omitted from analysis. The effects of sex were evaluated by regressions rather than a series of separate analyses as originally planned, in agreement with the decisions about how to best evaluate debt across time points. Lastly, there is not currently a program in R or SPSS that would accommodate a full model with the six moderators, of which two were multicategorical, two were continuous, and two were dichotomous, in combination with the two continuous mediators with a continuous outcome and categorical predictor. Therefore, each moderator was tested individually in the moderated mediations as the main objective was to determine moderation of the mediation. A combination of indicator and sequential dummy coding systems were used to compare each debt and education category. PROCESS does not allow for accommodation of weighted codes input as moderators and since education did not have an interaction term, dummy codes were used in accordance with the program to evaluate any differences in education level seeing as multiple evaluations have previously displayed

there are not significant differences between dummy and effects coding without interaction terms (Alkharusi, 2012; Daly, et. al., 2016). As such, dummy codes for education and debt were also used in the other regression analyses for congruity.

Chapter 3

Results

Missing Value Analysis and Mixed Models

Missing Value Analysis (MVA) was performed on the variables of interest to determine if there were patterns with the missing data that would affect the analyses. Dummy codes for each variable were created so MVA could be performed and identify missing data patterns. Patterns were found in life satisfaction, financial satisfaction, psychological well-being, social well-being, the categorical measure of debt, and income. Each pattern identified was coded as a separate missing data pattern variable in SPSS. Table 5 shows each missing data pattern identified organized by variable. Then, LMMs were used to assess if the missing data patterns were significant predictors of the outcome variables, respectively. Each LMM used wave (representing time of measurement), the missing data pattern, and their interaction as predictors with the variable of interest as the dependent variable. No patterns significantly predicted a change in financial satisfaction or life satisfaction as a result of the missing data and were therefore omitted from analysis. Patterns for debt, psychological well-being, and social well-being significantly predicted changes in their respective outcomes for certain wave comparisons, and a pattern comparing those that completed wave 3 and those that did not was chosen for analysis and included in the final multilevel models. Most missing data were attributed to attrition in a longitudinal study and reasons included mortality, not able to complete follow up assessments due to illness or refusal, and researchers not

being able to contact respondents. By comparing the completers and non-completers of wave 3 we can account for attrition not related to randomly missing data.

Table 5. Missing Data Patterns.

Variables with 3 waves

Pattern	Missing		
	Time 1	Time 2	Time 3
1	O	X	X
2	X	O	X
3	X	X	O
4	O	O	X
5	O	X	O
6	X	O	O
7	O	O	O
8	X	X	X

Note. O indicates data observed, X indicates data missing.

Variables with 2 waves

Pattern	Missing	
	Time 2	Time 3
1	O	X
2	X	O
3	O	O
4	X	X

Note. O indicates data observed, X indicates data missing.

Multinomial, Binary Logistic, and Multilevel Regression Models

The proportions of unique variance of each predictor were assessed to determine strength of relationships with debt in the final models. Measurements were standardized prior to testing as recommended by Schuurman and colleagues (2016). Due to the extreme values of debt and income in relation to the well-being scores, significant .00 values (*b*, *SE*, *CI*) were observed for income effects when using grand mean centered variables in the multinomial and hierarchical regressions, and z-scores were used instead

to more accurately interpret effects. The mediation and moderated mediation models used grand mean centered variables. Unfortunately, the cross-lagged effects were not significant and therefore analyses were conducted without lagged data. Sample R script for these analyses can be found in Appendix A.

Separate models were used to test the effects of total debt and education debt on anxiety, depression, psychological and social well-being, respectively. Additionally, out of interest, anxiety, depression, social and psychological well-being scores were also tested as predictors of total and education debt to further probe directionality of relationships. Psychological and social well-being were tested individually to distinguish differences in how the predictors related to each outcome. While clearly related, psychological and social well-being were not only measured separately at the times of data collection with the intent to measure different domains of self as opposed to social or group level ideas, but previous literature shows there can be inconsistencies in arbitrarily joining psychological and social well-being as constructs, and are defined separately (Choi & Kim, 2011; Dodge, et. al., 2012; Keyes, 1995; Ryff, 1989). It is important to define each type of well-being if there are differences in how we interpret, measure, and model each one to make sure we can target therapeutic interventions in ways that will be most beneficial to mitigate negative consequences of debt. Additionally, we thought it was important to keep each of these measures separate, rather than create a composite well-being score, or even a composite psychological well-being by combining anxiety and depression scores with measures of psychological well-being, particularly to not further distort the definitions of well-being. Recalling that different information and recording of debt was available for wave 1 compared to waves 2 and 3, data at wave 1 were analyzed differently as they were categorical measurements compared to a continuous reported dollar amount. Rather than only assess the categorical debt data, the continuous data

could allow for a better understanding of the debt and well-being relationships, by being able to evaluate the level of debt rather than strictly category, potentially parsing out any differences between those with small amounts of debt and those with large arrears. Hierarchical regression, binary logistic regression, and multinomial regression models were used for wave 1 data, and multilevel models were used for waves 2 and 3. The adjusted income and debt amounts were used in analyses of debt at waves 2 and 3 so all amounts were assessed in 2013 dollars.

WAVE 1

Social Well-Being Predicting Debt. To assess if social well-being predicted debt category, a multinomial logistic regression was used. A significant improvement in fit occurred for the final model (LL = 8033.57) from the null model (LL = 8818.33), $\chi^2(16, N = 5786) = 784.77, p < .001$. Pearson's chi square test, $\chi^2(11326, N = 5786) = 11251.61, p = .69$, and Deviance chi-square, $\chi^2(11326, N = 5786) = 7985.96, p = 1.00$ indicated the model fit the data well. Pseudo R-Square tests reported Cox & Snell = .13 and Nagelkerke = .16. Controlling for age, sex, income, student status, and education level, social well-being was a significant predictor of debt category, $\chi^2(2, N = 5786) = 86.92, p < .001$. Additionally, age, $\chi^2(2, N = 5786) = 436.49, p < .001$, sex, $\chi^2(2, N = 5786) = 11.81, p = .003$, income, $\chi^2(2, N = 5786) = 91.32, p < .001$, and education, $\chi^2(6, N = 5786) = 52.71, p < .001$, were significant predictors of debt category. There was not a significant effect of student status.

For every unit increase in social well-being, the odds of being in the debt category as opposed to the have money left category decrease, $b = -.34, SE = .04, Wald \chi^2(1) = 72.47, p < .001 (OR = .71, 95\% CI [.66, .77])$. This effect was also present for age, $b = -.79, SE = .04, Wald \chi^2(1) = 319.03, p < .001 (OR = .45, 95\% CI [.42, .49])$, indicating as age increased participants were less likely to be in the owe money category compared

to the have money left category. Additionally, there was a negative effect for income, $b = -.51$, $SE = .07$, Wald $\chi^2(1) = 57.65$, $p < .001$ ($OR = .60$, 95% CI [.53, .69]), indicating higher incomes were less likely to be in the owe money category as opposed to the have money left category. There was not a significant effect of sex, student status, or education when comparing those that would owe relative to those that would have money left.

For every unit increase in social well-being, the odds of being in the break even category as compared to the have money left category decreased, $b = -.24$, $SE = .05$, Wald $\chi^2(1) = 28.05$, $p < .001$ ($OR = .79$, 95% CI [.72, .86]). There was also a negative effect for age, $b = -.55$, $SE = .05$, Wald $\chi^2(1) = 129.43$, $p < .001$ ($OR = .58$, 95% CI [.53, .64]), indicating those that were older were less likely to be in the break even category relative to the have money left category. Additionally, there was an effect for sex, $b = .31$, $SE = .10$, Wald $\chi^2(1) = 10.40$, $p = .001$ ($OR = 1.36$, 95% CI [1.13, 1.65]), such that females were more likely to report belonging to the break even category relative to the have money left category. Additionally, a negative effect of income was seen, $b = -.38$, $SE = .08$, Wald $\chi^2(1) = 25.81$, $p < .001$ ($OR = .68$, 95% CI [.59, .79]), such that those with higher incomes were less likely to be in the break even category as compared to the have money left category. Those with a high school education or less were more likely to report being in the break even category as compared to the have money left category, $b = .56$, $SE = .18$, Wald $\chi^2(1) = 9.60$, $p = .002$ ($OR = 1.74$, 95% CI [1.23, 2.47]). However, no effect in the other levels of education or student status was observed when comparing those that would break even and those that would have money left.

For every unit increase in age, participants were less likely to report belonging to the owe money category relative to the break even category, $b = -.24$, $SE = .06$, Wald $\chi^2(1) = 17.04$, $p < .001$ ($OR = .78$, 95% CI [.70, .88]). A negative effect was also noted in

those with a high school education or less, $b = -.48$, $SE = .22$, Wald $\chi^2(1) = 4.91$, $p = .03$ ($OR = .62$, 95% CI [.41, .95]), such that they were less likely to report being in the owe money category relative to the break even category. Additionally, there was an effect of sex, $b = -.35$, $SE = .11$, Wald $\chi^2(1) = 9.36$, $p = .002$ ($OR = .71$, 95% CI [.57, .88]), such that females were less likely to report being in the owe money category relative to the break even category. There were no effects observed in the other levels of education, income, student status, or social well-being when comparing those that would owe relative to those that would break even.

Debt Predicting Social Well-Being. A hierarchical multiple regression was used to assess if debt predicted social well-being scores while controlling for age, education level, student status, sex, and income. The base model was significant with the covariates, $F(7, 5785) = 61.45$, $p < .001$, $R^2 = .07$. Addition of the predictors into the model resulted in a significant overall model $F(9, 5776) = 58.84$, $p < .001$, $R^2 = .08$. Holding the other variables constant, there was a significant effect of debt category when predicting social well-being for those in the owe money category, $b = -.32$, $SE = .04$, $t(5776) = -8.86$, $p < .001$, 95% CI [-.39, -.25], $sr^2 = .013$, and those in the break even category $b = -.23$, $SE = .04$, $t(5776) = -5.45$, $p < .001$, 95% CI [-.31, -.15], $sr^2 = .005$, such that both debtors and those who would break even reported significantly lower social well-being than those that would have money left. Those that were in the break even category and those in the owe category were not significantly different in social well-being scores, $b = .09$, $SE = .05$, $t(5776) = 1.90$, $p = .06$, 95% CI [-.003, .19], $sr^2 = .00$. There was a significant effect of age, $b = .06$, $SE = .01$, $t(5776) = 4.07$, $p < .001$, 95% CI [.03, .08], $sr^2 = .003$, such that as age increased, social well-being scores increased. There was also a significant effect of sex, $b = .07$, $SE = .03$, $t(5776) = 2.49$, $p = .01$, 95% CI [.01, .12], $sr^2 = .001$, specifically, men reported higher social well-being than women. There

was a positive effect for income, $b = .08$, $SE = .01$, $t(5776) = 5.45$, $p < .001$, 95% CI [.05, .11], $sr^2 = .005$, such that as income increased, social well-being increased. Additionally, differences in education levels were noted, such that as social well-being increased, education level rose. Some college $b = .24$, $SE = .03$, $t(5776) = 7.07$, $p < .001$, 95% CI [.17, .31], $sr^2 = .008$, undergraduate degree holders, $b = .43$, $SE = .03$, $t(5776) = 13.12$, $p < .001$, 95% CI [.36, .49], $sr^2 = .027$, and graduate degree holders, $b = .56$, $SE = .05$, $t(5776) = 12.31$, $p < .001$, 95% CI [.47, .65], $sr^2 = .024$, all reported significantly higher social well-being compared to those with a high school (or less) education. As education level increased, the strength of the relationship with social well-being also increased. Undergraduate and graduate degree holders reported higher social well-being compared to those with some college but no degree, $b = .19$, $SE = .04$, $t(5776) = 5.22$, $p < .001$, 95% CI [.12, .25], $sr^2 = .004$. Graduate degree holders also reported higher social well-being compared to those with undergraduate degrees, $b = .13$, $SE = .05$, $t(5776) = 2.94$, $p = .003$, 95% CI [.04, .22], $sr^2 = .001$. There was not a significant effect of student status, $b = -.03$, $SE = .07$, $t(5776) = -.45$, $p = .65$, 95% CI [-.16, .10], $sr^2 = .00$.

