The effect of overspending on retirement preparation

by

Christina Lynn

B.A., University of Wisconsin-Madison, 2003
M.S., South Dakota State University, 2019

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Personal Financial Planning
College of Health and Human Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2023

Abstract

The current study addressed the research question of how overspending was related to retirement preparation. A commonsense answer to this question would be clear: overspending should negatively impact retirement preparation. However, the existing body of knowledge did not provide evidence to support or deny this assumption. The current study tested two different theoretical frameworks, the Behavioral Life Cycle Hypothesis and Life History Theory, to answer this research question and found both to provide valuable insight. Three data sets were used, including the Survey of Household Economic Decisionmaking (SHED), the Survey of Consumer Sciences (SCF), and the National Financial Capability Study (NFCS), to conduct logit and OLS regressions in testing the hypotheses. The main findings were (a) a short-term time preference, poor economic expectations, risky behavior, and retirement life expectancy were found to be strong positive predictors of overspending, and (b) partial support for overspending being negatively associated with retirement preparation. Because the overspending measurements were only negatively related to retirement preparation in a little over half the analyses, it pointed to a new cultural norm where one's overspending behavior does not necessarily reflect one's retirement preparation behavior. Implications of the current study included support for tightening credit card policy, exposing a lack of awareness on overspending as well as providing practical approaches for avoiding overspending behavior, and the value of using multiple data sets as a robustness check.

The effect of overspending on retirement preparation

by

Christina Lynn

B.A., University of Wisconsin-Madison, 2003
M.S., South Dakota State University, 2019

A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Personal Financial Planning
College of Health and Human Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2023

Approved by:

Major Professor
Dr. Stuart Heckman

Copyright

Abstract

The current study addressed the research question of how overspending was related to retirement preparation. A commonsense answer to this question would be clear: overspending should negatively impact retirement preparation. However, the existing body of knowledge did not provide evidence to support or deny this assumption. The current study tested two different theoretical frameworks, the Behavioral Life Cycle Hypothesis and Life History Theory, to answer this research question and found both to provide valuable insight. Three data sets were used, including the Survey of Household Economic Decisionmaking (SHED), the Survey of Consumer Sciences (SCF), and the National Financial Capability Study (NFCS), to conduct logit and OLS regressions in testing the hypotheses. The main findings were (a) a short-term time preference, poor economic expectations, risky behavior, and retirement life expectancy were found to be strong positive predictors of overspending, and (b) partial support for overspending being negatively associated with retirement preparation. Because the overspending measurements were only negatively related to retirement preparation in a little over half the analyses, it pointed to a new cultural norm where one's overspending behavior does not necessarily reflect one's retirement preparation behavior. Implications of the current study included support for tightening credit card policy, exposing a lack of awareness on overspending as well as providing practical approaches for avoiding overspending behavior, and the value of using multiple data sets as a robustness check.

Table of Contents

List of Figures

List of Tables

Acknowledgements

I am grateful for the expertise and guidance provided by my dissertation committee members: Dr. Stuart Heckman, Dr. Derek Lawson, Dr. Michael Kothakota, and Dr. Gary Brase. A special thank you to Dr. Kothakota for his mentorship in academia, as well as to Dr. Megan McCoy for inspiring and mentoring me. Thank you to Dr. Martin Seay for introducing me to the Ph.D. PFP program at Kansas State University and his leadership there. Lastly, thank you to my cohort, Jodi, Ives, Mindy, Tim, Josh, and Matt for their support and camaraderie throughout the journey.

Dedication

I dedicate my dissertation work to my family. To my husband, Trey, who shows me what true love looks like every day. To our children, Kiana and Kipp, who put up with my mad-scientist ways with a smile. To my mom, who quoted Rocky Balboa at just the right times. To my dad and sisters, who graciously listened to stories of my Ph.D. journey and cheered me on along the way.

Chapter 1 - Introduction

The Star family makes ends meet, but with a thin margin. In their 3-bedroom 2-bath house, there is always food on the table, fuel in the gas tank, and cute shoes on the children's feet. However, the Star parents are stressed about money, never feeling like they have enough. The Star family's financial advisor identified the source of their financial insecurity. He thinks that instead of going on that hunting trip, the Star father should have increased his 401k contributions. Instead of upgrading the living room furniture set, the Star mother should have tucked the money away in an emergency fund. The Star family disagrees, arguing that they got a good deal, and they deserved to treat themselves. What is the truth?

Low financial literacy, easy access to credit, and social media envy may be contributing factors in the temptation to spend money beyond the budget. Rising levels of inflation magnify the concern regarding overspending – the same goods and services cost more today than they did yesterday. While overspending may bring value to the consumer's life in terms of current consumption and its associated utility, there may also be a price to pay beyond the price tag itself. The question is: how does overspending affect savings behavior? Is there a long-term impact to consider?

The current study examined the relationship between overspending and retirement preparation. This paper filled a research gap by interconnecting these topics using data from the Survey of Household Economics and Decisionmaking (SHED), the Survey of Consumer Finances (SCF), and the National Financial Capability Study (NFCS) to consider the impact of overspending on retirement preparation. The Behavioral Life Cycle Hypothesis (Shefrin & Thaler, 1988) as well as the Life History Theory (Stearns, 2000) provided the theoretical frameworks for analyzing overspending and its relationship with retirement preparation. It was

hypothesized that overspending would have a negative impact on retirement preparation. To judge the influence of overspending on retirement preparation, multivariate analyses of the overspending-retirement preparation relationship were conducted in each of the three data sets.

Statement of the Problem

The problem addressed in the current study was twofold. The first problem was the trend of under-saving for retirement. This problem has been well documented in the research literature (e.g., Kenneth et al., 2021). The second problem was overspending. Overspending has been studied by researchers and the empirical evidence suggests that fewer than half of households struggle with overspending (Sui et al., 2021). However, overspending has not been studied to the extent that retirement preparation has, and the link between the two has not yet been made clear.

Under-Saving for Retirement

Under-saving for retirement has been a complex problem in the U.S. The lack of savings behavior has been on the radar for financial advisors, academics, and institutions for decades (Yuh & Hanna, 2010). This problem has likely been camouflaged in the typical financial advising community because of a financial advisor's economic incentive to work with larger net worth clients. West (2012) explained the reason behind why lower net worth investors (i.e., those more likely to be under-saving) remained in the shadows and outside the influence or direct observation of a financial advisor: "we find that a combination of lower aggregate costs per investor and higher expected fee income motivates advisors to target higher net worth investors" (p. 50). The following areas were briefly explored to understand the extent of the overspending problem in our country: inadequate retirement savings, longevity risk, inflation, and lack of awareness.

Evidence of Inadequate Retirement Savings

The under-saving problem became apparent when turning to national studies on retirement preparation, which sounded the alarm bell (Benartzi & Thaler, 2013). One quarter of non-retirees had no retirement savings at all, and over one-third felt behind in preparing for retirement (Kenneth et al., 2021). Other studies suggested a higher percentage of households felt inadequate when it comes to retirement preparation (Oakley & Kenneally, 2019). Using a more objective measure with SCF data, Kim et al. (2016) found that 58 percent of households were under-prepared for retirement. Health and Retirement Study (HRS) data revealed between 42 to 62 percent of households may not reach a 75 percent replacement rate of pre-retirement income (A. Chen, Munnell, & Sanzenbacher, 2018). The Federal Reserve Board noted general deficient savings, not limited to retirement savings only, as a recurring theme in their Survey of Household Economics and Decisionmaking (Larrimore, 2016).

Racial and gender inequality also appear as issues in the retirement preparation crisis. The Federal Reserve reported that fewer women (i.e., 34 percent) report to be on track for retirement savings, compared to 38 percent of men (Fernandez & Tranfaglia, 2020). Regarding racial inequality, Black and Hispanic non-retirees were less likely to have retirement savings and feel on tack regarding retirement compared to their White and Asian counterparts (Fernandez & Tranfaglia, 2020).

Longevity Risk

Several additional factors have exacerbated the retirement preparation problem. Individuals are living longer, causing longevity to carry more weight as a risk factor in financial plans (Kim & Hanna, 2015; Lim & Lee, 2021). Adams and Rau (2011) made the point that modern retirement planning requires a longer time horizon compared to when the field of

retirement planning was established. Households' savings rates have not increased to adjust for longevity risk accordingly (Pfau, 2018).

Inflation

The problem of under-saving for retirement has been made worse by rising levels of inflation. Even a fully funded retirement plan could be at risk if inflation was not adequately planned for because inflation reduces the purchasing power of the amount of goods and services (Bennett, 2021). The cost of funding the first year of consumption costs in retirement was less than future years. Prior to the notable increase in inflation that began in 2021, it was common for financial planners to assume a two-to-three percent level of inflation. However, inflation has been up over six percent as of January 2023 over a twelve-month period (Bureau of Labor Statistics, 2023), marking higher inflation rates than have been seen in the last few decades. The historical rates assumed by financial advisors of two-to-three percent may have overestimated the probability of success of a retirement plan if inflation levels resemble the higher rates presently seen.

Lack of Awareness

A lack of understanding of retirement preparation by the average household has contributed to the under-saving problem. While most households self-reported as financially stable, (O'Connor et al., 2019) suggested a disconnect between perception and reality one's financial vulnerability. Recent studies found, using NFCS data, that only 55 percent of households have calculated their retirement needs (Fan et al., 2022). How could a household be adequately prepared for retirement if the total savings needed was unknown? The cause of the lack of awareness was beyond the scope of the current study, but it was noted as a contributing factor to the under-savings problem.

Other Causes of Concern in Under-Saving for Retirement

Additional factors add further to the concern of households being underprepared for retirement. Scholars have issued a warning about how low bond yields negatively impact retirement preparation and called for a "sharp" increase in savings rates if these low rates persist (Blanchett et al., 2017). Blanchett et al. (2017) concluded that the combination of increased longevity and low bond yields doubled the cost of funding retirement. Healthcare costs have also been a costly component of retirement, "…consuming an increasing amount of what are often fixed incomes for seniors" (Bond & Doonan, 2020), which have not been consistently accounted for in retirement plans. Lastly, Social Security has been a principal component of most retirement plans. Retirement preparation research has questioned the longevity of the Social Security benefit system, raising further concerns about retirement preparation (Adams & Rau, 2011; Hira, Rock, & Loibl, 2009; Kim & Hanna, 2015; Vasudeva, 2021). If many households already have deficient retirement savings habits, the impact of these additional factors threaten to make retirement even more expensive.

Overspending

Overspending was the second problem addressed in the current study. In personal finance research, overspending has been a concern because it is assumed link to deficient savings. Han et al. (2018) suggested that compared to those that have more conservative levels of consumption, the US in general appears to be a "now-focused consumer culture." Sui et al. (2021) explained that overspending research is both timely and important because exposing the overspending problem may trigger households to improve self-control in their personal finances. Overspending using credit cards has been particularly alarming (Ming et al., 2021) due to the high costs associated with it.