Psychological Well-Being Predicting Debt. To assess if psychological well-being predicted debt category, an additional multinomial logistic regression was used. A significant improvement in fit occurred for the final model (LL = 8008.38) from the null model (LL = 8851.97), $\chi^2(16, N = 5789) = 843.59$, $p < .001$. Pearson's chi square test, $\chi^2(11364, N = 5789) = 11157.55$, $p = .92$, and Deviance chi-square, $\chi^2(11364, N = 5789) = 7970.95$, $p = 1.00$ indicated the model fit the data well. Pseudo R-Square tests reported Cox & Snell = .14 and Nagelkerke = .17. Controlling for age, sex, income, student status, and education level, psychological well-being was a significant predictor of debt category, $\chi^2(2, N = 5789) = 144.44$, $p < .001$. Additionally, age, $\chi^2(2, N = 5789) = 463.98$, $p < .001$, sex, $\chi^2(2, N = 5789) = 11.77$, $p = .003$, income, $\chi^2(2, N = 5789) = 86.81$, $p < .001$, and

education level, $\chi^2(6, N = 5789) = 59.16, p < .001$, were also significant predictors of debt category. Student status was not a significant predictor.

For every unit increase in psychological well-being, the odds of being in the debt category as opposed to the have money left category decrease, $b = -.45, SE = .04, \text{Wald } \chi^2(1) = 137.32, p < .001 (OR = .64, 95\% \text{ CI } [.59, .69])$. This effect was also present for age, $b = -.83, SE = .05, \text{Wald } \chi^2(1) = 332.99, p < .001 (OR = .44, 95\% \text{ CI } [.40, .48])$, indicating as age increased participants were less likely to be in the owe money category compared to the have money left category. Additionally, there was a negative effect for income, $b = -.48, SE = .07, \text{Wald } \chi^2(1) = 52.42, p < .001 (OR = .62, 95\% \text{ CI } [.54, .70])$, indicating higher incomes were less likely to be in the owe money category as opposed to the have money left category. There was not a significant effect of sex, student status, or education.

For every unit increase in psychological well-being, the odds of being in the break even category as compared to the have money left category decreased, $b = -.21, SE = .04, \text{Wald } \chi^2(1) = 22.97, p < .001 (OR = .81, 95\% \text{ CI } [.74, .88])$. There was also a negative effect for age, $b = -.57, SE = .05, \text{Wald } \chi^2(1) = 139.24, p < .001 (OR = .57, 95\% \text{ CI } [.52, .62])$, indicating those that were older were less likely to be in the break even category relative to the have money left category. Additionally, there was an effect for sex, $b = .31, SE = .10, \text{Wald } \chi^2(1) = 10.45, p = .001 (OR = 1.36, 95\% \text{ CI } [1.13, 1.65])$, such that females were more likely to report belonging to the break even category relative to the have money left category. Additionally, a negative effect of income was seen, $b = -.39, SE = .08, \text{Wald } \chi^2(1) = 26.46, p < .001 (OR = .68, 95\% \text{ CI } [.59, .79])$, such that those with higher incomes were less likely to be in the break even category as compared to the have money left category. Those with a high school education or less were more likely to report being in the break even category as compared to the have money left category, b

= .63, $SE = .18$, Wald $\chi^2(1) = 12.33$, $p < .001$ ($OR = 1.87$, 95% CI [1.32, 2.65]). However, no effect in the other levels of education or student status was observed.

For every unit increase in psychological well-being, participants were less likely to report being in the owe money category relative to the break even category, $b = -.24$, $SE = .05$, Wald $\chi^2(1) = 21.68$, $p < .001$ ($OR = .78$, 95% CI [.71, .87]). Additionally, as age increased, participants were less likely to report belonging to the owe money category relative to the break even category, $b = -.25$, $SE = .06$, Wald $\chi^2(1) = 18.40$, $p < .001$ ($OR = .78$, 95% CI [.69, .87]). A negative effect was also noted in those with a high school education or less, $b = -.53$, $SE = .21$, Wald $\chi^2(1) = 6.15$, $p = .01$ ($OR = .59$, 95% CI [.39, .89]), such that they were less likely to report being in the owe money category relative to the break even category. Additionally, there was an effect of sex, $b = -.34$, $SE = .11$, Wald $\chi^2(1) = 9.19$, $p = .002$ ($OR = .71$, 95% CI [.57, .89]), such that females were less likely to report being in the owe money category relative to the break even category. There were no effects observed in the other levels of education, income, or student status.

Debt Predicting Psychological Well-Being. A hierarchical multiple regression was used to assess if debt predicted psychological well-being scores while controlling for age, education level, student status, sex, and income. The base model was significant with the covariates, $F(7, 5781) = 33.29$, $p < .001$, $R^2 = .04$. Addition of the predictor into the model resulted in a significant overall model $F(9, 5779) = 44.10$, $p < .001$, $R^2 = .06$. Holding the other variables constant, there was a significant effect of debt category when predicting psychological well-being such that those in the owe money category $b = -.45$, $SE = .04$, $t(5779) = -12.28$, $p < .001$, 95% CI [-.52, -.38], $s^2 = .024$, and those in the break even category $b = -.21$, $SE = .04$, $t(5779) = -5.02$, $p < .001$, 95% CI [-.29, -.13], $s^2 = .004$, reported significantly lower psychological well-being compared to those that would have money left. Those that were in the break even category reported significantly

higher psychological well-being scores compared to those who would owe money, $b = .24$, $SE = .05$, $t(5779) = 4.76$, $p < .001$, 95% CI [.14, .34], $sr^2 = .004$. There was also a significant effect of sex, $b = .07$, $SE = .03$, $t(5779) = 2.47$, $p = .01$, 95% CI [.01, .12], $sr^2 = .001$, specifically, men reported higher psychological well-being than women. There was a positive effect for income, $b = .06$, $SE = .01$, $t(5779) = 4.34$, $p < .001$, 95% CI [.03, .09], $sr^2 = .003$, such that as income increased, psychological well-being increased. Additionally, differences in education levels were noted, such that as psychological well-being increased, education level rose. Some college $b = .19$, $SE = .03$, $t(5779) = 5.43$, $p < .001$, 95% CI [.12, .25], $sr^2 = .005$, undergraduate degree holders $b = .32$, $SE = .03$, $t(5779) = 9.69$, $p < .001$, 95% CI [.25, .38], $sr^2 = .015$, and graduate degree holders $b = .38$, $SE = .05$, $t(5779) = 8.35$, $p < .001$, 95% CI [.29, .47], $sr^2 = .011$, all reported significantly higher psychological well-being when compared to those with a high school education or less. Undergraduate and graduate degree holders reported higher psychological well-being compared to those with some college but no degree, $b = .13$, $SE = .04$, $t(5779) = 3.65$, $p < .001$, 95% CI [.06, .20], $sr^2 = .002$. There was no significant difference in psychological well-being between those with undergraduate and graduate degrees, $b = -.06$, $SE = .05$, $t(5779) = -1.42$, $p = .16$, 95% CI [-.15, .02], $sr^2 = .00$. There was not a significant effect of age, $b = -.02$, $SE = .01$, $t(5779) = -1.14$, $p = .25$, 95% CI [-.01, .01], $sr^2 = .00$, or student status, $b = -.01$, $SE = .07$, $t(5779) = -0.14$, $p = .89$, 95% CI [-.34, .29], $sr^2 = .00$.

Debt Predicting Anxiety. To assess if debt category predicted anxiety, a binary logistic regression was used. The main effects model included debt, age, sex, income, student status, and education level, and was significant, $\chi^2(9, N = 5827) = 60.00$, $p < .001$ (Cox & Snell $R^2 = .01$, Nagelkerke $R^2 = .05$). Debt category was a significant predictor of anxiety, when comparing to those who would have money left, those who would owe, $b =$

.55, $SE = .21$, Wald $\chi^2(1) = 7.07$, $p = .01$ ($OR = 1.73$, 95% CI [1.16, 2.59]), were significantly more likely to report having anxiety. Those that would owe were not significantly different than those that would break even, $b = .26$, $SE = .27$, Wald $\chi^2(1) = .93$, $p = .34$ ($OR = 1.30$, 95% CI [.76, 2.22]). Additionally, those that would break even were not significantly different from those that would have money left, $b = .29$, $SE = .25$, Wald $\chi^2(1) = 1.29$, $p = .26$ ($OR = 1.33$, 95% CI [.81, 2.18]). There was a negative effect for age, $b = -.32$, $SE = .10$, Wald $\chi^2(1) = 10.62$, $p = .001$ ($OR = .73$, 95% CI [.60, .88]), such that as age increased, the participant was less likely to report anxiety. There was also a positive effect for student status, $b = .81$, $SE = .31$, Wald $\chi^2(1) = 6.84$, $p = .01$ ($OR = 2.24$, 95% CI [1.22, 4.09]), such that students were more likely to report having anxiety. Females were more likely to report anxiety, $b = .51$, $SE = .19$, Wald $\chi^2(1) = 7.06$, $p = .01$ ($OR = 1.67$, 95% CI [1.14, 2.43]). There was also a significant difference between those with an undergraduate degree and those with a high school (or less) education, $b = -.70$, $SE = .24$, Wald $\chi^2(1) = 8.76$, $p = .003$ ($OR = .50$, 95% CI [.31, .79]), such that those with a degree were less likely to report anxiety. There were not significant effects for income or other levels of education.

Anxiety Predicting Debt. To assess if presence of anxiety predicted debt category, a multinomial logistic regression was used. A significant improvement in fit occurred for the final model (LL = 6729.69) from the null model (LL = 7438.59), $\chi^2(16, N = 5827) = 708.90$, $p < .001$. Pearson's chi square test, $\chi^2(7118, N = 5827) = 7176.24$, $p = .31$, and Deviance chi-square, $\chi^2(7118, N = 5827) = 5696.52$, $p = 1.00$ indicated the model fit the data well. Pseudo R-Square tests reported Cox & Snell = .12 and Nagelkerke = .15. Controlling for age, sex, income, student status, and education level, anxiety was a significant predictor of debt category, $\chi^2(2, N = 5827) = 6.89$, $p = .03$. Additionally, age, $\chi^2(2, N = 5827) = 463.53$, $p < .001$, sex, $\chi^2(2, N = 5827) = 11.20$, $p =$

.004, income, $\chi^2(2, N = 5827) = 109.73, p < .001$, and education level, $\chi^2(6, N = 5827) = 75.06, p < .001$, were also significant predictors of debt category. Student status was not a significant predictor.

Those in the debt category as opposed to the have money left category were more likely to report anxiety, $b = .55, SE = .21, \text{Wald } \chi^2(1) = 7.13, p = .01$ ($OR = 1.73, 95\% \text{ CI } [1.16, 2.59]$). There was also an effect present for age, $b = -.80, SE = .04, \text{Wald } \chi^2(1) = 335.33, p < .001$ ($OR = .45, 95\% \text{ CI } [.41, .49]$), indicating as age increased participants were less likely to be in the owe money category compared to the have money left category. Additionally, there was a negative effect for income, $b = -.55, SE = .07, \text{Wald } \chi^2(1) = 68.24, p < .001$ ($OR = .58, 95\% \text{ CI } [.50, .66]$), indicating higher incomes were less likely to be in the owe money category as opposed to the have money left category. There was not a significant effect of sex, student status, or education.

Those in the break even category were not significantly different in their likelihood of anxiety as compared to the have money left category. There was a negative effect for age, $b = -.56, SE = .05, \text{Wald } \chi^2(1) = 138.13, p < .001$ ($OR = .57, 95\% \text{ CI } [.52, .63]$), indicating those that were older were less likely to be in the break even category relative to the have money left category. Additionally, there was an effect for sex, $b = .28, SE = .10, \text{Wald } \chi^2(1) = 8.36, p = .004$ ($OR = 1.32, 95\% \text{ CI } [1.09, 1.59]$), such that females were more likely to report belonging to the break even category relative to the have money left category. Additionally, a negative effect of income was seen, $b = -.42, SE = .08, \text{Wald } \chi^2(1) = 30.57, p < .001$ ($OR = .66, 95\% \text{ CI } [.57, .76]$), such that those with higher incomes were less likely to be in the break even category as compared to the have money left category. Those with a high school education or less were more likely to report being in the break even category as compared to the have money left category, b

= .70, $SE = .18$, Wald $\chi^2(1) = 15.68$, $p < .001$ ($OR = 2.01$, 95% CI [1.42, 2.84]). However, no effect in the other levels of education or student status was observed.

Females were less likely to report belonging to the debt category relative to the break even category, $b = -.36$, $SE = .11$, Wald $\chi^2(1) = 10.29$, $p = .001$ ($OR = .70$, 95% CI [.56, .87]). Additionally, as age increased, participants were less likely to report belonging to the owe money category relative to the break even category, $b = -.24$, $SE = .06$, Wald $\chi^2(1) = 16.65$, $p < .001$ ($OR = .79$, 95% CI [.70, .88]). A negative effect was also noted in those with a high school education or less, $b = -.44$, $SE = .21$, Wald $\chi^2(1) = 4.23$, $p = .04$ ($OR = .65$, 95% CI [.43, .98]), such that they were less likely to report being in the owe money category relative to the break even category. We did not find significant differences in anxiety, income, student status, or other levels of education.

Debt Predicting Depression. To assess if debt category predicted depression, a binary logistic regression was used. The main effects model included debt, age, sex, income, student status, and education level, and was significant, $\chi^2(9, N = 5827) = 160.06$, $p < .001$ (Cox & Snell $R^2 = .03$, Nagelkerke $R^2 = .05$). Debt category was a significant predictor of depression, when comparing to those who would have money left, those who would owe, $b = .69$, $SE = .11$, Wald $\chi^2(1) = 43.18$, $p < .001$ ($OR = 1.99$, 95% CI [1.62, 2.44]), and those who would break even, $b = .28$, $SE = .13$, Wald $\chi^2(1) = 4.62$, $p = .03$ ($OR = 1.33$, 95% CI [1.03, 1.71]), were significantly more likely to report having depression. Additionally, those that would owe were significantly more likely to report depression than those that would break even, $b = .41$, $SE = .14$, Wald $\chi^2(1) = 8.04$, $p = .005$ ($OR = 1.50$, 95% CI [1.13, 1.99]). There was a negative effect for age, $b = -.27$, $SE = .05$, Wald $\chi^2(1) = 32.50$, $p < .001$ ($OR = .76$, 95% CI [.69, .84]), such that as age increased, the participant was less likely to report depression. There was also a negative effect for income, $b = -.17$, $SE = .07$, Wald $\chi^2(1) = 6.96$, $p < .01$ ($OR = .84$, 95% CI [.74,

.96]), such that as income increased, participants were less likely to report having depression. Females were more likely to report depression, $b = .42$, $SE = .09$, Wald $\chi^2(1) = 20.57$, $p < .001$ ($OR = 1.53$, 95% CI [1.27, 1.84]). There were not significant effects for student status or education level.

Depression Predicting Debt. To assess if presence of depression predicted debt category, a multinomial logistic regression was used. A significant improvement in fit occurred for the final model (LL = 6925.21) from the null model (LL = 7669.60), $\chi^2(16, N = 5827) = 744.39$, $p < .001$. Pearson's chi square test, $\chi^2(7600, N = 5827) = 7659.48$, $p = .31$, and Deviance chi-square, $\chi^2(7600, N = 5827) = 6030.01$, $p = 1.00$ indicated the model fit the data well. Pseudo R-Square tests reported Cox & Snell = .12 and Nagelkerke = .15. Controlling for age, sex, income, student status, and education level, depression was a significant predictor of debt category, $\chi^2(2, N = 5827) = 42.37$, $p < .001$. Additionally, age, $\chi^2(2, N = 5827) = 443.38$, $p < .001$, sex, $\chi^2(2, N = 5827) = 11.72$, $p = .003$, income, $\chi^2(2, N = 5827) = 104.74$, $p < .001$, and education level, $\chi^2(6, N = 5827) = 74.65$, $p < .001$, were also significant predictors of debt category. Student status was not a significant predictor.

Those in the debt category as opposed to the have money left category were more likely to report depression, $b = .70$, $SE = .10$, Wald $\chi^2(1) = 44.47$, $p < .001$ ($OR = 2.01$, 95% CI [1.64, 2.46]). There was also an effect present for age, $b = -.79$, $SE = .04$, Wald $\chi^2(1) = 320.61$, $p < .001$ ($OR = .45$, 95% CI [.42, .50]), indicating as age increased participants were less likely to be in the owe money category compared to the have money left category. Additionally, there was a negative effect for income, $b = -.54$, $SE = .07$, Wald $\chi^2(1) = 64.93$, $p < .001$ ($OR = .58$, 95% CI [.51, .67]), indicating higher incomes were less likely to be in the owe money category as opposed to the have money left category. There was not a significant effect of sex, student status, or education.

Those in the break even category were more likely to report depression as compared to the have money left category, $b = .27$, $SE = .13$, Wald $\chi^2(1) = 4.18$, $p = .04$ ($OR = 1.31$, 95% CI [1.01, 1.69]). There was a negative effect for age, $b = -.56$, $SE = .05$, Wald $\chi^2(1) = 135.00$, $p < .001$ ($OR = .57$, 95% CI [.52, .63]), indicating those that were older were less likely to be in the break even category relative to the have money left category. Additionally, there was an effect for sex, $b = .27$, $SE = .10$, Wald $\chi^2(1) = 7.87$, $p = .005$ ($OR = 1.31$, 95% CI [1.08, 1.58]), such that females were more likely to report belonging to the break even category relative to the have money left category. Additionally, a negative effect of income was seen, $b = -.42$, $SE = .08$, Wald $\chi^2(1) = 30.05$, $p < .001$ ($OR = .66$, 95% CI [.57, .77]), such that those with higher incomes were less likely to be in the break even category as compared to the have money left category. Those with a high school education or less were more likely to report being in the break even category as compared to the have money left category, $b = .70$, $SE = .18$, Wald $\chi^2(1) = 15.59$, $p < .001$ ($OR = 2.01$, 95% CI [1.42, 2.84]). However, no effect in the other levels of education or student status was observed.

Additionally, those who would owe were more likely to report having depression than those who would break even, $b = .43$, $SE = .14$, Wald $\chi^2(1) = 8.93$, $p = .003$ ($OR = 1.54$, 95% CI [1.16, 2.03]). Females were less likely to report belonging to the debt category relative to the break even category, $b = -.38$, $SE = .11$, Wald $\chi^2(1) = 11.20$, $p = .001$ ($OR = .69$, 95% CI [.55, .86]). Additionally, as age increased, participants were less likely to report belonging to the owe money category relative to the break even category, $b = -.23$, $SE = .06$, Wald $\chi^2(1) = 15.64$, $p < .001$ ($OR = .79$, 95% CI [.71, .89]). A negative effect was also noted in those with a high school education or less, $b = -.45$, $SE = .21$, Wald $\chi^2(1) = 4.37$, $p = .04$ ($OR = .64$, 95% CI [.42, .97]), such that they were less likely to

report being in the owe money category relative to the break even category. We did not find significant differences in income, student status, or other levels of education.

WAVES 2 AND 3

Social Well-Being Predicting Total Debt. In order to assess the effects of social well-being on total debt at waves 2 and 3, MLMs were constructed after examining null, unconditional, and conditional growth models. Variables were grand mean centered prior to analysis and debt and income were adjusted for inflation as previously described. After testing each predictor in the model examining the effects of social well-being on debt for random and fixed slopes and intercepts, a fixed/fixed model by maximum likelihood was adopted, improving the LL from the null model of -85613.23 to a LL of -84851.89 in the final model. Social well-being did not significantly predict total debt, $b = 193.98$, $SE = 289.44$, $t(1932) = 0.67$, $p = .50$. There was not a significant effect of time, $b = -416.84$, $SE = 590.82$, $t(1932) = 0.71$, $p = .48$. However, there was a significant effect of age, $b = -3364.66$, $SE = 187.37$, $t(1932) = -17.96$, $p < .001$, such that as debt decreased with age. Education level had a significant effect on debt, $b = 21543.51$, $SE = 2010.18$, $t(1932) = 10.72$, $p < .001$, such that more education was related to higher amounts of debt. Additionally, an effect for sex was present, $b = -14783.09$, $SE = 4308.58$, $t(1932) = -3.43$, $p < .001$, such that men reported more debt. The missing data pattern was also significant, $b = 74409.68$, $SE = 21211.01$, $t(4338) = 3.51$, $p < .001$, indicating that those who were missing data at time 3 reported significantly more debt compared to those who completed both assessments. Student status and income were not significant predictors and were excluded from the final model.

Social Well-Being Predicting Education Debt. After testing each predictor in the model examining the effects of social well-being on debt for random and fixed slopes and intercepts, a fixed/fixed model by maximum likelihood was adopted, improving the LL

from the null model of -53840.41 to a LL of -52002.63 in the final model. Social well-being, age, and student status did not significantly predict education debt. There was a significant effect of time, $b = 547.27$, $SE = 55.14$, $t(1262) = 9.93$, $p < .001$, indicating debt increased over time. Education level had a significant effect on debt, $b = 332.11$, $SE = 75.68$, $t(1262) = 4.39$, $p < .001$, such that more education was related to higher amounts of debt. The missing data pattern was also significant. $b = -12159.41$, $SE = 933.96$, $t(1262) = -13.02$, $p < .001$, indicating that those who were missing data at time 3 reported significantly less debt compared to those who completed both assessments. Income and sex were not significant predictors and were excluded from the final model. Contrary to the hypothesis, the relationship between social well-being and debt was not stronger for education debt.