Researchers expressed concern that overspending is both commonplace and self-harming to households (Peetz et al., 2021). Overspending, researchers fear, leads to financial hardship, which negatively affects life satisfaction, well-being, and health (Achtziger, 2022). Furthermore, overspending may foster financially vulnerability (e.g., being less prepared for a job loss or interest rate hike) (Achtziger, 2022), and affect the accumulation of wealth (Zan & Hanna, 2008) – both of which can undermine retirement preparation. Overspending has become a problem world-wide (Achtziger, 2022), as well as at home – 40 percent of US households reported feeling like they overspend and regret it (Sui et al., 2021). Magnifying the problem is the fact that middle-aged adults tend to be the greatest over-spenders (Sui et al., 2021), which is considered a critical stage in the life cycle to be saving for retirement (Ando & Modigliani, 1963).

Purpose and Justification of the Study

The purpose of the current study was to gain insight into how overspending contributes to under-saving for retirement. Overspending may be insignificant in isolated events but repeated over a lifetime may contribute to the under-preparation for retirement problem identified. Given the critical importance of retirement preparation, the current study tested the legitimacy of the connection between overspending and retirement preparation, in the hopes of better understanding the nature of retirement preparation.

Background

How long has substandard retirement preparation been a problem in the US? The crisis seems to have slowly developed since the shift from defined benefit (DB) to defined contribution (DC) plans by employers. Pension systems saw major change was required to handle the aging population, leading to financial reforms resulting in the abandonment of DB pensions and the adoption of DC plans (Van Dalen et al., 2010). This shifted financial responsibility from the

pension plan (i.e., the employer) to the employee (Van Dalen et al., 2010). DB plans offered guarantees that made it easy for pensioners to budget around, which has not been the case with DC plans (Adams & Rau, 2011). Thaler and Benartzi (2004) suggested the switch placed the responsibility of planning for retirement on the employee. Many retirement preparation researchers have claimed this to be the root cause of the current retirement preparation crisis (Adams & Rau, 2011; Kim & Hanna, 2015; Lim & Lee, 2021; Oakley & Kenneally, 2019; Sturr et al., 2021). By 1998, one study found around half or less of non-retired were on track for retirement (Yao et al., 2003). Currently, only 15 percent of employees working in the private sector are offered a defined benefit plan (Walsh & Beach, 2021), and DC plans are now twice as common as DB plans (Kenneth et al., 2021).

There have been various explanations why households have reacted so poorly to the responsibility of retirement preparation. One possibility has been that households were not taught the financial planning skills needed, nor experienced the socialization process of retirement preparation. Other explanations pointed to disinterest, a lack of financial knowledge, and poor investment experience (Morgan & Eckert, 2004). Thaler and Benartzi (2004) suggested self-control as a possible behavioral explanation for substandard retirement savings. They explained that traditional economic theory assumed individuals would make optimal decisions around savings and consumption, but self-control levels have questioned the legitimacy of the economic model in the real world. It is interesting to note that the shift from DB to DC plans and the resulting retirement preparation crisis has not been unique to the U.S. Similar studies pointed to the same concern in South Africa (Reyers, 2018), Malaysia (Kimiyagahlam et al., 2019), the Netherlands (Hershey et al., 2010; Van Dalen et al., 2010), Israel (Segel-Karpas & Werner, 2014), and China (Chou et al., 2015).

The Gap in Literature

Prior Related Studies

Researchers have studied the relationship between overspending and retirement preparation. Han et al. (2018) explored the trend of overconsumption and under-saving and described a tendency to overconsume due to witnessing others overconsume. Gathergood (2012) explored the relationship between self-control and over-indebtedness (i.e., overspending) using data from the U.K and found evidence that impulsive spenders were more likely to be behind in debt payments and self-report over-indebtedness problems.

Researchers have also studied the relationship between self-control and retirement preparation. Kim et al. (2016) studied the role of self-control on retirement preparation in the US. They used data from the SCF and operationalized retirement preparation with an income replacement ratio. Rha et al. (2006) studied the influence of self-control on savings behavior, also using SCF data. Kim and Hanna (2017) replicated the Rha et al., (2006) study using more recent SCF data, but still operationalizing self-control in the same way with savings goals, foreseeable expenses, and savings rules. Both the Kim and Hanna (2017) study and the Rha et al. (2006) study used the BLCH as a theoretical framework. All three studies (Kim et al., 2016; Kim and Hanna, 2017; Rha et al.., 2006) found that high levels of self-control had a significant positive relationship with retirement preparation. However, Kim and Hanna's (2017) results were partially inconsistent with the original study it replicated, Rha et al. (2006). Kim and Hanna (2017) found that some self-control measures, including most savings goals and foreseeable major expenses, did not have a significant relationship with savings behavior. Although their results were inconsistent with the original Rha et al. (2006) study, they still suggested that self-control, as measured by savings rules, had a strong positive effect on saving. The inconsistencies

suggested that sustainably employing self-control in the form of savings rules was challenging for clients (Kim & Hanna, 2017).

A few studies combined elements of self-control, spending, and savings behavior. At least two such studies found that low levels of self-control predicted overspending (Achtziger et al., 2015; Frigerio et al., 2020). Another study explored the relationship between self-control and wealth using HRS data and found that self-control failures were inversely related to wealth (Biljanovska & Palligkinis, 2018). Using SCF data, Fisher and Montalto (2010) found that a longer savings horizon had a strong positive relationship on savings behavior. No studies were found that combined all the elements of self-control, overspending, and retirement preparation. However, the empirical evidence of these constructs generally demonstrated a positive relationship between retirement adequacy and self-control.

Contribution of the Current Study to the Body of Knowledge

The current study uniquely combined the work previously mentioned on overspending and retirement preparation by applying the Behavioral Life Cycle Hypothesis as a theoretical framework. Self-control was operationalized in a new way with overspending. The current study also contributed to the body of knowledge by overlaying the Life History Theory, a theory borrowed from biology and psychology fields, to provide a more dynamic exploration of the relationship between overspending and retirement preparation. Additionally, the current study is among the first to apply LHT to personal finance research. The current study used three nationally representative data sets, allowing for enhanced robustness checks and a more dynamic measurement of subjective and objective measures of retirement preparation.

Need for the Study

Conventional wisdom among financial advisors would suggest overspending is a cause of under-saving for retirement. How true is that assumption? Are the two, in fact, related? What other nuances could be detected regarding overspending and retirement preparation that may help inform policy makers and financial advisors in their practice? The current study sheds light on these two national concerns to better understand the nature of the problem. Furthermore, it is common for financial advisors to feel stumped about how to help certain clients that overspend. By better understanding overspending and its relationship to long-term financial planning, the current study helps address that common client conundrum.

Retirement preparation has affected households in many ways. In addition to the objective consequences of having insufficient retirement funds, retirement preparation has caused stress. Around 30 percent of households felt emotional or mental stress due to retirement preparation (Greenwald, 2017). Greenwald (2017) identified both a negative health impact as well as also decreased productivity levels at work due to retirement preparation-related stress. Beyond stress-related factors, there has been a concern about covering basic expenditures. If retirees are not adequately prepared for retirement, it may prevent them from buying household necessities such as food and medication (Segel-Karpas & Werner, 2014).

Introduction to Theoretical Framework

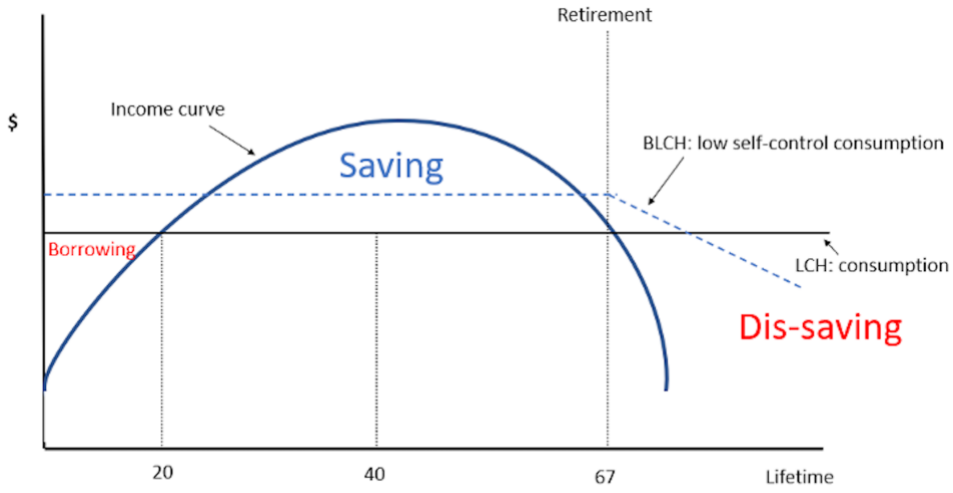
Behavioral Life Cycle Hypothesis

Insight from the Behavioral Life cycle Hypothesis (BLCH) (Shefrin & Thaler, 1988) provided a theoretical framework for studying how self-control relates to overspending. To understand the origin of the BLCH, it was necessary to first review the underlying economic theory: the Life Cycle Hypothesis (LCH) (Ando & Modigliani, 1963). Ando and Modigliani

(1963) wrote the seminal work on the LCH, which is a normative theory explaining the consumption and saving behaviors of individuals over time (Yuh & Hanna, 2010). According to the LCH, individuals choose a consumption level that maximizes expected lifetime utility (Yuh & Hanna, 2010). A central tenant of the LCH is that consumption is smoothed over time (Ando & Modigliani, 1963). The theory also accounts for the resource changes that typically occur throughout the life cycle. Some general patterns emerged when considering income over the life cycle. A principal pattern was that at younger ages, individuals tend to have higher debt and lower income. Figure 1.1 depicted the borrowing that occurs in early years. Later in their career, when income is higher, individuals have more opportunity to save in preparation for retirement when dissaving occurs again. This traditional model assumed money is perceived as fungible and people completely rational (Strömbäck et al., 2017). The LCH dictated a flat line for consumption, assuming that consumers have sufficient levels of self-control.

Figure 1.1.

BLCH and LCH Conceptual Models of Consumption



Note. This was adapted from www.economicshelp.org LCH model.

Arguably, normative theory alone did not explain income and consumption patterns (Shefrin & Thaler, 1988). Traditional economic theory overestimated a consumer's level of sophistication in decision making and erroneously assumes individuals act in alignment with intentions (Laibson et al., 1998). Rather, behavioral factors caused deviation from the prescriptive model of the LCH. Ballinger et al. (2011) explained that behavioral variation due to human cognition impacts one's consumption and savings rates. The BLCH recognized how people often act irrationally. Retirement saving may only be perceived as important in relation to how much consumers value the distal goal of adequate, sustainable income in retirement (Krijnen et al., 2022). In contrast to the flat consumption line of the LCH, the consumption line under the BLCH model would not be straight. Consumption may be higher in pre-retirement, due to low levels of self-control leading to overspending, and then decline in later years due to deficient savings. In summary, the BLCH was an extension of the LCH to account for the behavioral deviations from the traditional model (Strömbäck et al., 2017).