Debt Predicting Social Well-Being. The model predicting social well-being from total debt resulted in a fixed model with time as a random factor by maximum likelihood, improving the LL from the null model of -31580.54 to a LL of -14885.21. Debt amount predicted social well-being scores, $b = .000001$, $SE = .00$, $t(1910) = 2.50$, $p = .01$, such that as debt increased so did social well-being. Time had a significant effect on social well-being, $b = -.03$, $SE = .01$, $t(1910) = -4.33$, $p < .001$, indicating social well-being was higher at wave 2 than wave 3. There was also a significant effect of age, $b = .01$, $SE = .003$, $t(1910) = 3.25$, $p = .001$, such that social well-being was higher amongst older participants. Additionally, education level produced a significant effect, $b = .66$, $SE = .03$, $t(1910) = 21.08$, $p < .001$, such that social well-being was increased with more education. The missing data pattern was not significant and thus, not related. Student status, income, and sex were not significant predictors and excluded from the final model.

Psychological Well-Being Predicting Total Debt. The model predicting total debt from psychological well-being was best fit with fixed factors except time was a

random factor by maximum likelihood, improving the LL from the null model of -85613.23 to a final LL of -84835.76. Psychological well-being significantly predicted debt, $b = 3392.28$, $SE = 592.38$, $t(1932) = 5.73$, $p < .001$], such that as debt increased, psychological well-being increased. Time was not a significant factor, $b = 463.30$, $SE = 588.92$, $t(1932) = 0.79$, $p = .43$. Age was a significant predictor, $b = -3430.75$, $SE = 187.13$, $t(1932) = -18.33$, $p < .001$, indicating younger people reported more debt. Education level produced a significant effect, $b = 20163.67$, $SE = 2013.44$, $t(1932) = 10.01$, $p < .001$, indicating that more education was related to more debt. Sex was also a significant factor, $b = -15672.24$, $SE = 4300.70$, $t(1932) = -3.64$, $p < .001$, such that men reported more debt. The missing data pattern was also significant, $b = 73939.70$, $SE = 21143.53$, $t(4338) = 3.50$, $p < .001$, indicating that those who did not complete both assessments reported more debt than those who completed both waves. Student status and income were not significant factors and were excluded from the final model.

Psychological Well-Being Predicting Education Debt. The model predicting education debt from psychological well-being was best fit with fixed factors except time was a random factor by maximum likelihood, improving the LL from the null model of -53840.41 to a final LL of -52002.32. Psychological well-being, student status, and age did not significantly predict education debt. Time was a significant factor, $b = 547.29$, $SE = 55.14$, $t(1262) = 9.93$, $p < .001$, indicating debt decreased over time. Education level produced a significant effect, $b = 319.44$, $SE = 75.79$, $t(1262) = 4.21$, $p < .001$, indicating that more education was related to more education debt. The missing data pattern was also significant, $b = -12173.98$, $SE = 934.07$, $t(1262) = -13.03$, $p < .001$, indicating that those who did not complete both assessments reported less debt than those who completed both waves. Sex and income were not significant factors and were excluded from the final model. Contrary to the hypothesis, the relationship between psychological

well-being and education debt was not stronger than the psychological well-being relationship with total reported debt.

Debt Predicting Psychological Well-Being. The model predicting psychological well-being from total debt was best fit as a fixed model by maximum likelihood with time as a random factor, improving the LL from the null model of -30367.18 to a final LL of -14388.74. Debt significantly predicted psychological well-being, $b = .000001$, $SE = .00$, $t(1929) = 5.94$, $p < .001$, indicating as well-being increased, so did debt. Age was a significant predictor of psychological well-being scores, $b = .02$, $SE = .003$, $t(1929) = 7.09$, $p < .001$, indicating that well-being increased with age. Education level was also significant, $b = .38$, $SE = .03$, $t(1929) = 13.12$, $p < .001$, indicating that well-being was increased for those with more education. Both time and the missing data pattern were not significant or related to psychological well-being. Student status, sex, and income were not significant factors and were excluded from the final model.

Education Debt Predicting Psychological and Social Well-Being. Education debt did not significantly predict psychological or social well-being. In addition, there were no effects of time, sex, age, student status or income in either model. Greater levels of education were associated with better well-being scores as previously reported.

Multilevel Moderated Mediation Models

The mediation models were constructed as multilevel analyses in which the mediations were examined on step one and the moderators were individually added on step two. Each model was potentially mediated by attitudes (life satisfaction and financial satisfaction), with the categorical measure of debt as the predictor, the well-being score as the outcome, and time as a covariate. Each moderator (age, sex, income, education level, and student status) was assessed on the 'a', 'b', and 'c' pathways. Complete cases were analyzed in the following models using the ordinary least squares mathematical

procedure as described in Hayes (2013) and Hayes and Preacher (2014) via models 4 and 59 of the PROCESS macro in SPSS.

Social Well-Being. Step one of the model examined the mediational effect of attitudes on the debt to social well-being relationship with time as a covariate. The total effect of debt on social well-being was significant when examining those owed relative to those that had money, $b = -.46$, $SE = .08$, $t(11427) = -5.49$, $p < .001$, 95% CI [-.63, -.30], and when examining those that would break even relative to those that would have money left, $b = -.47$, $SE = .07$, $t(11427) = -6.63$, $p < .001$, 95% CI [-.61, -.33]. However, when examining those that would owe to those that would break even the effect was not significant. Furthermore, there was a significant effect of debt on financial satisfaction in those that owed relative to those that had money left, $b = -.55$, $SE = .07$, $t(11427) = -8.23$, $p < .001$, 95% CI [-.69, -.42], and an effect in those that would break even relative to those who had money left, $b = -.89$, $SE = .06$, $t(11427) = -15.63$, $p < .001$, 95% CI [-1.01, -.78]. In addition, the debt to financial satisfaction relationship was significant in those who would owe relative to those who would break even, $b = -.34$, $SE = .08$, $t(11427) = -4.15$, $p < .001$, 95% CI [-.50, -.18]. No relationships between debt categories and life satisfaction were observed. Both financial satisfaction, $b = .28$, $SE = .01$, $t(11425) = 24.25$, $p < .001$, 95% CI [.26, .31], and life satisfaction, $b = .25$, $SE = .02$, $t(11425) = 12.98$, $p < .001$, 95% CI [.21, .29] revealed significant positive relationships to social well-being. Additionally, the direct effects on social well-being were significant for those that owed relative to those that would have money left, $b = -.31$, $SE = .08$, $t(11425) = -3.79$, $p < .001$, 95% CI [-.46, -.15], as were those that would break even relative to those that would have money left, $b = -.23$, $SE = .07$, $t(11425) = -3.30$, $p = .001$, 95% CI [-.36, -.09]. However, a significant relationship was not found in examination of the direct effect of those that owed relative to those that broke even.

To determine if the indirect effects of financial satisfaction and life satisfaction on debt category and social well-being was significant, a 5000 sample bias-correcting bootstrapping procedure was performed. The results revealed that financial satisfaction mediated the relationship, relative to the have money left and owe comparison, Indirect Effect = $-.16$, $SE = .02$, 95% CI $[-.20, -.12]$, $P_M = .10$, as well as the have money left and break even comparison, Indirect Effect = $-.25$, $SE = .02$, 95% CI $[-.29, -.21]$, $P_M = .15$, and the owe and break even comparison, Indirect Effect = $-.10$, $SE = .02$, 95% CI $[-.14, -.05]$, $P_M = 2.16$. However, the results revealed life satisfaction was not a significant mediator in the analysis.

Subsequently, moderated mediations were run, with each moderator individually and interaction terms with debt and each moderator. The remaining moderators tested were used as covariates in each of the subsequent analyses, thus, all moderator effects were controlling for the other moderators (age, sex, income, education level, time, and student status).

Age was a significant moderator of the debt to financial satisfaction relationship when comparing those who would have money left to those that would break even, $b = .03$, $SE = .01$, $t(6409) = 6.43$, $p < .001$, 95% CI $[.02, .04]$, as age increases the differences between the categories decrease (see Table 6). Age moderated the debt to social well-being relationship in those who would have money left compared to those that would owe, $b = .02$, $SE = .01$, $t(6405) = 2.09$, $p = .04$, 95% CI $[.001, .03]$, and in those that would have money left compared to those that would break even, $b = .01$, $SE = .01$, $t(6405) = 2.03$, $p = .04$, 95% CI $[.001, .03]$. The effect was only present in younger participants in both comparisons, those that would have money left to those that would owe, $b = -.41$, $SE = .14$, $t(6405) = -2.87$, $p = .004$, 95% CI $[-.70, -.13]$, and between those who had money left and those that would break even, $b = -.25$, $SE = .12$, $t(6405) = -2.09$,

$p = .04$, 95% CI [-.49, -.02], both effects decreased in strength as age increased.

However, the effect was not present in those that would owe compared to those that would break even or in average aged or older participants. Age also moderated the life satisfaction to social well-being relationship, $b = .01$, $SE = .002$, $t(6405) = 3.37$, $p < .001$, 95% CI [.003, .01], the effect increased as age increased (see Table 7). The Johnson-Neyman region of significance indicated that the interaction between age and life satisfaction was significant at a centered value of -24.17, which accounted for 95.89% of the sample. Age did not moderate the debt to life satisfaction relationship or the financial satisfaction to social well-being relationship.

Education level did not significantly moderate the debt to financial satisfaction relationship, the debt to life satisfaction relationship, or the financial satisfaction to social well-being relationship. However, it did significantly moderate the relationship of debt to social well-being, $b = .88$, $SE = .31$, $t(6395) = 2.85$, $p = .004$, 95% CI [.28, 1.49], the effects of which can be located in Table 8. Additionally, education level also moderated the life satisfaction to social well-being relationship, $b = .20$, $SE = .08$, $t(6395) = 2.41$, $p = .02$, 95% CI [.04, .36], strengthening as education level increased. Values for each level can be found in Table 9.

Table 6. Conditional Effects of Debt on Financial Satisfaction at levels of Age.

Age	Debt Comparison		<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Low (-1SD)	Have	Owe	-0.54	0.11	-4.68	< .001	-.76, -.31
	Have	Even	-1.17	0.09	-12.57	< .001	-1.35, -.99
	Owe	Even	-0.64	0.13	-4.74	< .001	-.90, -.37
Mean	Have	Owe	-0.39	0.09	-4.41	< .001	-.57, -.22
	Have	Even	-0.71	0.08	-9.27	< .001	-.86, -.56
	Owe	Even	-0.31	0.11	-2.86	0.004	-.53, -.10
High (+1SD)	Have	Owe	-0.25	0.13	-1.88	0.06	-.51, .01
	Have	Even	-0.24	0.12	-2.07	0.04	-.47, -.01
	Owe	Even	0.01	0.17	0.05	0.96	-.32, .33

Table 7. Conditional Effects of Life Satisfaction on Social Well-Being at Levels of Age.

Age	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Younger (-1SD)	0.16	0.04	4.47	< .001	.09, .23
Average Aged	0.24	0.03	9.46	< .001	.19, .30
Older (+1SD)	0.33	0.04	8.85	< .001	.26, .40

Table 8. Conditional Effects of Debt on Social Well-Being at levels of Education.