There have been conflicting views on observed savings behavior and whether it follows the BLCH or LCH model. Some researchers concluded that contrary to the LCH, the value of retirees' financial assets holds steady or even increases over time which suggests the dis-saving modeled in retirement years may not occur as predicted (Alonso-García et al., 2021; Browning et al., 2016; Lloyd, 2018). This may have been due in part to a trend for retirees to spend less and manage with less money than they thought they needed (Lloyd, 2018; O'Neill & Gillen, 2020). Bequest motives and the need for continued precautionary savings to handle uncertainty regarding future health costs also suggested a need to modify the LCH. Other researchers agreed that the LCH does not hold up under real world behavior, but for a distinct reason, namely due to the lack of prescribed retirement savings goals (Benartzi & Thaler, 2013; Brüggen et al., 2017;

Rhee & Boivie, 2016; Yuh & Hanna, 2010). Yet still other researchers, with the benefit of using panel data, found that over 80 percent of households have adequate wealth, suggesting savings behavior that aligned with the LCH (Scholz et al., 2006). Savings behavior over the life cycle has been a large-scale and dynamic topic which can yield conflicting results when studied from different perspectives.

Dual-Preference Framework

The BLCH identified a concept of the dual-preference framework, where an individual's orientation is either short-term or long-term. Shefrin and Thaler (1988) posited that within everyone exists two conflicting forces: a *planner* with a long-term orientation, and a *doer* with a short-term orientation. These internal forces are at odds with each other. The *doer* prefers instant gratification, in contrast to the *planner's* preference for ensuring provisions for tomorrow. According to the BLCH, there are three factors that contribute to the short or long-term orientation of one's consumption preference: self-control, framing, and mental accounting (Shefrin & Thaler, 1988). The current study focused on the influence of self-control within the dual-preference framework, rather than framing or mental accounting. The reason for the focus on self-control was to build upon prior research (e.g., Biljanovska & Palligkinis, 2018; Fujita & Carnevale, 2012; Rha et al., 2006; Strömbäck et al., 2017) and using available measurements in the data sets.

Self-Control

According to the theoretical framework, self-control was one of the primary reasons for the failure to set prudent savings rates. Sui et al., (2021) suggested that to smooth consumption over a lifetime, consumers must control overspending behaviors. Within the theoretical framework of the BLCH, self-control is the ability of our future self (the *planner*) to control our

current self (the *doer*), exposing a natural pull between the two (Strömbäck et al., 2017). Self-control is the behavior resulting from a decision between consumption versus savings (Laibson et al., 1998), albeit likely a subconscious decision. Self-control manifests as the ability to resist temptation and overcome first impulses (Fujita & Carnevale, 2012; Kokkoris et al., 2019). A high level of self-control is associated with the "abstinence from hedonic consumption" (Vosgerau et al., 2020). Hedonic consumption is consumption for the purpose of experiencing happiness and is beyond one's basic needs (MBA Skool Team, 2020).

Self-control can explain time-inconsistent preferences (Karlsson, 2003). According to the BLCH, low levels of self-control are associated with procrastination and a lack of optimization (Benartzi & Thaler, 2007; Strömbäck et al., 2017). While the *doer* is concerned with the short-run, the *planner* thinks about the long-run (Strömbäck et al., 2017). The *planner* mode of the dual preference framework requires self-control to hold steady in the pursuit of distal goals (Fujita & Carnevale, 2012). Efforts exerted by the *planner* require will power (Rha et al., 2006). Self-control can be employed via attitudes or the willful favoring of distal goals at the expense of proximal goals, (Fujita & Carnevale, 2012). High levels of self-control are associated with proactive or farsighted behavior.

Empirical evidence also supported the notion that low levels of self-control were associated with suboptimal financial behavior (Gathergood, 2012). The *doer*, for example, might spend the last $100 in one's savings account on concert tickets, leaving no money in case of emergencies. For the *doer*, instant gratification trumps future needs, revealing a lack of self-control. For this reason, the *doer* mode increases consumer financial vulnerability (O'Connor et al., 2019).

Self-Control Represented by Overspending.

The current study posited that overspending could be used as a proxy for self-control because of the following logic: both self-control and overspending represented acting upon the desire for current consumption at the cost of future consumption. While self-control was a broader construct that could be applied to non-financial behavior (e.g., over-eating), overspending had a narrower focus of financial behavior only. Overspending represented a decision to reward oneself today (the *doer's* preference) rather than working towards a more secure financial future (the *planner's* preference). In the current study, the choice to overspend represented a low-level of self-control, whereas the choice to prepare for retirement represented a high-level of self-control. Overspending was predicted to negatively impact retirement preparation because the money spent on overspending (i.e., overconsumption) could not simultaneously be allocated towards preparing for retirement.

The conceptual model displayed in Figure 1.2 identified the key components of the proposed relationship between overspending and retirement preparation according to the BLCH. Time preference represented the dual preference framework, where a short-term time preference represented a *doer*, and a long-term time preference represented a *planner*. A short-term time preference was predicted to influence self-control levels, and self-control levels were predicted to influence retirement preparation. Directional hypotheses on the relationships were provided in chapter three. The following sub-sections identified additional aspects of self-control and personal finances to provide a wider perspective on the components of the conceptual model in Figure 1.2.

Figure 1.2.

Conceptual Model of How the BLCH Informs Retirement Preparation Decisions

Self-Control and Personal Finances.

Self-control levels have influenced the direction and health of one's personal finances. Financial decision-making regarding consumption choices have depended largely on an individual's level of self-control (Haws et al., 2012). Consumers must employ self-control when faced with temptation for immediate gratification at the expense of distal goals (Fujita & Carnevale, 2012). Households with high levels of self-control were characterized by planning, monitoring, commitment, utilizing savings rules and savings goals (Biljanovska & Palligkinis, 2018; Rha et al., 2006). Households with low levels of self-control did not engage in these activities to the same degree as households with higher levels of self-control (Biljanovska & Palligkinis, 2018; Rha et al., 2006). The BLCH assumed that employing self-control requires effort because individuals are tempted to spend all their resources on current consumption rather than saving some for the future (Levin, 1998).

Some households preferred a higher consumption rate than others. Financial behavior has been determined by one's level of self-control and the associated will to control impulses (Strömbäck et al., 2017). Free will in consumption choices exposes a spectrum of self-control levels, where placement on the self-control spectrum is determined by an individual's choice to give into temptation by spending more on current consumption at the cost of saving for the future, or the reverse. If an individual can afford a high level of consumption, it is not considered

overspending, but if one's cashflow does not cover all consumption expenditures, it is considered overspending. Spending preferences (e.g., overspending or underspending) characterizes an individual's level of self-control.

The BLCH suggested a lack of self-control was associated with financial decisions that may not be in one's best interest over one's lifespan – which empirical evidence has supported. Kim et al. (2016) found that households with low levels of self-control were found to be less prepared for retirement compared to their counterparts. Figure 1.1 illustrated how self-control may impact the prescriptive model of the LCH by setting a higher than-rational consumption level prior to retirement. This would cause deficient savings and thus result in lower consumption in retirement. Note the breakdown at retirement in the self-control-altered consumption line for BLCH. Figure 1.1 was a dramatic illustration of how low levels of self-control led to over-consumption, and the resultant decline in consumption level post-retirement. The LCH model prescribed consumption to be constant over a lifetime. However, if consumption level was too high in relationship to the household income level early in life, consumption levels could involuntarily decline in retirement due to insufficient savings.

Self-control has often been viewed as being either positive or negative, where a positive interpretation of self-control assumed a high level of self-control aids in the advancement of academic, professional, financial, or personal pursuits (Gal & Liu, 2011; Kokkoris et al., 2019; Limerick & Peltier, 2014). Whereas a negative lens of self-control focused on the effects of low levels of self-control and was seen as a contributor to societal problems caused by a lack of willpower and indulgence (Kokkoris et al., 2019). The negative lens of self-control has often been framed as a "self-control failure" (Kliamenakis & Sobol, 2021; Limerick & Peltier, 2014).

It should also be noted that there could be a distinction between perceived and objective self-control (Kliamenakis & Sobol, 2021).

In a related study on self-control and financial behavior, Strömbäck et al. (2017) found those with high levels of self-control were (a) more likely to actively save a portion of earned income, (b) have better financial behavior in general, (c) have less anxiety around personal finances, and (d) feel more secure about their financial outlook. Sui et al. (2021) found that households with savings goals, a self-control measure, resulted in reduced overspending. Self-control has also been identified as a factor that leads consumers to overspend with their credit card (Sotiropoulos & d'Astous, 2013). One study found retirement preparation interventions may be more effective if the distant future can be illustrated in a vivid manner (Krijnen et al., 2022). This made sense, as those who are short-term oriented were less likely to be committed to long-term goals like retirement preparation and making the long-term appear more real could help lengthen the duration of one's orientation.

Some researchers focused on the feelings associated with self-control (Kokkoris et al., 2019; Patrick et al., 2009). Kokkoris et al. (2019) found that those who exert higher levels of self-control experience higher satisfaction if they rely on reason rather than feelings. Patrick et al. (2009) found that how one anticipated feeling as a result of exerting self-control in a situation either facilitated or impeded a self-control failure. For example, if pride was the anticipated feeling (i.e., a positive feeling), Patrick et al. (2009) found self-control failures less likely to occur. If shame was the anticipated feeling (i.e., a negative feeling), they found self-control failure to be more likely to occur.

Savings and Self-Control.

Why have households overlooked savings? Behavioral factors were a likely explanation (Newmeyer et al., 2020; Watson, 2003). One such behavioral factor was that individuals have not successfully managed their consumption relative to their resources (Beverly et al., 2003). It could be a challenge to reserve a portion of current resources for the benefit of future needs (Beshears et al., 2019). Researchers are actively identifying ways to overcome behavioral constraints to savings (e.g., Middlewood et al., 2018; Newmeyer et al., 2020).

The decision to save represented an internal conflict between the *doer* and the *planner* (Middlewood et al., 2018). To engage in savings behavior requires the *planner*, because of the inherent future orientation of savings (Newmeyer et al., 2020). However, the motive to spend feels more urgent than the motive to save, which leads to the postponement of savings (Watson, 2003). Consumers' priorities have varied in their decision to delay gratification now in favor of future needs (Newmeyer et al., 2020). When the *planner* was dominant and savings occurs, self-control was employed (Haws et al., 2012). This relationship was supported by empirical evidence; one study found individuals with high levels of self-control were more likely to save money from every paycheck (Strömbäck et al., 2017). Another study found that when the preferences of the *planner* were dominant, individuals had higher savings and financial wellbeing (Middlewood et al., 2018; Rha et al., 2006; Strömbäck et al., 2017). When the *doer* was dominant, suboptimal financial decisions were made, such as compulsive shopping and over-indebtedness (Achtziger et al., 2015; Gathergood, 2012).

Past research has paved the way in linking savings behavior and the BLCH (Benartzi & Thaler, 2007; Kim & Hanna, 2017; Middlewood et al., 2018). Experts suggested that a lack of savings may be due to a low level of self-control (Thaler & Shefrin, 1988). The act of saving

requires self-control, and researchers have found that self-control is positively associated with savings behavior (Kim & Hanna, 2017; Rha et al., 2006) and financial wellbeing (Strömbäck et al., 2017). Self-control has also been associated with household wealth (Biljanovska & Palligkinis, 2018). Low levels of self-control have been associated with financial distress (Biljanovska & Palligkinis, 2018). The suboptimal financial outcomes associated with low levels of self-control were depicted in Figure 1.1 by the declining consumption line after retirement. The declining consumption line post-retirement in Figure 1.1 suggested that low levels of self-control increased longevity risk, meaning the possibility of running out of money in retirement increased.

Self-Control Aliases.

Self-control has not been a concept unique to personal finance. It was a construct that bridges various disciplines, and has been framed in a variety of ways, including impulsivity, consciousness, self-regulation, delay of gratification, will power, and intertemporal choice (Moffitt et al., 2011). For example, self-control was required frequently for the health-conscious individual who avoided the cookies to achieve a longer-term health goal (Hur et al., 2015).

Theory addressing self-control was not limited to the BLCH alone. Related fields study variations of self-control and refer to it in various ways. Some researchers framed self-control as self-discipline (Duckworth & Seligman, 2005). Other researchers framed self-control as self-regulation (Kliamenakis & Sobol, 2021; Vohs & Faber, 2007). Self-regulation is the willingness and ability to overcome impulses and temptations while pursuing long-term goals (Kliamenakis & Sobol, 2021). Scholars have also equated self-control with resistance (Hofmann & Fisher, 2012). Resistance is considered as the prevention of enacting a desire (Hofmann & Fisher, 2012). Some researchers considered impulsivity to represent self-control (Limerick & Peltier, 2014).

Impulsiveness can simply be defined as “the choice of less rewarding over more rewarding alternatives,” and such suboptimal decisions have negative temporal consequences (Ainslie, 1975, p. 463). Figerio et al. (2020) further explained how impulsiveness includes an element of unplanned action without regard to the consequence. While some researchers used impulsivity interchangeably with self-control (Gathergood, 2012), others argued that the two constructs are interrelated yet distinct (Frigerio et al., 2020). Researchers have found impulsivity to have a negative effect on one’s personal finances (Ottaviani & Vandone, 2011). Self-discipline, self-regulation, resistance, and impulsivity are closely related constructs to the self-control described by the BLCH and could be considered proxies for self-control.

Life History Theory

Life History Theory (LHT) (Stearns, 2000) was an alternative theory considered in answering the research question of the current study. LHT is a theoretical framework for understanding the causes and results in life cycle variation (Braendle et al., 2011). LHT originated in the field of evolutionary biology to explain how organisms choose to spend their resources on tasks to attain reproductive success (Stearns, 2000). It helped answer questions regarding variation in life cycles characteristics such as why some species have more offspring but invest less in each one (Sng et al., 2017). The theory concluded that for species residing in an environment where mortality is a higher risk, or more specifically in environments in which resources are unreliable or unstable and at least sometime scarce, it is typical for them to reproduce earlier in the life cycle, have more offspring, and invest fewer resources in each offspring, in comparison with species living in lower risk environments (Sng et al., 2017).

How does LHT apply to retirement preparation? Researchers have found broader applications of the theory and is now popular in psychological applications (Del Giudice et al.,

2015; Sng et al., 2017). While mortality risk in an evolutionary biology context could be represented by a predator higher on the food chain, within a human context, mortality risk takes the shape of income, health, education, etc. (Sng et al., 2017). As LHT related to retirement preparation, two propositions stood out. The first was resource allocation. The LHT provided a framework for understanding how individuals "… allocate time and energy towards important life functions" (Mishra, Templeton, & Meadows, 2017). Life functions include such behaviors as risk-taking, self-regulation, exploration, having children, caregiving (Del Giudice et al., 2015), growth, and maintenance (Sng et al., 2017). The concept of "trade-offs" was a key assumption of resource allocation, where the time and energy devoted to one task could not be double spent on another task (Del Giudice et al., 2015; Sng et al., 2017; Xu et al., 2018). Del Giudice et al. (2015) likened the double spending restriction of energy spent to how individuals must live within "finite energy 'budgets'…and can never spend more than they have available" (p.88). The current study proposed that retirement preparation was one such life function that required the allocation of time and energy (i.e., energy in the form of savings behavior), where the resource of money put towards overspending could not be simultaneously allocated towards retirement preparation.

The second proposition of LHT that related to retirement preparation was a short-term time preference. According to LHT, Daly & Wilson (2005) explained that individuals discount the future when making decisions, but the weight of the discounting varies among individuals. It is natural for individuals to prefer receiving or experiencing goods and services now rather than later (Daly & Wilson, 2005). Those who overcome the desire to consume now are seen as having higher levels of self-control and a longer-term orientation (Daly & Wilson, 2005). According to LHT, individuals who exhibit high levels of self-control would be considered to have a long-

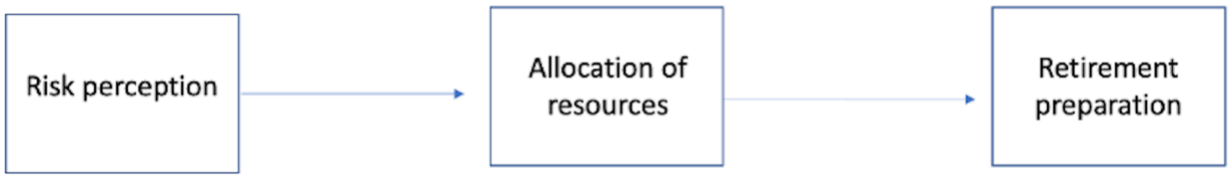
term time preference and would allocate more resources towards retirement preparation when compared to those with low levels of self-control.

Another key assumption of LHT is that resource allocation and time preference vary among individuals and is classified by a fast or slow life history strategy (LHS) (Del Giudice et al., 2015; Mishra et al., 2017; Sng et al., 2017; Xu et al., 2018). Individuals who have exhibited a slow LHS tend to be future-oriented (Mishra et al., 2017; Sng et al., 2017), which may have manifested as a higher investment in education, longer marriages, fewer children, and a greater parental investment (Sng et al., 2017). Those who have exhibited a fast LHS tended to be present-oriented (Mishra et al., 2017; Sng et al., 2017), which may have manifested as having children at a younger age, having more children and investing less in each child (Sng et al., 2017). Time preference, according to LHT, is on a spectrum of fast to slow orientations, rather than a binary measurement (Del Giudice et al., 2015; Mishra et al., 2017).

Figure 1.3 below illustrates retirement preparation as influenced by LHT. Risk perception captured outlook on resource availability. The perception of resources as being limited represents a high-risk perception, which is indicative of a fast LHS. Risk perception was the first predictor construct displayed in Figure 1.3. If an individual has a high-risk perception, they are more likely to have allocated their resources towards current consumption at the expense of future consumption – which was framed as "allocation of resources" in Figure 1.3. Over-allocating resources for current consumption at the expense of future consumption was considered overspending. Finally, if overspending occurred (i.e., over-allocation of current resources for current consumption), it was expected to be negatively related to retirement preparation, the third construct in Figure 1.3.

Figure 1.3.

Conceptual Model of How the LHT Informs Retirement Preparation Decisions



How does LHT relate to self-control? The time preference proposition of the LHT paralleled the dual-preference framework described in the BLCH (Shefrin & Thaler, 1988), where a high-risk perception (i.e., fast LHS) aligned with the *planner* preference, and a low-risk perception (i.e., slow LHS) aligned with the *doer* preference. A high-risk perception was predicted to impact the allocation of resources, which should in turn impact retirement preparation. Directional hypotheses on the relationships were provided in chapter 3.

Comparison of the BLCH and LHT

The BLCH did not use the language of "allocation of resources," although its consumption versus savings decision could be framed as such. In that case, the BLCH and LHT were similar in that they both recognized how the allocation of resources is a short-term decision with long-term impact. The BLCH explained the short-term versus long-term orientation with the dual preference framework, whereas the LHT explained it with risk perception. A *doer* preference of the BLCH or a high-risk perception would plausibly achieve similar results in terms of consumption and savings decisions because both are short-term oriented. Likewise, a *planner* preference of the BLCH and a low-risk perception would achieve similar results in terms of consumption and savings decisions because both are long-term oriented. Additionally, both theories recognized the impact of short-term time preference on allocation of resource decisions.

As seen in Figure 1.2 and Figure 1.3, the conceptual model under both theories were similar. The conceptual model for the BLCH, Figure 1.2, illustrated how a short-term time preference should lead to a low-level of self-control and overspending, which should negatively impact retirement preparation. Likewise, the conceptual model for the LHT, shown in Figure 1.3, illustrated how a high-risk perception should lead to an overallocation of resources in the present and overspending, which should negatively impact retirement preparation.

Both theories have various elements that the other does not cover. Notably, the BLCH acknowledged the influential behavioral factors of self-control, framing, and mental accounting. In contrast, the LHT viewed risk perception as the primary influential behavioral factor of consumption choices. Overlaying the LHT as an alternative theory allowed for the inclusion of risk perception elements, including risky behavioral outcomes, poor economic expectations, and retirement life expectancy, that would otherwise not have been incorporated under the BLCH theoretical framework alone.

Research Objectives

The concerns over the lack of retirement preparation across the nation seemed related to overspending. Yet research on each topic is mostly siloed. The objective of the current study was to determine if and how overspending is related to retirement preparation.

Research Questions

The current study proposed the following research question: how is overspending related to retirement preparation? The BLCH was relied upon to answer this research question with the *doer*/*planner* framework and positioning overspending as a proxy for self-control. The alternative theoretical framework of LHT also helped answer this research question by viewing overspending and retirement planning with a risk perception lens.

Hypotheses

Three hypotheses are proposed in the current study. The dual-preference framework of the BLCH would explain that a long-term time preference (i.e., the *planner*) indicated self-control levels are sufficiently high to resist short-term temptations of overspending (i.e., the *doer*). Therefore, a short-term time preference is hypothesized to be negatively associated with overspending (H1).

The current study measured LHS with risk perception, where a higher risk perception was indicative of a fast LHS. If one had a high-risk perception, then the future was discounted to a greater degree compared to an individual with a slow LHS. Because overspending represented a preference for present consumption (i.e., spending current resources on current needs or wants) at the expense of future consumption (i.e., saving for future needs), a high-risk perception is expected to be positively associated with overspending. Those who exhibited a high-risk perception (i.e., a fast LHS) are hypothesized to be more likely to overspend (H2).

Lastly, it is hypothesized that overspending will be negatively associated with retirement preparation (H3). H3 was informed by prior literature which suggested low levels of self-control were positively related to overspending (e.g., Gathergood, 2012), as well as the theoretical frameworks. The BLCH would explain how the *doer*'s needs negatively impact the *planner's* needs. The *doer*'s low levels of self-control would represent how short-term-consumption (i.e., overspending) would occur at the expense of the *planner's* future consumption (e.g., retirement income). The LHT would explain how a high-risk perception would lead to the over-allocation of resources for current consumption (i.e., overspending), at the expense of future consumption, negatively impacting retirement preparation. The three hypotheses were listed below:

H1: Overspending is positively associated with a short-term time preference.

H2: Individuals who exhibited a fast LHS, as measured by risk perception, are more likely to overspend.

H3: Overspending is negatively associated with retirement preparation.