Education Level	Debt Comparison		<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
HS or Less	Have	Owe	-0.26	0.18	-1.46	0.14	-.62, .09
	Have	Even	-0.29	0.17	-1.77	0.07	-.62, .03
	Owe	Even	-0.03	0.22	-0.13	0.89	-.47, .41
Some College	Have	Owe	-0.07	0.24	-0.27	0.79	-.54, .41
	Have	Even	-0.29	0.19	-1.52	0.13	-.66, .08
	Owe	Even	-0.22	0.28	-0.79	0.43	-.78, .33
Undergraduate Degree	Have	Owe	-0.45	0.21	-2.15	0.03	-.85, -.04
	Have	Even	-0.08	0.17	-0.45	0.66	-.41, .26
	Owe	Even	0.37	0.25	1.48	0.14	-.12, .86
Graduate Degree	Have	Owe	0.17	0.31	0.55	0.59	-.43, .77
	Have	Even	0.59	0.26	2.26	0.02	.08, 1.10
	Owe	Even	0.42	0.38	1.11	0.27	-.32, 1.17

Table 9. Conditional Effects of Life Satisfaction on Social Well-Being at Levels of Education.

Education Level	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
HS or Less	0.19	0.05	4.11	< .001	.09, .27
Some College	0.18	0.06	3.28	0.001	.07, .29
Undergraduate Degree	0.26	0.05	5.75	< .001	.17, .35
Graduate Degree	0.39	0.07	5.52	< .001	.25, .52

Student Status significantly moderated the debt to financial satisfaction relationship in those who would break even compared to those who would have money left over, $b = -1.16$, $SE = .43$, $t(6409) = -2.71$, $p = .01$, 95% CI [-2.00, -.32]. Table 10 shows the effects for both students and non-students. We see that in students, the

difference was driven by comparing those that had money left to those that would owe and those that would break even respectively. For non-students, each level of debt comparison was significant. Interestingly, the relationships were strongest when comparing those that had money left to those that broke even across both students and non-students. Further, student status moderated the life satisfaction to social well-being relationship, $b = -.36$, $SE = .18$, $t(6405) = -2.01$, $p = .04$, 95% CI [-.72, -.01]. However, the effect was only present in non-students, $b = .24$, $SE = .03$, $t(6405) = 9.39$, $p < .001$, 95% CI [.19, .30]. Student status did not moderate the debt to life satisfaction relationship, the debt to social well-being relationship, or the financial satisfaction to social well-being relationship. Neither sex nor income significantly moderated any of the relationships in the model.

Table 10. Conditional Effects of Debt on Financial Satisfaction by Student Status.

Student	Debt Comparison		<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
No	Have	Owe	-0.38	0.09	-4.27	< .001	-.56, -.21
	Have	Even	-0.77	0.08	-10.22	< .001	-.92, -.63
	Owe	Even	-0.39	0.11	-3.60	< .001	-.61, -.18
Yes	Have	Owe	-1.05	0.55	-1.91	0.06	-2.12, .03
	Have	Even	-1.94	0.42	-4.59	< .001	-2.76, -1.11
	Owe	Even	-0.89	0.61	-1.47	0.14	-2.07, .30

Psychological Well-Being. Step one of the model examined the mediational effect of attitudes on the debt to psychological well-being relationship with time as a covariate. The total effect of debt on psychological well-being was significant when examining those that had money left compared to those that owed, $b = -.33$, $SE = .08$, $t(11491) = -4.42$, $p < .001$, 95% CI [-.48, -.18], and when examining those that would have money compared to those that would break even, $b = -.50$, $SE = .06$, $t(11491) = -7.89$, $p < .001$, 95% CI [-.63, -.38]. However, when examining those that would owe to

those that would break even the effect was not significant. Furthermore, the effect of debt to financial satisfaction was significant in those that owed compared to those that had money left, $b = -.55$, $SE = .07$, $t(11491) = -8.19$, $p < .001$, 95% CI [-.68, -.42], those that would break even compared to those who had money left, $b = -.90$, $SE = .06$, $t(11491) = -15.73$, $p < .001$, 95% CI [-1.01, -.78], and those who would owe compared to those who would break even, $b = -.35$, $SE = .08$, $t(11491) = -4.25$, $p < .001$, 95% CI [-.51, -.19]. No relationships between debt categories and life satisfaction were observed. Both financial satisfaction, $b = .29$, $SE = .01$, $t(11489) = 28.75$, $p < .001$, 95% CI [.27, .31], and life satisfaction, $b = .38$, $SE = .02$, $t(11489) = 22.57$, $p < .001$, 95% CI [.35, .41] revealed significant positive relationships to psychological well-being. Additionally, the direct effects of debt to psychological well-being were significant in those that owed compared to those that would have money left, $b = -.18$, $SE = .07$, $t(11489) = -2.56$, $p = .01$, 95% CI [-.32, -.04], as were those that would break even compared to those that would have money left, $b = -.25$, $SE = .06$, $t(11489) = -4.19$, $p < .001$, 95% CI [-.37, -.13]. However, a significant relationship was not found in examination of the direct effect of those that owed compared to those that broke even.

To determine if the indirect effects of financial satisfaction and life satisfaction on debt category and psychological well-being was significant, a 5000 sample bias-correcting bootstrapping procedure was performed. The results revealed that financial satisfaction did mediate the relationship, compared to the have money left and owe comparison, Indirect Effect = $-.16$, $SE = .02$, 95% CI [-.20, -.12], $P_M = .14$, as well as the have money left and break even comparison, Indirect Effect = $-.26$, $SE = .02$, 95% CI [-.30, -.22], $P_M = .15$, and the owe and break even comparison, Indirect Effect = $-.10$, $SE = .03$, 95% CI [-.15, -.05], $P_M = .17$. However, the results revealed life satisfaction was not a significant mediator in the analysis.

Subsequently, moderated mediations were run, with each moderator individually and interaction terms with debt and each moderator. The remaining moderators tested were used as covariates in each of the subsequent analyses, thus, all moderator effects were controlling for the other moderators (age, sex, income, education level, time, and student status).

Age was a significant moderator of the debt to financial satisfaction relationship when comparing those who would have money left to those that would break even, $b = .03$, $SE = .01$, $t(6445) = 6.03$, $p < .001$, 95% CI [.02, .04], and in those who would owe compared to those that would break even, $b = .02$, $SE = .01$, $t(6445) = 2.70$, $p = .01$, 95% CI [.01, .03], as age increases the differences between the categories decrease (see Table 11). However, the effect was not found between those that would have money left and those that would owe. Age moderated the financial satisfaction to psychological well-being relationship, $b = -.005$, $SE = .001$, $t(6441) = -4.88$, $p < .001$, 95% CI [-.01, -.003], to which the effect decreased in strength as age increased (see Table 12). The Johnson-Neyman analysis revealed the interaction was significant in 100% of the sample. Age also moderated the life satisfaction to psychological well-being relationship, $b = .01$, $SE = .002$, $t(6441) = 6.45$, $p < .001$, 95% CI [.007, .01], the effect increased as age increased (see Table 13). The Johnson-Neyman analysis revealed that this interaction was significant in 100% of the sample. However, the effect was not present in those that would owe compared to those that would break even or in average aged or older participants. Age did not moderate the debt to life satisfaction relationship or the debt to social well-being relationship.

Table 11. Conditional Effects of Debt on Financial Satisfaction at levels of Age.

Age	Debt Comparison		<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Low (-1SD)	Have	Owe	-0.53	0.11	-4.69	< .001	-.76, -.31
	Have	Even	-1.15	0.09	-12.33	< .001	-1.33, -.96
	Owe	Even	-0.61	0.13	-4.59	< .001	-.87, -.35
Mean	Have	Owe	-0.38	0.09	-4.28	< .001	-.55, -.21
	Have	Even	-0.71	0.08	-9.43	< .001	-.86, -.57
	Owe	Even	-0.33	0.11	-3.06	0.002	-.55, -.12
High (+1SD)	Have	Owe	-0.23	0.13	-1.72	0.09	-.48, .03
	Have	Even	-0.28	0.11	-2.46	0.01	-.51, -.06
	Owe	Even	-0.06	0.16	-0.34	0.73	-.38, .27

Table 12. Conditional Effects of Financial Satisfaction on Psychological Well-Being at Levels of Age.

Age	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Younger (-1SD)	0.37	0.02	18.93	< .001	.33, .40
Average Aged	0.30	0.01	21.66	< .001	.27, .33
Older (+1SD)	0.23	0.02	11.96	< .001	.20, .27

Table 13. Conditional Effects of Life Satisfaction on Psychological Well-Being at Levels of Age.

Age	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
Younger (-1SD)	0.26	0.03	8.77	< .001	.20, .32
Average Age	0.40	0.02	18.37	< .001	.36, .45
Older (+1SD)	0.54	0.03	17.17	< .001	.48, .60

Education level did not significantly moderate the debt to financial satisfaction relationship, the debt to life satisfaction relationship, or the financial satisfaction to psychological well-being relationship. Education level did significantly moderate the debt to psychological wellbeing relationship with those who would break even compared to those who would have money left who have a high school (or less) education compared those who have an undergraduate degree, $b = .56$, $SE = .20$, $t(6431) = 2.81$, $p = .01$, 95% CI [.17, .96], and between those with a high school (or less) education and those

with a graduate degree, $b = .72$, $SE = .26$, $t(6431) = 2.76$, $p = .01$, 95% CI [.21, 1.24]. Additionally, Table 14 shows each education level's effects. Additionally, education level significantly moderated the life satisfaction to psychological well-being relationship for those with an undergraduate degree compared to those with a high school (or less) education, $b = .12$, $SE = .05$, $t(6431) = 2.30$, $p = .02$, 95% CI [.02, .23], those with a graduate degree compared to those with a high school (or less) education, $b = .20$, $SE = .07$, $t(6431) = 2.84$, $p = .005$, 95% CI [.06, .34], The effect of life satisfaction on psychological well-being was moderated at each level of education and increased as the participant had more education (see Table 15).

Table 14. Conditional Effects of Debt on Psychological Well-Being at levels of Education.

Education Level	Debt Comparison		<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
HS or Less	Have	Owe	-0.24	0.15	-1.55	0.12	-.54, .06
	Have	Even	-0.49	0.14	-3.50	< .001	-.77, -.22
	Owe	Even	-0.26	0.19	-1.34	0.18	-.63, .12
Some College	Have	Owe	-0.16	0.21	-0.78	0.43	-.56, .24
	Have	Even	-0.52	0.16	-3.22	0.001	-.83, -.20
	Owe	Even	-0.36	0.24	-1.49	0.14	-.83, .11
Undergraduate Degree	Have	Owe	-0.17	0.18	-0.98	0.33	-.52, .17
	Have	Even	0.07	0.14	0.50	0.61	-.21, .35
	Owe	Even	0.25	0.21	1.15	0.25	-.17, .66
Graduate Degree	Have	Owe	0.17	0.26	0.65	0.51	-.34, .68
	Have	Even	0.23	0.22	1.05	0.30	-.20, .67
	Owe	Even	0.06	0.32	0.19	0.85	-.57, .69

Table 15. Conditional Effects of Life Satisfaction on Psychological Well-Being at Levels of Education.