Limitations

Several limitations were acknowledged in the current study. The first was the assumption that retirement preparation primarily consists of investable assets. Could there be a trend to build more equity in one's house instead of retirement accounts (Gong & Kelly; 2010)? Housing equity was not considered in the current study's measurement of retirement preparation, revealing a potential validity concern that retirement preparation was not accurately measured because it did not include housing equity. Housing equity as a key source of retirement preparation has been studied (Gong & Kelly, 2010), but has not been a concern generally voiced among retirement preparation researchers. The current study assumed that housing equity was used solely for the purpose of providing a home and would be passed on to heirs post-death.

Selection bias was a potential limitation because the sample was restricted to non-retirees. An argument could be made that those who are already retired may not have been prepared adequately for retirement (e.g., longevity risk), and therefore should have also been included in the sample. The current study recognized this potential sample selection bias but considered it outside of the scope of the research question, which focused on households still in the working-phase of the life cycle.

Endogeneity was a potential concern given that self-control levels could change over time. For example, if humans tended to develop higher levels of self-control as they aged due to hormone changes or cumulative life experiences, it would be impossible to isolate the effect of self-control on retirement preparation. Biljanovska and Palligkinis (2018) identified this

endogeneity concern in a similar study and turned to literature for guidance. They concluded that, in general, psychology literature suggested self-control can be identified early in the life cycle and remains relatively stable thereafter. The current study assumed self-control levels remain consistent in adulthood, making the year of the survey irrelevant.

Lastly, it was recognized that overspending in isolated events is not necessarily harmful to one's financial plan. The current study generalized overspending as a repeated behavior misaligned with prescribed financial planning principles. To be clear, the negative financial consequences of an occasional overspending event can likely be overcome by a lifetime characterized by the lack of overspending.

Summary

This purpose of the current study was to better understand the relationship between overspending and retirement preparation. The BLCH provided the theoretical framework for answering this research question, viewing overspending as a manifestation of self-control. LHT also helped inform the exploration of the relationship between overspending and retirement preparation. This research question was considered worthwhile to address due to indications of under-preparation for retirement nationwide (Chen et al., 2018, Kim et al., 2016; Oakley & Kenneally, 2019).

Chapter 2 - Review of Literature

The three primary constructs reviewed in this section include retirement preparation and overspending. Within the retirement preparation construct, six main topics emerged within the literature. They were organized as (a) why retirement preparation matters, (b) defining retirement preparation, (c) identifying reasons for under-preparing for retirement, (d) the associated factors of retirement preparation, (e) measurements of retirement preparation, and (f) understanding contrary empirical evidence. Within the overspending construct, three main topics emerged within the literature. They were organized as (a) defining overspending, (b) understanding causes of overspending, and (c) measurements of overspending.

Retirement Preparation

Why Retirement Preparation Matters

Saving for the future is a critical component to most household's personal finances. Savings provide a cushion to absorb financial shock and decreases the potential for financial hardship (Gjertson, 2016; Newmeyer et al., 2020; O'Connor et al., 2019). Saving also enhances one's personal sense of security (Newmeyer et al., 2020). Savings is not limited to retirement planning, but also encompasses emergency funds and other financial assets (Gjertson, 2016). That said, retirement savings is a large component of overall savings and is considered rational behavior for consumers (Asebedo et al., 2019).

Savings behavior has become more critical for individuals to actively manage due to a shift in the private sector from defined benefit plans to defined contribution plans (Benartzi & Thaler, 2013). Times have changed as pension plans are quickly fading. In the past, under the DB system, individuals did not bear the investment risk. Rather, pension plans bore the investment risk, which guaranteed a reliable monthly check to the individual. Now, most

individuals are personally responsible to be on track for saving and managing investments, which requires active saving throughout one's career. Policy makers saw the problem posed by underpreparing for retirement, which prompted them to create and incentivize saving through retirement accounts by offering tax deductions through tax deferred accounts, tax-free growth on tax exempt accounts, and increased limits for individuals over age 50 (Hira et al., 2009).

Around half of US employees have access to an employer sponsored program, such as a 401(k), 403(b), 457 plans, where individuals must choose how much to contribute and how to invest the funds (Benartzi & Thaler, 2013). Individual Retirement Accounts (IRAs) are another option for retirement savings, which also leave the investment and contribution choices up to the individual. The key theme under this new era of DC plans is that individuals are responsible for their own financial welfare in retirement. Individuals carry the investment risk and have a choice to save sufficiently or not. In summary, there is a consensus in the research literature that retirement preparation matters because in an era of DC plans, households should be actively preparing for retirement.

What is "Retirement Preparation"?

The term "retirement preparation" is known by many names in the research literature. The term "retirement preparation" has been used by many (Binswanger & Schunk, 2012; Chan et al., 2021; Greenwald, 2017; Han et al., 2019; Jacobs et al., 2020; Krijnen et al., 2022; Lee et al., 2018; Muratore & Earl, 2010; Sturr et al., 2021). Some used the term "retirement preparedness" ("2020 End of Year Report," 2020; Chen et al., 2018; Croy et al., 2010; J. Han et al., 2019; Kim & Hanna, 2015; Moore, 2019; Segel-Karpas & Werner, 2014), others used "retirement savings" (Benartzi & Thaler, 2013; Koposko et al., 2016; Sensenig, 2021), "retirement adequacy" (Chou et al., 2015; Hershey et al., 2010; Malroutu & Xiao, 1995; Reyers, 2018; Yao et al., 2003),

"retirement planning"(Ng et al., 2011; Noone et al., 2010; Petkoska & Earl, 2009; Topa et al., 2009), and others simply referred to it generally as "saving behavior" (Kim & Hanna, 2017; Rha et al., 2006). There is also variation on these terms, such as "retirement financial preparation" (Morgan & Eckert, 2004). The current study used the term "retirement preparation" to broadly capture all these various long-term savings-related terms. Some retirement preparation researchers incorporated health, lifestyle, or psychological elements into the retirement preparation construct (Hurtado & Topa, 2019; Muratore & Earl, 2010; Noone et al., 2010; Petkoska & Earl, 2009). The current study limited the construct of retirement preparation to the context of personal finances only.

Retirement preparation requires sufficient accumulated savings to fund retirement income to cover around 15 to 20 years of living expenses, which is almost a quarter of one's life expectancy (Adams and Rau, 2011). There are periods in life where saving may not occur, such as during time spent in school, when borrowing (negative savings) is relied upon (Ando & Modigliani, 1963). These periods of negative or neutral savings are temporary (Ando & Modigliani, 1963).

However, life is not always so orderly. There are many possible explanations for deficient savings. Life events may cause bumps in the road that derail one's intent to save. Data also suggests that savings is often an ignored component of the budget (Gjertson, 2016; Yuh & Hanna, 2010). This suggests that the LCH, as a normative theory, may not be supported by real world behavior. Additionally, individuals have varying standards of living (Adams & Rau, 2011) and goals in retirement. High standards require more funding, while more conservative standards require less (Adams & Rau, 2011). Because retirement planning is highly customized, there is no

simple formula. The key to achieving success in retirement preparation is to ensure that goals and needs are planned for sufficiently (Adams & Rau, 2011).

Muratore and Earl defined retirement preparation as "effort invested by individuals, while still employed, to provide for their wellbeing in retirement" (2010, p. 99). Regarding the "effort invested" as Muratore and Earl (2010, p. 99) described, Morgan and Eckert (2004) further refined the definition to specifically include steps taken towards providing for one's financial future, rather just intention alone. The current study adopted a blend of Muratore and Earls's (2010) and Morgan and Eckert's (2004) definitions: retirement preparation was defined as steps taken during one's working career towards to providing for financial wellbeing in retirement.

Why Are Some Households Not Saving for Retirement?

The introduction section of the current study unearthed alarming statistics of a lack of retirement preparation among many U.S. households. The current study has also established that retirement preparation matters because households hold that responsibility in this era of DC plans. These two points are at odds with each other, generating the question of why some households are not saving for retirement when they should be? Researchers have stressed the importance of getting to the bottom of why some individuals fail to adequately prepare for retirement (Hershey et al., 2010; Stawski et al., 2007). While the current study focused on the role of self-control as a possible factor under-preparing for retirement, researchers have identified other factors outside the BLCH theoretical framework. For instance, Peetz and Buehler (2009) found individuals tend to have unrealistic predictions of their spending and savings behavior. Their results uncovered the tendency to underestimate future spending despite a general desire to save money or minimize spending. Results from another study suggested the lack of retirement planning efforts is less about individuals not understanding the importance of

it, but rather the perceived difficulty of it that drives action (Krijnen et al., 2022). Inertia may be another contributor to substandard retirement preparation. Gabriel et al. (2009) found that even if one's default retirement savings rates and strategies are insufficient, individuals often do not take action to change them. Kimiyahagahlam et al. (2019) suggested that because retirement planning is not mandatory, younger households may consider the distal goal of retirement not critical enough to actively plan for until they are closer to retirement age. Greenwald (2017) found that most working non-retirees not currently saving for retirement indicated employer matching contributions (three-fourths) or automatic paycheck deductions with modification options (two-thirds) would make them more likely to save for retirement. These findings were contrary to retirement planning principals which call for consistent savings starting early in a career, because delaying savings excludes the helpful factor of compound interest. Lastly, there may be generational differences in retirement preparation (Qi et al., 2022; Yao & Cheng, 2017). For example, Generation X was found in a recent study to be better prepared for retirement than millennials within general asset allocation cases (Qi et al., 2022).

Associated Factors

Retirement preparation is an interdisciplinary construct that broadly encompasses influences spanning from psychological to financial. The theoretical frameworks and previous literature were relied upon to identify demographic and behavioral factors to help explain the variation in retirement preparation behavior. Common variables were identified below.

Demographic Characteristics

Do household characteristics reveal savings behavior patterns? The results of one study revealed that sub-optimal saving was randomly distributed and was not disproportionate among

certain demographic groups (Scholz et al., 2006). Most retirement preparation studies, however, produced significant results among demographic variables.

Age.

Age has been found to be a significant role in retirement preparation (Lim & Lee, 2021; Morgan & Eckert, 2004; Yuh & Hanna, 2010). Lim and Lee (2021) suggested this is because life cycles are a function of age, and the amount of attention devoted to personal finances naturally varies according to one's stage in the life cycle. Researchers generally expect retirement preparation to increase with age (Kim & Hanna, 2015; Moore, 2019; Muratore & Earl, 2010; Stawski et al., 2007; Van Dalen et al., 2010).

Consumer expenditures have been found to vary by age, revealing a "hump shape" spending pattern by age where expenditures where lowest for the youngest age groups, highest for the middle age groups, and then declining in older age groups (Foster, 2015). Empirical evidence suggested that many retirees save during retirement, which represents another potential deviation from the LCH model (Taylor et al., 2018).There have also been nuances regarding age and retirement preparation to be aware of, such as declining perceived retirement preparation at advanced ages due to a decreased cognitive ability (Kim & Hanna, 2015).

Age also needs to be considered to account for the possibility that people make up for a lack of savings in early years and catch up later in their career. For example, an individual may not have seen the value of saving in their twenties, been busy raising a family in their thirties and forties and wanted to make up for lost time with saving at a higher rate in their fifties. Yuh and Hanna (Yuh & Hanna, 2010) recognized that savings could be low or negative at younger ages when income is low but future income is greater, but the savings rates may increase proportionately with age.

Income.

It is important to recognize the retirement preparation constraints on lower income households. Lower income households have a limited savings capacity because of covering basic living costs may not allow much margin for savings (Newmeyer et al., 2020). For low-income households, some researchers have argued that Social Security benefits will replace a higher amount of pre-retirement income, thereby reducing the amount needed to save in preparation for retirement (Briggs, 2020). It is often assumed that higher income households benefit from a higher capacity to save (Newmeyer et al., 2020; Reyers, 2018). Studies supported this assumption with results reflecting income positively predicting retirement preparation (Morgan & Eckert, 2004; Muratore & Earl, 2010; Qi et al., 2022; Stawski et al., 2007). Biljanobska and Palligkinis (2018) also researched the link between self-control and income, thinking of it in two different ways: (a) individuals with high levels of self-control were expected to achieve more in their careers and thus receive higher incomes, and (b) individuals with low levels of self-control were envisioned to work harder in their careers to support their overspending.

Gender.

Gender has often been found to be a significant factor in retirement preparation studies. Several studies found women to have lower levels of retirement preparation (Copeland, 2020; Muratore, 2010). Under-funded retirement plans for women are exacerbated by the fact women live longer and are more likely to become widows (Copeland, 2020). Gender discrepancies in education and employment potentially could result in lower perceived retirement preparation in women (Hurtado & Topa, 2019; Joo & Pauwels, 2002). However, not all related studies found gender to have a significant association with retirement preparation (Morgan & Eckert, 2004). This could be due to differences in sample demographics or measurements. Additionally, one

study found women to more prone to compulsive shopping associated with self-control (Achtziger et al., 2015); compulsive shopping may be considered a type of overspending.

Marital Status.

Marital status is an important variable when considering retirement preparation because it contributes to the economies of scale issue within the household. Economies of scale quantifies the cost for a household of a given size and composition to achieve the same living standard as some reference household (Cherchye et al., 2020). For households with married couples where both spouses worked outside the home, they may have had more ability (e.g., two incomes) to save for retirement compared to a single or divorced individual. Marital status within a household could also affect household budget constraint (Rha et al., 2006) which in turn is related to household savings behavior. Additionally, married individuals may have higher education and income. Copeland (2020) found different marital statuses to be significantly related to several retirement preparation measures, including retirement confidence and propensity to plan. Most researchers expected or found married households to have higher levels of retirement preparation (Copeland, 2020; Koposko et al., 2016; Rha et al., 2006). Copeland (2020) found that perceived retirement preparation was notably higher (76%) for married women, compared to divorced women (43%) or never-married women (51%). One study found that single households have lower economies of scale than married households (Fan & Zan, 2020).

Education.

Several studies found that education was influential on the level of family consumption (Abdel-Ghany & Foster, 1982; Fernández-Villaverde & Krueger, 2007; Siahpush et al., 2018), and was linked to higher levels of retirement preparation (Morgan & Eckert, 2004; Lusardi &

Mitchell, 2011; Qi et al., 2022). Some studies suggested that higher educated households had lower savings rates due to expected higher income in the future (Rha et al., 2006). This made sense when considering how, according to the LCH, a household's savings level is a factor of its current disposable income and anticipated future income.

Employment.

Work status was often included in retirement preparation-related studies (Hira et al., 2009; Lee et al., 2018; Lim & Lee, 2021; Topa et al., 2009). Employment status is important to consider because it helps explain one's current ability to actively prepare for retirement. For example, if an individual is unemployed, current savings towards retirement would not be expected. Additionally, self-employed individuals have been found to differ in their retirement preparation behavior than employed workers (Rostamkalaei et al., 2022).

Race.

Race has typically been included in retirement preparation studies as a control variable, with varying results. One recent study indicated White and Asian non-retiree respondents, compared to their Black and Hispanic counterparts, had lower levels of retirement preparation (Kenneth et al., 2021). Among millennials, Yao and Cheng (2017) found that Black households had 53 percent lower retirement account balances compared to their White counterparts. Lusardi and Mitchell (2011) suggested this is due to Black and Hispanic households having lower levels of financial literacy, and financial literacy's positive impact on retirement preparation. Copeland and Greenwald (2021) found several nuances regarding race and retirement preparation, further stressing the need to control for race. For example, they found that Hispanic households were more likely to value helping family and friends over saving for retirement.

Household Size.

Household size has been found to be a predictor of retirement plan contributions (Lee et al., 2018). Household size should be negatively related to retirement preparation because a higher degree of income must be allocated towards livings expenses. For example, the costs of raising three children are higher than the cost of raising one child. More dependents may place stress on a household's retirement planning (Hurtado & Topa, 2019), whereas fewer dependents may better aid a household's retirement preparation (Reyers, 2018). Bae et al. (1993) found a significant negative relationship between overspending and age for households with five or more people, but a positive relationship for households with one person.

In summary, the demographic variables of age, income, gender, marital status, education, employment, and race were included as control variables in most related studies. It was important to control for these demographic measures because of their potential impact on overspending or retirement preparation behavior. Controlling for these variables helped the analyses to isolate the relationship between overspending and retirement preparation.

Behavioral Factors

The current study recognized how the demographic variables identified above explain much of the variation in retirement preparation among households, but not all. Researchers have found behavioral factors to influence retirement planning behavior as well (Kimiyagahlam et al., 2019). In fact, some researchers claim retirement preparation is largely based behavioral factors, such as social influences and psychological attributes (Van Dalen et al., 2010). The primary behavioral factors highlighted in the BLCH or found in previous research were identified below.

Financial Knowledge.

There are two typical ways to operationalize financial knowledge: objective and subjective financial knowledge. Reyers (2018) found subjective financial knowledge to be most influential in its relationship with retirement confidence. Segel-Karpas (2014) suggested those with high subjective financial knowledge may be less likely to feel underprepared for retirement. Financial knowledge has been noted as a behavioral characteristic to control for when studying retirement preparation (Babiarz & Robb, 2014; Chou et al., 2015; Kimiyagahlam et al., 2019; Nolan & Doorley, 2019; Reyers, 2018; Segel-Karpas & Werner, 2014; Van Dalen et al., 2010; Vasudeva, 2021; Yeh, 2022) because it likely influences retirement preparation behavior. For example, those with higher levels of financial knowledge might have known the importance of retirement preparation and may have been more likely to act on it. While higher levels of financial knowledge were expected to be positively related to retirement preparation based on prior literature (Reyers, 2018; Segel-Karpas & Werner, 2014; Vasudeva, 2021; Yeh, 2022), other related literature did not find a significant relationship between financial knowledge and retirement preparation (Nolan & Doorley, 2019).

Researchers have found that financial literacy has a direct relationship with retirement preparation (Kimiyagahlam et al., 2019). Financial literacy includes the knowledge of fundamental financial concepts and calculations (Nolan & Doorley, 2019). While financial literacy is a construct that encompasses both financial knowledge and the application of financial knowledge, financial knowledge does not extend to the application of financial knowledge (Huston, 2010).

Time Preference.

Time preference is a related yet distinct construct than self-control. A long-term time preference is characterized by resisting temptations to overspend in order to make room enough in the budget to save for future needs (Chou et al., 2015). The BLCH framework explained how time preference inconsistencies can be caused by low levels of self-control (Kim et al., 2016). Scholars have suggested that savings may be postponed, misaligning with the LCH model, due a lack of self-control modifying one's time preference (Harris & Laibson, 2001; Laibson et al., 1998).

Time preference, also referred to as time discounting, has been a common factor accounted for in retirement preparation studies (Chou et al., 2015; Croy et al., 2010; Han et al., 2018; Hershey et al., 2007; Kimiyagahlam et al., 2019; Muratore & Earl, 2010; Petkoska & Earl, 2009; Reyers, 2018; Rha et al., 2006; Yeh, 2022). Some researchers have found time preference to have a positive influence on retirement planning (Chou et al., 2015; Kimiyagahlam et al., 2019; Reyers, 2018), while others did not (Petkoska & Earl, 2009). The inconsistent results of the influence of time preference on retirement preparation could be explained by different sample demographics, sample restrictions, or measurements.

Financial Attitude.

Financial attitude is a general term encompassing feelings towards various financial topics. Financial attitudes, including self-reported attitudes (Croy et al., 2010), financial anxiety (Limerick & Peltier, 2014), self-efficacy (Muratore & Earl, 2010), financial self-efficacy (Sturr et al., 2021), savings attitudes (Kimiyagahlam et al., 2019), job satisfaction (Topa et al., 2009), number of financial concerns (Topa et al., 2009), and self-image (Steinhart & Jiang, 2019) all had significant effects on retirement preparation. Segel-Karpas and Werner (2014) expected an

attitude toward retirement to be positively related to retirement preparation. Researchers also made a connection between self-control and financial anxiety (Limerick & Peltier, 2014).

Financial Advisor Use.

It was no surprise that the support of a financial advisor positively influences retirement planning behavior (Morgan & Eckert, 2004), otherwise financial advisors would be out of business. Yet, only about one third of non-retirees used a financial advisor, and fewer yet (23%) have consulted with a financial advisor about retirement planning (Rick, 2018). About one-third of households did not know where to go for good retirement planning advice (Copeland & Greenwald, 2021). Rather, individuals often resorted to online resources and family or friends for information on retirement planning (Copeland & Greenwald, 2021). Financial advisor use was not controlled for in most retirement preparation studies, and the current study assumed the average financial advisor does not receive specialized training to assist clients with overspending issues, which made financial advisor usage less important of a behavior factor in the current study.

Cognitive Ability.

Cognitive ability has also been a behavioral trait controlled for in retirement preparation studies (Biljanovska & Palligkinis, 2018; Van Dalen et al., 2010). Higher levels of cognitive ability suggested higher capacity for retirement planning skills, and lower levels may have had the opposite effect. Ballinger et al. (2011) reported cognitive abilities to be the best predictor of savings behavior. Data sets often do not include a measure of cognitive ability, so researchers have used various proxies, including education (Kim & Hanna, 2015; Stango & Zinman, 2020), level of understanding survey questions (Huston et al., 2012; Kim & Hanna, 2015), use of a

financial planner (Kim & Hanna, 2015), numeracy level (Biljanovska & Palligkinis, 2018), and delayed memory measurement (Biljanovska & Palligkinis, 2018).

Risk Tolerance.

Researchers considered risk tolerance a financial attitude (Kim & Hanna, 2015), or a psychological characteristic that influences retirement preparation (Reyers, 2018). Qi et al. (2022) found risk tolerance to be positively associated with retirement preparation. While not all related studies found risk tolerance to be a meaningful predictor of retirement preparation (Croy et al., 2010), others did (Vasudeva, 2021). According to the BLCH theoretical framework, risk tolerance is a predictor of household saving and consumption (Reyers, 2018; Rha et al., 2006).

Health.