Education Level	<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
HS or Less	0.30	0.04	7.94	< .001	.23, .38
Some College	0.39	0.05	8.35	0.001	.30, .48
Undergraduate Degree	0.43	0.04	11.00	< .001	.35, .50
Graduate Degree	0.50	0.06	8.46	< .001	.39, .62

Student status significantly moderated the debt to financial satisfaction relationship in those who would break even compared to those who would have money left, $b = -1.17$, $SE = .43$, $t(6445) = -2.73$, $p = .01$, 95% CI [-2.01, -.33], and was stronger in students (see Table 16). Student status did not moderate the debt to life satisfaction relationship, the debt to psychological well-being relationship, or the financial satisfaction to psychological well-being relationship. However, moderation did occur in the life satisfaction to psychological well-being relationship, $b = -.40$, $SE = .15$, $t(6441) = -2.58$, $p = .01$, 95% CI [-.70, -.09]. However, this effect was only present overall in non-students, $b = .40$, $SE = .02$, $t(6441) = 17.88$, $p < .001$, 95% CI [.35, .44]. Sex and income did not significantly moderate any of the analyses.

Table 16. Conditional Effects of Debt on Financial Satisfaction by Student Status.

Student	Debt Comparison		<i>b</i>	<i>SE</i>	<i>t</i>	<i>p</i>	95% CI
No	Have	Owe	-0.37	0.09	-4.18	< .001	-.55, -.20
	Have	Even	-0.77	0.08	-10.21	< .001	-.92, -.62
	Owe	Even	-0.40	0.11	-3.66	< .001	-.61, -.19
Yes	Have	Owe	-1.05	0.55	-1.92	0.06	-2.12, .02
	Have	Even	-1.94	0.42	-4.59	< .001	-2.76, -1.11
	Owe	Even	-0.89	0.60	-1.47	0.14	-2.07, .30

Chapter 4

Discussion

Debt is a serious and inescapable condition in our current society. Serious psychological and health consequences have been linked to the burden of debt (Andrews & Wilding, 2004; Archuleta, Dale & Spann, 2013; Bridges & Disney, 2010; Drentea, 2000; Jenkins, et. al., 2008; Hira & Mugenda, 1998; Joo, Durband & Grable, 2008; Joo & Grable, 2004; Norvilitis, et. al., 2003,2006; Plagnol, 2011; Richardson, et. al., 2013; Roberts, Golding, Towell & Weinreb, 1999; Roberts, et. al., 2000; Shim, Xiao, Barber &

Lyons, 2009). The present study aimed to address psychological and social outcomes of debt in a longitudinal sample of American adults using the MIDUS data from 1994-2014. The study had three aims, to examine psychological and social well-being outcomes of debt, to explore self-reported attitudes as mediators of the debt and well-being relationships and explore demographic characteristics as moderators to these relationships.

The first aim was tested by examining models in which we evaluated debt's effects on well-being, and, out of interest, well-being's effects on debt. We expected stronger relationships for students, which unfortunately we did not find. This could be due to the low number of students at the time of each wave measurement, a less competitive job market for college graduates in earlier waves, or possibly the concerns of debt accrual, and lower costs of education in the 1990's and 2000's, the waves in which we had the most students (Archuleta, et. al., 2013; Callendar & Jackson, 2008; College Board, 2019; Perna, 2008). The invention of the internet and subsequently job postings, has made for a more competitive job market in modern times. Where a company may have received 10-20 applications for a position posted in the local paper or by word of mouth, they now receive hundreds, or even thousands of online applications. Although it should be noted it is easier for everyone to find a position this way, the competition remains heightened and it seems, the process is extended as a result. In earlier years it may have been a more streamlined process from college graduate to employee, which could be related to a lower overall stress level, less of a gap in income, and more positive attitudes toward well-being (Green, et. al., 2011; Rood, 2011). Additionally, the return of investment on some degrees has decreased drastically and risen for in demand careers (Bowers & Bergman, 2016; Green, et. al., 2011; Hoyt & Allred, 2008). It appears that for the successful college graduate, timing, and a bit of front end research, is everything. As

previously discussed, the costs of education have continued to rise over time and are not likely to slow down. These increased costs have led to increased need for student funding, much of which comes in the form of grants and loans (Archuleta, Dale & Spann, 2013; Fenske, Porter & DuBrock, 2000; O'Brien & Shedd, 2001). While grants do not require repayment, loans will be due eventually, with interest. It is likely the student debt crisis was becoming noticeable around the last wave of measurement and continuing to climb to the outstanding amount of 1.64 trillion dollars at the end of 2019 (Federal Reserve, 2019).

There were relationships with level of education and both well-being and debt. Higher levels of education were related to higher self-reported well-being scores, both psychological and social. Additionally, those with higher levels of education were related to higher social and psychological well-being scores and those with a high school or less education level were more likely to break even when cashing in assets than owe or have money left over. This may be because those in the HS education group were less likely to be taking large financial risks. It could have been that they had lower incomes and curbed spending, did not have access to large amounts of credit from which to withdraw, or were more financially cautious. Not surprisingly, education was also related to more debt. This could be a direct consequence of education costs, which as we know, have continued to climb and have resulted in increasing amounts of loan debt for students, particularly those pursuing graduate work (College Board, 2019; Federal Reserve, 2019). This could also be related to potentially higher incomes. For many, the objective of higher education is to lead to a higher paying career, and generally speaking, more advanced degrees can qualify one for positions with higher pay rates (Clapp, 1998; Delucchi & Korgen, 2002; Gardner, Jewler, & Barefoot, 2007; Phinney, Dennis & Osorio, 2006; Roberts & Jones, 2001; Schultz & Higbee, 2007; Twenge & Donnelly, 2016). The current study

demonstrated a negative effect with income and debt, such that as income rose, debt decreased. As income increased participants were less likely to be in debt than the other categories. One would hope that an increased income level would lead to less of a need to borrow indiscriminately and support reasonable spending behaviors. Previous research indicates numerous rationales for spending behaviors, including prosocial spending, materialism, and theoretical perspectives regarding resources, all of which can easily contribute to debt accumulation. Prosocial spending is a phenomenon wherein people use their resources to help others. This type of spending behavior increases happiness levels with and without reciprocal benefits such as spending in an effort to strengthen social relationships (Aknin, Dunn & Norton, 2011). Materialism has been linked with psychological distress in that those who endorse materialistic values tend to also report more worry about financial states, as well as decreased financial management skills and well-being (Gardarsdottir & Dittmar, 2012).

Debt and spending can also be approached via a resource perspective. For example, Conservation of Resources (COR) theory is based on the idea that individuals want to both conserve the resources they already have and pursue gain of new resources. Loss of resources will lead to increased stress (Hobfoll, 1989; Tay, et. al., 2017). There are theoretical implications of COR, such that a person may be inclined to take on debt to preserve a savings fund which could lead to debt tolerance or problem debt. If the result was problem debt, the individual would have lost resources in the form of money and available credit, and both the beginning of and being trapped in the cycle of debt and interest could certainly lead to increased stress levels. While the previous literature disagrees regarding whether there are definitive sex differences in reported debt amounts (Armstrong & Craven, 1993; Davies & Lea, 1995; Lawrence, et. al., 2003; Robb & Sharpe, 2009), the current study found females were more likely to break even

than owe or have money left and reported lower average incomes. Fewer females reported having money left over than males did, and more females reported owing or breaking even than did males. Additionally, males reported more debt than females overall. It may be important to note that marital status and family composition could influence the debt amounts reported depending on if one partner is responsible for financial matters or is more knowledgeable or skilled in finances. Previous research found many younger males were more confident and financially knowledgeable than females, therefore it is possible that males may have taken on a more involved financial role in the household finances in the current sample (Borden, et. al., 2008; Chen & Volpe, 1998, 2002; Edwards, et. al., 2007; Hayhoe, et. al., 1999; Jones, 2005; Lusardi & Mitchell, 2005; Newcomb & Rabow, 1999; Steinrock, et. al., 1991; Xiao, et. al., 1995). The increased stress of debt and resultant strain on both psychological, financial, and potentially social resources would likely decrease perceptions of well-being in financial and psychological domains (Bridges & Disney, 2010; Fitch, et. al., 2007; Hayes, 2000; Jenkins, et. al., 2008; Reading & Reynolds, 2001; Richardson, et. al., 2013; Sweet, et. al., 2013).

In addition, we expected to see better well-being in males and older participants, both of which were observed in the analyses. Males reported higher social and psychological well-being scores than females. This could be an accurate reporting, but it is also possible that there is influence of a phenomenon in which men are less likely to report distress or engage in social sharing or seeking emotional support than women (Fuhrer & Stansfeld, 2002; Liebler & Sandefur, 2002; McKenzie, et. al., 2018). As a consequence of traditional gender roles and development of “masculine” behaviors in which emotional sharing, displays, and help-seeking behaviors were discouraged, the mental health of males was an issue that certainly did not receive enough attention in the

past. More recently, researchers have begun to investigate these issues and give more focus to assessing well-being for males, especially in the mental health arena (Smith, et. al., 2018). Interestingly, older participants were more likely to be in the break even or have money left groups than report they would owe money if they liquidated their assets. Many older individuals have some type of retirement in place, through savings, pension, or social security and are often homeowners or live with relatives. These circumstances likely lead to better financial security.

However, a 2018 report from the Bureau of Consumer Financial Protection (BCSP) revealed that 25% of seniors were financially insecure. These findings reported financial well-being increased until a person was in their 70's and then decreased afterward. The BCSP report also found sex, race, and marital status differences which became larger as age increased. Furthermore, those with credit card or education debt, poorer health, poorer financial knowledge and behaviors, or experienced unplanned retirement displayed poorer financial well-being (BCSP, 2018). The current study showed relationships between financial and psychological and social well-being, and as such, it could be interesting to test this effect again to see if issues like changes in insurance coverages, economic consequences of market crashes in 2012 and 2020, and increased levels of medical debt have had a significant impact on American seniors. It may also be interesting to compare these effects across countries, particularly looking at differences in countries with socialized medical systems and government assisted retirement.

Testing the bi-directionality of these relationships, separate regression models were used to test the effects of well-being predicting debt. For the wave 1 data, we saw that social well-being predicted debt, specifically that as well-being increased, participants were more likely to be in the have money left category than they were to report owing or breaking even. They also were more likely to report breaking even than

owing. This shows that debtors were less likely to have higher social well-being scores and is in line with previous findings, where a debtor may feel excluded by peers due to financial constraints, or possibly experience shame or feelings of failure regarding their financial circumstances (Fitch, et. al., 2007; Hayes, 2000). We also saw effects of anxiety and depression on debt, specifically, that debtors were more likely to report depression and anxiety than those who would break even or those that would have money left. These findings are in congruence with previous studies that found relationships between debt and negative mental health consequences, even when controlling for diagnosed mental illnesses (Andrews & Wilding, 2004; Archuleta, Dale & Spann, 2013; Bridges & Disney, 2010; Drentea, 2000; Fitch, et. al., 2007; Jenkins, et. al., 2008; Joo, Durband & Grable, 2008; Murali & Oyebode, 2004; Norvilitis, et. al., 2006; Richardson, Elliott & Roberts, 2013; Roberts, Golding, Towell & Weinreb, 1999; Roberts, et. al., 2000). We also saw more females, students, younger adults, and those with less achieved education and lower incomes were more likely to report anxiety and depression. These results are also complimentary to previous research finding younger adults, females, recent graduates, and lower incomes to be associated with higher levels of anxiety, depression, stress, and poorer well-being (Baumeister & Leary, 1995; Belsky & Kelly, 1994; Bijl, et. al., 2002; Blazer, et. al., 1991; Cyranowski, et. al., 2000; Drentea, 2000; Faravelli, et. al., 2013; Kessler, 2003; McLean, et. al., 2012; Mellor, et. al., 2008; Mirowsky & Ross, 1999). However, it is interesting to note that we saw more anxiety in females than males. We also saw more reported debt from males, albeit they also reported more assets as more males fell into the have money category than did females. These findings were in conjunction with the weak, positive relationships that were found between debt and well-being. It may be that males were driving this effect considering they reported better overall well-being than did females, or it may have been that there

was a point of diminishing return when assessing the influence of debt on well-being. It was possible that a small amount of debt was deemed acceptable by most and those on the low side of the debt scale have a very different experience than those on the more extreme side of the scale.