Health has been found to have a significant relationship on retirement preparation (Lee et al., 2018; Morgan & Eckert, 2004; Topa et al., 2009). Health may be relevant to retirement preparation because it impacts one's outlook on life expectancy. There were various ways to look at this relationship. If health was poor, life expectancy could be assumed to be shorter, reducing the amount of retirement funds needed. On the contrary, poor health also suggested more retirement funds needed to cover potential medical costs or, as Biljanovska and Palligkinis (2018) suggested, those with poor health were less likely to make long-term plans (e.g., retirement preparation). Good health, on the other hand, suggested increased longevity, which would increase the amount of retirement funds needed to avoid running out of money in retirement. Morgan and Eckert (2004) found support for this by reporting a positive relationship between health and retirement preparation. On the contrary, Reyers (2018) suggested good health generated fewer medical costs, making retirement preparation easier. Findings from other studies supported this, where respondents with poor health were less likely to be saving money (Fisher

& Montalto, 2010). Additionally, Biljanovska and Palligkinis (2018) connected self-control to health status, suggesting that high levels of self-control could lead to better health and longevity. Health is related to longevity, which was another important element researchers controlled for in retirement preparation studies because it was a required variable in important retirement planning calculations (Koposko et al., 2016).

Socialization.

Socialization was controlled for in several retirement studies (Chou et al., 2015; Kimiyagahlam et al., 2019; Van Dalen et al., 2010; Vasudeva, 2021). Socialization is the learning process for acquiring attitudes and habits that shape one's life, including financial aspects of life (Kim & Chatterjee, 2013). Individuals all have unique socialization experience among their family and peers, which may uniquely impact retirement preparation behavior (Koposko et al., 2016). For example, Koposko et al. (2016) found that households saved more if they perceived their peers to be doing so. Vasudeva (2021) positioned parental influence as an important element of financial socialization. Some studies found a positive significant relationship between parental influence and retirement planning (Vasudeva, 2021), while others did not (Kimiyagahlam et al., 2019).

What was important to recognize here is that retirement preparation is a construct shaped by many behavioral factors. Various researchers recognized how financial knowledge (e.g., Yeh, 2022), time preference (e.g, Yeh, 2022), financial attitudes (e.g., Kimiyagahlam et al., 2019), cognitive ability (e.g., Biljanovska & Palligkinis, 2018), risk tolerance (e.g., Rha et al., 2006), health (e.g., Biljanovska & Palligkinis, 2018), and socialization (e.g., Vasudeva, 2021) are factors that may impact one's overspending or retirement preparation behavior. Prior literature consistently considered objective measures in their analyses but did not consistently consider

behavioral variables. The current study considered financial knowledge, financial attitude, risk tolerance, cognitive ability, health, and socialization to be behavioral factors in the relationship between overspending and retirement preparation. Note that a short-term time preference was addressed in chapter three as a predictor variable.

Retirement Preparation Measurements

What retirement preparation is, why it matters, and its associated factors have been explored thus far. There has been a lack of consensus on how to best measure retirement preparation. Financial planners use complex software tools, such as eMoney, Money Guide Pro, or Right Capital to create a customized retirement plan to measure retirement preparation for a given individual. No two cases are alike. This personalized format of financial plans in the real world is lost in secondary studies, which cannot account for them. Rather, the typical objective and subjective retirement preparation measures found in secondary data sets and empirical research were identified below and compared with each other.

Objective Retirement Preparation Measures

Objective measures may capture data consistently and be less influenced by one's opinion (Cognitive FX, 2019). Common objective measures of retirement preparation were reviewed, including spending less than income, active versus passive saving, benchmark ratios, retirement account ownership, retirement account contributions, retirement account balance, and variations of net worth. Two assumptions were recognized regarding objective retirement preparation measures. The first was that that the funds earmarked for retirement in retirement accounts will not be spent prior to retirement. This assumption was fortified by the age stipulations of tax-advantaged accounts (e.g., penalties enforced prior to age 59 and a half). The second assumption was that retirement accounts were the primary vehicle used for retirement

savings, rather than taxable accounts or other assets. This assumption was in line with previous research (e.g., Lim & Lee, 2021).

Spending Less Than Income.

The discrepancy between income and consumption has been a common way for researchers to measure retirement preparation, where savings is assumed to occur if consumption levels are below income levels (Ferdous et al., 2010; Heckman & Hanna, 2015; Kim & Hanna, 2017; Yuh & Hanna, 2010). More specifically, (Borsch-Supan & Lusardi, 2003) explained savings can be determined by subtracting consumption expenditures from income in a given period. Conceptually, the lower the consumption line is set on Figure 1.1 relative to the income curve, the higher the savings rate because income will exceed expenditures. Conversely, when expenditures are as high or higher than income, savings will not occur. Utilizing Consumer Expenditure (CE) data, Ferdous et al. (2010) found that 63 percent of households were saving as measured by total expenditures being less than after-tax income.

Benchmark Ratios.

Another way to measure retirement preparation has been by using a benchmark ratio. There are numerous benchmark ratios, so the most appropriate one must be determined for the case at hand (Binswanger & Schunk, 2012). The capital accumulation ratio is a benchmark ratio used to estimate retirement preparation, which is defined as the ratio of investment assets to net worth (Yao et al., 2003). One study used this ratio and tested a 25 percent and 50 percent guideline to measure retirement adequacy (Yao et al., 2003). The target replacement ratio, which estimates the percentage of an individual's pre-retirement income will be needed to maintain his or her lifestyle in retirement, is another benchmark ratio that researchers have used to estimate retirement preparation (Binswanger & Schunk, 2012). Binswanger and Schunk (2012) accounted

for individual preferences when using benchmark ratios by using a calibration approach. A recent study operationalized retirement preparation using a newly developed ratio of current assets to an individualized baseline of current age, current income, expected retirement age, and remaining work-life expectancy (Qi et al., 2022).

One concern with using benchmark ratios in retirement preparation studies is their embedded assumptions. Because there has been no consensus on which ratio to use (Binswanger & Schunk, 2012) or where to set the benchmark, the assumptions required are challenging to substantiate. Yao et al. (2003) expressed concern that ratio guidelines were too optimistic, meaning the ratio calculations indicated a larger percentage of households were on-track for retirement preparation as compared to other definitions of retirement adequacy.

Retirement Account Ownership.

Owning a retirement account, such as a tax deferred (e.g., 401k plan) or a tax-exempt plan (e.g., Roth IRA), has been used as a measure of retirement preparation (Hira et al., 2009; Lim & Lee, 2021; Yao & Cheng, 2017). Copeland (2020) suggested that workplace retirement savings plans are the most important type of retirement account, of which 66 percent of working adults own such an account. Greenwald et al., (2017) found that retirement plan ownership makes workers more likely to feel on track for retirement compared to those without a retirement plan. Lim and Lee (2021) found that owning a retirement account (DB, DC, or IRA) was positively associated with retirement savings adequacy for non-retirees. Researchers have expressed concern about a lack of preparation for retirement when results indicate low retirement account ownership, such as was found by Yao and Cheng (2017) among millennials.

Active Contributions to a Retirement Account.

Researchers have measured whether respondents actively contribute to a retirement plan to operationalize retirement preparation (Hassan & Lawrence, 2007; Lee et al., 2018; Morgan & Eckert, 2004; Stawski et al., 2007; Sturr et al., 2021). Similarly, Hira et al. (2009) measured whether participants were maximizing contributions to retirement accounts. Stawski et al. (2007) measured retirement account contributions as a percentage of household income and found that contribution to a retirement account was positively and significantly correlated with age, income, goal clarity, and planning activities. Kim et al. (2016) also operationalized retirement preparation with active account contributions by assuming contributions would remain consistent until retirement and projecting the logged accumulated balance of future contributions (Kim et al., 2016).

Retirement Account Assets.

Researchers have measured retirement preparation by recent retirement account asset balances (Sensenig, 2021; Tamborini & Purcell, 2016; Yao & Cheng, 2017). Common retirement accounts measured include IRAs and defined contribution plans (e.g., Yao & Cheng, 2017). The log of account balances is often utilized because of their skewed nature (Kim et al., 2016; Tamborini & Purcell, 2016; Yao & Cheng, 2017). Retirement account balance upon retirement has been equated with one's retirement benefit (Hassan & Lawrence, 2007). While retirement account balance has been a less common measurement for retirement preparation, the current study considered it a viable one because of the simple retirement preparation principle that more retirement account assets, in general, reflect better financial preparation for retirement.

Variations of Net Worth.

Total financial assets, as a continuous variable, was measured by Rha et al. (2006) to operationalize savings behavior. Comparing asset balances over a given period, from beginning and end, was another way of measuring savings over the life cycle (Borsch-Supan & Lusardi, 2003). Similarly, Borsch-Supan and Lusardi (2003) identify savings by adding inflows and outflows of wealth over a given period. Kim et al. (2016) used projections of the natural log of account balances and contributions, adjusting for inflation. Home ownership has been used as a proxy for the non-financial assets (Rha et al., 2006). Some researchers used broader measures of net worth to measure retirement preparation that included expected pension and social security income (Jacobs et al., 2020).

Propensity to Plan.

Propensity to plan can also be considered an indicator of retirement preparation. "Propensity to plan" is a phrase used to describe a retirement needs analysis, the creation of a financial plan, or a similar retirement planning activity (Lee & Kim, 2016, 2020; Kimiyagahlam et al., 2016; Sharma et al., 2021). Conducting a retirement needs analysis is a basic retirement planning task, yet only 42 percent of workers have done one (Copeland, 2020). Fewer yet have calculated how the financial need for health expenses (21 percent of non-retirees) or prepared a written financial retirement plan (11 percent of non-retirees) (Greenwald et al., 2017). One previous study on consumption behavior found that individuals who tend to overspend had a lower propensity to plan than those who spend less (Rick, 2018).

Other Objective Measures of Retirement Preparation.

Researchers have operationalized retirement preparation by measuring whether respondents were offered a retirement plan through their employer, regardless of if they chose to

contribute to it or not (Hassan & Lawrence, 2007; Lee et al., 2018). Morgan and Eckert (2004) measured financial planning in part by use of a financial planner or attending seminars as a measurement of retirement preparation. Others measured long-term savings more generally (i.e., not limited to retirement accounts) as an indicator of retirement preparation (Han et al., 2019). In summary, researchers have used a wide variety of objective measures to operationalize retirement preparation.

Subjective Retirement Preparation Measures

Some researchers argued objective measures of retirement preparation alone did not tell the entire story and called for a subjective measure (Chou et al., 2015; Reyers, 2018; Van Dalen et al., 2010). A subjective measure of retirement assesses one's self-reported belief about how sufficiently they have saved for retirement (Chou et al., 2015). Joo and Pauwels (2002) referred to this as "retirement confidence." Subjective measures have been seen as helpful because they capture more of the variation in personality seen in the retirement preparation process (Chou et al., 2015; Segel-Karpas & Werner, 2014). Reyers (2018) said it this way: "perceptions drive actions" (p. 345). Segel-Karpas and Werner (2014) made the case for the subjective measurement of retirement preparation: "the perception of financial preparedness might determine the timing of retirement, as well as future financial behavior" (p. 282).