The second and third aims were tested as multilevel moderated mediations. We expected attitudes of life satisfaction and financial satisfaction to mediate the debt to well-being analyses, replicating the work by Bridges and Disney (2010). Financial satisfaction was a mediator for both social and psychological well-being and their relationships with debt, respectively. However, life satisfaction was not a significant mediator. It makes sense that financial satisfaction would be an influential mediator in the debt and well-being relationships, and we would expect that attitudes regarding the effect of debt on financial satisfaction to have a relationship with well-being, both socially and psychologically. Previous research has demonstrated relationships with debt and income, specifically that lower income households accumulate more debt, which in turn can lead to psychological, social, and financial distress (Bridges & Disney, 2010; Cameron & Golby, 1990; Duesenberry, 1949; Fitch, et. al., 2007; Lenton & Mosley, 2008; Livingstone & Lunt, 1992; Prenda & Lachman, 2001; Tudela & Young, 2003). It is also interesting that financial concerns did not carry over into the measurement of life satisfaction in the present study. The measure of life satisfaction was composed by scoring questions on satisfaction levels regarding work, health, and relationships. It is hopeful to think that we do not let financial issues carry over into our relationships or health, but this is not always the case. Previous research has found that debt can lead to household stress, straining relationships and influencing reported happiness and well-being (Bridges & Disney, 2010; Brown, et. al., 2005; Drentea, 2000; Reading & Reynolds, 2001; Selenko & Batinic, 2011). Although we did not see this effect, it could be outweighed by ratings of work

satisfaction, familial relationship satisfaction, and self-rated health, but it could also be overshadowed by the uneven debt categories in which most participants stated they would have money left if they cashed in their assets. Some research has found that feelings of belonging and strong relationships may buffer negative effects of debt in previous loneliness studies, therefore it is possible that our participants were allowing less permeation of debt and negative feelings penetrate their relationships and work satisfaction, leading to less affected measures of life satisfaction in our study (Baumeister & Leary, 1995; Mellor, et. al., 2008). Similar to findings by Xiao and colleagues (2009), it is also possible that measuring life satisfaction is more complex, and while debt and financial constraints could certainly lead to dissatisfaction in some important life areas, it may not affect overall life satisfaction as measured by relationship and employment satisfaction. Future studies could assess attitudes more deeply, including reasoning for debt accrual, if employment was satisfactory in terms of compensation, and possibly if lower compensation was accepted in order to have a more satisfactory position, and whether the objective for accruing debt was achieved.

We expected each demographic variable to moderate the relationships, however, we did not see moderating effects of income or sex. Accounting for inflation, the total debt amounts and incomes were adjusted to match 2013 dollars. Incomes decreased from wave 1 to wave 2 and rose slightly at wave 3, where debt decreased from wave 2 to wave 3. This would indicate that individuals were either paying off debt or accruing less of it at a time. It is possible that by the second and third waves of measurement, many of our participants had previously purchased homes and paid down their mortgages or paid back student debt or had it forgiven. Previous research has indicated that younger adults are more likely to have debt and debt problems, which would support the trend of debt decreasing over time in the present study (Fitch, et. al., 2007; Lenton & Mosley, 2008;

Tudela & Young, 2003). However, it is interesting to note that income followed the same pattern, which could be due to lower average salaries, retirement, or possibly individuals receiving social security or disability funds as their primary income source. Furthermore, this could be related to increased costs of living for which stagnation of or increases in wages have not always matched, especially depending on location and household size (Anker & Anker, 2017; Grout & Ifft, 2017).

With the debt decreasing, it is reasonable that the psychological and social strain due to debt would decrease over time as well (Bridges & Disney, 2010; Brown, et. al., 2005; Drentea, 2000; Fitch, et. al., 2007; Hayes, 2000; Lea, et. al., 1993, 1995; Reading & Reynolds, 2001; Selenko & Batinic, 2011). One important caveat would be retirement age individuals where they may have retired without sufficient funds or experienced a financial setback of some kind that would decrease available funds and possibly increase debt. While we see a small increase in the number of people reporting they would be in debt if they cashed in all assets between waves 2 and 3, it is also important to consider the time frame in which these waves were measured. Between these two waves, there was a housing crisis in America, in which the housing markets were drastically influenced. Variable rate mortgages led to an unprecedented number of foreclosures, leaving many in a precarious financial situation. Again in 2012, before wave 3, America experienced a recession with high unemployment and stock market consequences. The Federal Reserve Board (2017) reported that debt amongst older adults increased over 400% between 1989 and 2016, and Lusardi and colleagues (2018) also reported those reaching retirement age had a substantial increase in debt to 71% in 2010 from 64% in 1992. A decreasing income and increasing debt amount were likely influenced by the severe market changes in 2008 and 2012, particularly as mortgage amounts ballooned during this time (Lusardi, et. al., 2019). Both of these financial catastrophes could

certainly lead to financial insecurities, a need to return to work and/or liquidate assets, and psychological and social strain. Additionally, some individuals who experienced major losses in these events and needed to return to work to rebuild their assets recognized a need to refresh or further their education to be competitive in the current job markets. Some returned to pursue new college degrees and likely took on debt as a result.

For education, there was an observed effect for life satisfaction on well-being scores, which became stronger as the level of education increased. Again, recall that life satisfaction in the current study was heavily dependent on job satisfaction and satisfaction with relationships. Increased income is a documented reason for pursuing a college or graduate level education, and it is reasonable to believe that by pursuing a higher paying career, one would in turn be more satisfied with this route than they might be otherwise, leading to strengthened relationships with life satisfaction and well-being (Clapp, 1998; Delucchi & Korgen, 2002; Gardner, Jewler, & Barefoot, 2007; Phinney, Dennis & Osorio, 2006; Roberts & Jones, 2001; Schultz & Higbee, 2007; Twenge & Donnelly, 2016). We also noticed differences between those with a high school education or less and those with college degrees. Specifically, those with more education were more likely to be in higher debt categories and report better well-being. We expected that more debt would be related to worse well-being, citing the strain of debt and established negative health consequences. However, this is where the role of attitudes likely appears and the “why” becomes more important. Being in debt for reasons we accept as necessary may be easier to manage than being in debt for reasons out of our control. Carrying a large mortgage or student debt for a house or career we desire may not have the same detrimental effects as being in debt due to a large, unexpected medical bill or out of control spending behaviors. We may view the former reasons as necessary,

worthy, or as a good return of investment and have fewer negative associations with this kind of debt (Bowers & Bergman, 2016; Green, et. al., 2007).

Furthermore, age is clearly an important factor when assessing social, psychological, and financial well-being and in the present study, it moderated all relationships between debt, attitudes, and well-being. Across models, we saw a pattern of debt decreasing with age. It is possible that we are seeing generational differences in how young people used to be more financially prepared by schools and parents, with an emphasis on financial responsibility. It is also likely that the oldest participants in this study formed the bulk of their financial education attitudes prior to the increased credit availability with more lax criteria than the younger participants. Credit was not the same concept in the 1950's as it is in the 2000's, it was more difficult to get a credit card, much less a wallet full of cards from multiple companies. We saw a moderating influence of student status on the debt and financial satisfaction relationship, where relationships were strengthened in those that would have money left compared to the other categories. Being a student had a negative effect on the financial satisfaction and debt category relationship. This would indicate that we need to provide better financial education to young people, potentially exploring concepts of budgeting, taxes, investments, spending analysis, and how credit and borrowing actually work. High schools could easily build these concepts back into curriculum, and colleges could offer coursework related to financial health and preparedness, possibly even incorporating the psychology of well-being in financial domains.

When discussing debt, it may be important to take the reason for debt into consideration. Building on a resource perspective, debt may be incurred strategically, or with a certain purpose such as building credit. This debt may be better managed than unexpectedly incurred debt, and thus, have a smaller influence on the resultant health

effects (Tay, et. al., 2017). The theoretical background provided by Shim and colleagues (2009) laid a solid rationale for the models tested in this study. Combined with the results from Bridges and Disney (2010), we can see that there is a role for attitudes in well-being relationships. Considering the reasons for behaviors like spending and debt accumulation is important when evaluating the health effects of carrying debt and engaging in debt accruing behaviors.

Limitations and Future Directions

As with any study, several limitations were present when evaluating the data for this project. There are several important considerations when discussing debt that were not measured, such as inclusion of major expenditures like healthcare and catastrophic medical debt. Furthermore, we were lacking a number of student specific concerns that warrant investigation including detail on attitude and reasoning for educational pursuits and resultant debt. Additionally, unraveling the related concepts to major contributors in the present study such as generational attitude and educational differences in age could lead to a better understanding of how age interacts with well-being.

A potential major contributor to determining consequences of debt is medically related expenses. Medical debt is a significant problem in the United States, with uninsured and young people being particularly vulnerable, up to the point of bankruptcy (Collins, et. al., 2004; Doty, Edwards & Holmgren, 2005; Heffler, et. al., 2005; Himmelstein, et. al., 2004; May & Cunningham, 2004; O'Toole, et. al., 2004; Schoen, et. al., 2005, Tu, 2004). Additionally, many may perceive this debt as burdensome considering it may be unexpected, accumulate rapidly, be in tremendous excess to what an insurance plan covers (or worsened by not having insurance), and be considered excessive in itself. Additionally, previous research shows that those with medical debt may face problems of access including denial of care, delay of treatment, or hostile

treatment as a result (O'Toole, et. al., 2004; Doty, et. al., 2005; Herman, et. al., 2011). While we sometimes expect this problem to be more prevalent in younger people due to lower incomes, fluctuating employment, or need for emergency services, we must not discount the effect on older adults and geriatric populations. Although there are public programs available, costs are not always covered and often operate as supplemental insurance. Private insurance could be far beyond the average elderly person's budget. Although we saw that older adults were more financially satisfied, we may see a decrease in that measurement as younger adults seem to be less financially educated than those of previous generations. Future research could investigate how financial knowledge interventions affect younger people and track their financial preparedness and satisfaction over time.

In addition, this dataset did not have a sufficient number of student respondents at each wave (see Table 2), which led to an inability to assess unique student circumstances or draw solid conclusions based on education related debt. This is an issue that certainly warrants further investigation considering the current mental health crisis among students and rising education costs. The idea that reasons for debt mitigate the negative consequences certainly applies to student debtors as their primary motivation tends to be securing increased wages, and many may see the initial debt as an investment. It would be worthwhile to evaluate student debtors over time to assess the degree to which the debt influences well-being, as well as changes in attitudes toward the debt. In addition, it is important to note that there have been changes to the amount of debt load carried by students, related to the increased costs of pursuing education and increased utilization of education loans. However, while education costs have tripled, income has not. Thus, it is reasonable to assume that the burden of debt may be weighing more heavily on today's students influencing their perceptions of well-being and

psychosocial distress. Studying these factors in a recent population may elucidate stronger relationships and better demonstrate how the rising costs and resultant increased debt is impacting our young people. Furthermore, it may be that education level is a confounding variable when discussing issues of debt and satisfaction, as more education could be related to better financial preparedness and increased knowledge of financial domains, or higher incomes, and potentially leading to higher levels of financial satisfaction.

Relatedly, it may also be interesting to assess differences in traditional and non-traditional students. Since we saw an effect of age on well-being and debt, it would be interesting to see if that effect holds within students, and assess their financial well-being before they entered school and also gauge their attitudes about taking on education debt, recording their reasons for attendance. Additionally, when discussing education debt, it would be helpful to assess if the individual secured the career and/or income they were seeking when motivated to pursue their education. For example, a person may view education loans as an investment in their future, citing increased earning potential and job satisfaction as valid reasons for taking on the debt initially. Should this goal be achieved, resulting in the individual securing the career and salary desired, they may view the debt more positively and thus, experience fewer consequences psychosocially or physically. In contrast, if the goal is not achieved, where the individual may drop out, and not gain the employment or salary desired, the consequences of education debt may be exacerbated and the individual is more vulnerable to the effects of burdensome debt. While measures of job success and satisfaction, as well as whether or not the individual's goal was obtained, and if they are satisfied with this success, are not present in the MIDUS data, future studies could expand on these measures and analyze how the burdens change based on job satisfaction and performance. Given that COR in

organizational contexts has become a notable theory (Hobfall, et. al., 2018), future research could base exploration of job satisfaction on this model to probe into differences in well-being, as well as the extent to which individuals or groups are affected by debt, especially student debt, in individuals who report differing levels of job satisfaction and performance.

In addition, loan counseling for college students is often a click-through agreement with minimal information given at entrance counseling and more details and instructions provided at the exit. It may be most advantageous to provide the exit counseling information at the time of securing the first loan instead, to better prepare the student for what interest rates will add to their balance, providing pay off timetables, etc. Furthermore, having a face to face meeting with a loan counselor or financial advisor could yield better preparedness as compared to an online only program. We know that overestimations of future income and underestimations of how long it takes to discharge debt occur and these seem to be common among students (Seaward & Kemp, 2000). Therefore, more extensive education prior to accruing debt may be pertinent to better prepare students for how their loans will impact their futures post-graduation. Issues of over- or underestimation of debt and income could also have influenced the data and results in this study, and self-report data should be interpreted with caution. In addition, individuals may be improperly estimating their assets, and it could be prudent to build in some sort of income/debt verification during or after data collection to verify if individuals had, in fact, classified themselves in the correct categories of debt and reported accurate amounts. It may also be pertinent to re-examine effects of income and sex in a modern sample to capture effects of the gender wage gap, declines in marriage rates which lead to combined incomes, changes in spending behaviors, and changes in attitudes about financial preparedness, manageability, and satisfaction.

It is possible that the infrequent assessment periods, as well as the extended data collection times that also varied between waves, and the limitation of “midlife” age to begin may have led to problems in modeling debt and well-being relationships, specifically amongst student populations. In the future, these measures could be assessed more often, possibly yearly, to study changes in well-being, debt, and attitudes toward the debt whilst in school and beyond. Assessing whether the goal for attending college was obtained should influence an individual’s attitudes and overall sense of well-being. Furthermore, assessing how the challenges of college relate to well-being over time would be interesting. Pursuing an education can be stressful for many reasons, including debt accrual, financial strain, feelings of being overwhelmed and burned out, social isolation, and job searches. The stress of being a student could be compared to a traditional workforce member, or comparisons between students who work and/or have families to support could be compared to traditional students. Additionally, being able to compare the changes that happen immediately after graduation as students are entering (or re-entering) the workforce may elucidate details on the role of attitudes toward debt and if any changes in their income are influencing well-being. Regular assessment times at shorter intervals may be able to capture the immediate effects happening during these transition times (first entering college, college to graduate school, college to work, and graduate school to work). These important transition times would be key to measure attitudes regarding debt, especially for those pursuing graduate level degrees. It would be interesting to see how the attitudes are reported prior to taking loans, while in school, and then post-graduation. Here again, we suspect the achievement of career goals would influence self-reported attitudes and measures of well-being.

Additionally, more research focusing on graduate students’ well-being, health, and attitudes is needed. It is possible that graduate students have better attitudes toward

accumulating debt, such that they are more debt tolerant and/or positive, as they are viewing these amounts to be an investment in both future income and job satisfaction, at least while they are in school. However, should the individual overestimate their potential income, fail to complete the degree program, or not be able to secure the desired employment, one would expect a negative shift in attitudes toward accumulated debt. As graduate students tend to amass high amounts of student debt, while enduring low income and highly stressful programs, their mental health and well-being are of great concern. Furthermore, it would be pertinent to assess well-being of students by evaluating their feelings of being values contributors in their lab/school environments, assessing their relationships with peers and mentors, specifically looking for perceived social support, and their stress levels. These measures may be influential factors when discussing students' well-being and should be explored. This information may also elucidate differences between programs of study and psychological demand between these fields, possibly leading to better measures of evaluating potential success in graduate school and helping to maintain well-being while attending programs.

In addition, this sample was not an accurate representation of the racial diversity of America today and further investigation into how race affects debt could be helpful in identifying areas where we still need to improve equal opportunity, particularly in education. Further studies could investigate how scholarships, fellowships, and opportunities designed for people of color are helping individuals pursue higher education and where more or better opportunities need to be implemented to give everyone their best chance at pursuing an education.

Lastly, an important caveat to this project was that multiple analyses were conducted rather than running a singular large model for several reasons including inconsistency in desired variables across each wave of measurement, addressing

specific hypotheses, and constraints in available technology to assess the desired variables in one total model. As noted in the Results section, some significant effects resulted in very small effect sizes and may not be meaningful results. As such and considering the large sample size of the MIDUS dataset, the results should be interpreted cautiously and replication in additional samples would be recommended prior to making more concrete judgments about the findings on debt and well-being in the current study.

Conclusion

Overall, it is clear that debt can affect well-being. We found significant relationships between debt and well-being, indicating debt does have a negative effect on anxiety, depression, social and psychological well-being. We found differences in some aspects of student status, but the relationships were not stronger for education debt as hypothesized. Additionally, we did find support for the mediating role of attitude in the debt and well-being relationships, as well as moderating effects of demographic variables including age and education level.

Attitudes regarding the debt, both before and during the debt experience may be important in determining who is more susceptible to the negative consequences of debt, and who may be better able to manage it. In the future, research should continue to parse out the relationships between debt and health, with a special focus on especially financially vulnerable populations such as students, the underemployed, younger adults, and older adults. Student research should focus on differences in health between graduate and undergraduate, programs of study, income level, attitudes, and with degrees of social support as well as demographic differences such as location/cost of living, sex, and age.

It is important to note that while there are many negative consequences of debt, we can see that there is an important role for attitudes in debt related mental health

consequences (Arnett, 2000; Bridges & Disney, 2010; Schoeni & Ross, 2005; Shim, et. al., 2009). Future work should assess how one feels about accruing debt, specifically if the purpose of doing so influences their happiness or life satisfaction or has potential to impact their life or financial satisfaction. As an example, the graduate student that amassed \$100,000 in loans during their schooling could be more accepting of taking on this debt if the goal was obtaining a degree that would allow them to make a significant contribution in a way that was meaningful to them, or help secure higher earning potential, may not feel as negatively toward carrying and repaying the debt as would an uninsured, underemployed individual that had a catastrophic injury with the same amount in medical expenses. It is possible that this difference in attitude toward the debt could lead to different outcomes in terms of well-being and psychological or physical distress.

Certainly, the goal is to improve well-being across a variety of circumstances, and debt should not be neglected considering we will all likely be in debt at some point. Improvements in financial education from simple money management and budgeting, to more advanced knowledge of interest rates and loan counseling, should be more readily available, especially to our young people. It would be a great thing to see financial satisfaction increase with age akin to how life satisfaction strengthened over time in our sample. Hopefully, this field of research can help to improve mental health and reduce the burden of debt while calling attention to the need for better health resources for vulnerable populations and the out of control costs of education.

Appendix A

Sample R Script for MLM Analysis

```
library(nlme)
```

Null model

```
modd<-gls(y ~ 1, method = "ML", na.action="na.omit", data=data) summary(modd)
```

Model 2

```
modd2<- lme(y ~ 1, data=data, method = "ML", na.action="na.omit", random= ~1 | ID1)  
summary(modd2)
```

model 3

```
modd3<- lme(y ~ x, data=data, method = "ML", na.action="na.omit", random= (~1 | ID1))  
summary(modd3)
```

Test fixed and random factors

Fixed

```
mdebtfi<- lme(y ~ xcv, random = ~1|ID1, data=data, method= "ML", na.action= "na.omit")  
summary(mdebtfi)
```

Random

```
mdebtri<-lme(y ~ xcv, data=data, method = "ML", na.action="na.omit", random= ~xcv | ID1) sum  
mary(mdebtri)
```

Unconditional Growth Model

Time fixed

```
moddu<- lme(y ~ time, random = ~1|ID1, data=data, method= "ML", na.action= "na.omit")  
summary(moddu)
```

Time random

```
moddur<-lme(y ~ time, data=data, method = "ML", na.action="na.omit", random= ~ time | ID1)  
summary(moddur)
```

Compare models

```
anova(moddu, moddur)
```

Conditional Growth Model

All fixed factors

```
mdebtc<- lme(y ~ x + time + xcv + xcv2, data=data, method = "ML", na.action="na.omit", rando  
m= (~1 | ID1))  
summary(mdebtc)
```

Any random factors, (include in random list)

```
mdebtc<- lme(y ~ x + time + xcv + xcv2, data=data, method = "ML", na.action="na.omit", rando  
m= (xcv | ID1))  
summary(mdebtc)
```


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Biographical Information

Kelley received her Bachelor of Arts in Psychology from the University of Texas at Austin in 2012, her Master of Science in Experimental Psychology from the University of Texas at Arlington in 2018, and her Doctor of Philosophy in Experimental Psychology (health and neuroscience track) from the University of Texas at Arlington in 2020. Over the course of her education, she has completed research projects concerning canine cognition/genetics/working ability, clinical psychology, chronic pain, molecular mechanisms of drug addiction, and health outcomes and behavior in both clinical and pre-clinical models.

She is interested in a variety of behavioral aspects in both humans and animals, pain and health outcomes research, statistical methods, research design, and neurodegenerative diseases. Additionally, Kelley taught statistics and research design numerous times in her graduate career and enjoys both using and teaching statistics in a variety of settings.