There are different ways researchers have measured subjective retirement preparation. Many studies did not rely solely on one measurement, but rather used a variety of subjective retirement preparation measures (Kimiyagahlam et al., 2019; Krijnen et al., 2022; Segel-Karpas & Werner, 2014; Van Dalen et al., 2010). Likewise, it was important to acknowledge the limitation of subjective retirement preparation measures: they may not align with objective measures (Reyers, 2018).

Perceived Retirement Preparation.

A common way to measure subjective retirement preparation found in the research literature was to utilize survey questions that capture the respondent's perceived, self-reported view of one's personal retirement preparation status. One question often utilized to measure perceived retirement preparation asked whether the respondent considers themselves to be on track with their retirement savings plan (Lim & Lee, 2021; Moore, 2019). There were variations on how this question is worded. For example: sometimes it was worded it this way: "taking all of the various sources of retirement income into account, how confident are you that your income will give you the standard of living you hope for throughout retirement" (Reyers, 2018). Or along these lines: "I am saving enough each month to retire comfortably" (Chou et al., 2015; Joo & Pauwels, 2002; Segel-Karpas & Werner, 2014). A related survey question asked respondents to rate the adequacy of their retirement income (Kim & Hanna, 2015; Malroutu & Xiao, 1995; Lee et al., 2018; Rha et al., 2006). Fisher and Montalto (2010) utilized a question from the SCF that asked respondents if they set aside money each month as a measure of long-term savings habits.

Other Measures of Subjective Retirement Preparation.

Another subjective retirement preparation measure captured whether the respondent has conducted a retirement needs analysis, with a question such as "I know the amount of money I will need for retirement time" (Joo & Pauwels, 2002; Kimiyagahlam et al., 2019; Segel-Karpas & Werner, 2014). Other studies asked specifically if respondents have calculated their retirement income needs (Han et al., 2019). Still others measured subjective retirement preparation by asking respondents about their ability to cover expenses in retirement (Joo & Pauwels, 2002; Vasudeva, 2021). Some researchers treated households who reported retirement as a savings goal

were considered to be preparing for retirement, expecting that having a retirement savings goal was positively related to retirement planning (Kim & Hanna, 2015; Petkoska & Earl, 2009; Stawski et al., 2007). Stawski et al. (2007) claimed goal clarity was a psychological mechanism that motivated individuals to financially prepare for the future.

One study gathered a subjective measure of retirement preparation by questioning an individuals' best estimate of their expected retirement income replacement rate (Van Dalen et al., 2010). Krijnen et al. (2022) asked a blend of subjective and objective retirement preparation questions: such as (a) keeping/storing your pension statements in a structural way (b) finding out which sources of income you will have after retirement, (c) estimating how much money you will need after retirement to live the life you want to live, (d) estimating your monthly income after retirement, (e) assessing what you can do to make sure that you can live the life you want to live after retirement, and (f) assessing which financial product of which financial provider would best suit your situation.

Subjective Versus Objective Retirement Preparation

There appeared to be gaps between households' objective and subjective retirement preparation, meaning a household typically did not score the same on objective retirement preparation as they did on subjective retirement preparation. This suggested that households may not fully be aware of how adequately they are preparing for retirement. Kim and Hanna (2015) compared subjective versus objective retirement preparation and found that only 52 percent of households were consistent between these subjective and objective measurements, suggesting that over half of households are either inadequate in the subjective or objective perception of their retirement preparation. Despite this discrepancy between objective and subjective retirement preparation measures, many researchers still consider subjective retirement

preparation measure worth including because of their ability to capture attitudinal aspects of retirement preparation that objective measures do not (Joo & Pauwels, 2002; Reyers, 2018; Segel-Karpas & Werner, 2014; Van Dalen et al., 2010).

Is There Really a Retirement Preparation Crisis?

Thus far, the current study has commented about the consensus within the research literature on retirement preparation regarding the concern over a lack of retirement preparation among U.S. households. However, not all studies painted a gloomy picture of nation's status when it comes to retirement preparation (e.g., Biggs, 2022). A 2020 study focused on confidence levels found record-highs in the amount of people who felt on track retirement preparation (Copeland, 2020). One 2017 study found that six out of ten workers felt somewhat or very confident about their retirement preparation (Greenwald, 2017). Another Federal Reserve report indicated only moderate, albeit rising, shortfalls in retirement preparation (Jacobs et al., 2020). One study that measured retirement preparation using a combined wealth measure that included net worth, defined benefits, and expected social security, concluded with a less concerning interpretation of retirement preparation among households (Scholz et al., 2006).

Despite the studies mentioned that did not support the existence of a retirement preparation crisis, the majority of retirement preparation studies have reported concern over the lack of retirement preparation across the nation. The combination of evidence of inadequate retirement savings (Kenneth et al., 2021; Oakley & Kenneally, 2019), longevity risk (Lim & Lee, 2021), inflation risk (Bennett, 2021), and lack of awareness (Fan et al., 2022) were indicators of a valid retirement preparation problem.

The Retirement Consumption Puzzle

Another apparent contradiction to the retirement preparation concern depicted in the current study was that of the "retirement consumption puzzle." The retirement consumption puzzle describes how retirees are expected to maintain a consumption level consistent with pre-retirement years, yet some households decrease consumption and do not withdraw enough to cause the expected decline in net worth during retirement when dissaving is expected to occur (Blanchett, 2014; Olafsson & Pagel, 2020). Recent research documented how the value of retirees' financial assets does not decrease over time, as the LCH would suggest due to dissaving in retirement (Alonso-García et al., 2021; Blanchett, 2014; Browning et al., 2016; Lloyd, 2018). One study found that retirees reduced discretionary spending, consumer debt, and increased liquid savings (Olafsson & Pagel, 2020). This could occur when retirees spend less than they thought they needed (Blanchett, 2014; Lloyd, 2018; O'Neill & Gillen, 2020). The retirement consumption puzzle was not a focus in the current study because it is a trend that occurs in retirement, whereas the current study focused on trends pre-retirement.

Overspending

Overspending is not a new phenomenon. Research published in 1993 was indicative of the prevalence of overspending in the US. More recent research has also concluded that overspending is an increasing trend among households (e.g., Achtziger, 2022; Håkansson, 2014). Bae et al., (1993) found that almost 40 percent of households spent more than their take home pay.

Why Does Overspending Occur?

If overspending is a self-harming financial behavior, then why do individuals overspend? There were many possible explanations as to why overspending occurs. Spending preferences

may have stemmed from social norms and cultural trends (Cynamon & Fazzari, 2008). How money is spent has been tied to self-image and personal identity (Schor, 1998). Another possible explanation was that individuals naturally have a reference group to whom they self-compare, and if an individual with low income has a reference group with a high level of materialism, he or she will likely spend beyond the budget (Schor, 1998; Watson, 2003). Social media magnifies this social comparison phenomenon, increasing "materialistic propensities" (Pahlevan Sharif et al., 2022). Pahlevan Sharif et al., (2022) explained that consumers promulgating their recent expenditures on social media "…gives rise to a consumption culture" (p. 214). Recent empirical evidence supported the thought of social networking being linked to financial social comparison and online compulsive buying (Pahlevan Sharif et al., 2022). It is plausible that financial social comparison could cause consumption habits beyond what one's budget would responsibly dictate. Social norms blur the line between needs and wants, potentially negatively impacting financial security (Schor, 1998).

Materialism was another possible explanation. The worldview of materialism has typically been conceptualized by researchers as a consumer value that consists of the pursuit of happiness through acquisition (Richins & Dawson, 1992). The U.S. is considered a consumer society, where materialism is a symptom of the tendency to try to achieve happiness through consumption (Richins & Dawson, 1992; Roberts & Clement, 2007). Said another way, satisfaction is achieved in the act of consumption (Watson, 2003). Happiness achieved in this manner consists of the number and quality of possessions accumulated and the prestige they generate (Watson, 2003). Materialistic individuals were found to have weaker money management skills and more likely to overspend (Kimiyagahlam et al., 2019). Furthermore,

materialistic individuals tended to describe themselves as “spenders” and have a favorable attitude towards borrowing (Watson, 2003).

Another explanation involved budgeting skills. One study found that individuals who followed a budget had better financial behaviors (O’Neill et al., 2017) and have a better control over overspending (Sui et al., 2021). This was because “budgets project future income and expenses with a goal of positive cash flow” (O’Neill et al., 2017), which helps prevent overspending (Choe & Kan, 2021). However, budgeting sufficient savings is easier said than done. Behavioral biases and environmental influences make it challenging for individuals to manage and smooth consumption over a lifetime, which may result in overspending or under-saving (Sui et al., 2021). Another study found that expenditure forecasting and savings goals affected overspending behavior (Sui et al., 2021). One study explored the process of budget setting, noting the conflicting needs of saving and spending and how that conflict influences the perceptions of saving’s importance (Kim, 2022). An additional budgeting nuance to be aware of is that budgeting too far in advance was found to increase overspending (Choe & Kan, 2021).

Self-discipline was another explanation for why overspending occurs. One study focused on over indebtedness and found that an individual’s impulsivity was a significant factor in making consumer debt decisions (Ottaviani & Vandone, 2011). Relating to this, Achtziger (2015; 2022) suggested that self-control was linked to overspending. Compulsive buying/shopping disorders have been studied as a cause of overspending (Müller et al., 2021). One study found that compulsive buying was positively related to debts (Achtziger et al., 2015), where debts were a result of overspending. Similarly, a Malaysian study on in-app gaming among university students attributed overspending to addiction to the game (Kaur et al., 2020) which seemed related to compulsive buying.

Numerous studies focused on "pain of payment" to explain overspending (Achtziger, 2022; Choe & Kan, 2021; Karmarkar et al., 2015; Knutson et al., 2007; Liu & Feng, 2012; Rick, 2018). "Pain of payment" refers to purchasing decisions being driven by consumer preferences and price – the more pain associated with that decision (e.g., expected financial consequences) helps deter spending (Choe & Kan, 2021). Achtziger (2022) linked the "pain of payment" to credit card spending by hypothesizing that "…using credit cards instead of cash reduces the pain of payment as the negative consequences of the purchase (paying the price) are experienced much later than paying for a product in cash" (p.2). Paying with credit may help relieve the immediate pain of payment by deferring the payment of a desired purchase (Gärling & Ranyard, 2020). One study found individuals who pay with credit cards spend more overall than those paying with cash (Banker et al., 2021). In other words, paying with "plastic" facilitated overspending (Achtziger, 2022; Banker et al., 2021). On the contrary, increasing the pain of payment could deter overspending (Rick, 2018). Rick (2018) explained that one way to increase pain of payment is to make the transaction less convenient. An example of a less convenient purchasing transaction would be having to call the financial institution to request a higher spending limit as an exception to a purposefully decreased spending limit on a credit or debit card.

There were several other possible explanations as to why overspending occurs. Some researchers suggested overconsumption is a result of outside forces such as an increasing credit supply (Achtziger, 2022; Banker et al., 2021a) and shrewd marketing strategies (Achtziger, 2022). Banker et al. (2021) claimed that "…credit cards facilitate spending in ways that are difficult to justify on purely financial grounds" (p. 1). Self-forgiveness could also reinforce overspending behavior (Achtziger, 2022; Peetz et al., 2021), where one forgives himself or

herself for a failure through the act of purchasing a good or service, guided by a tone of self-compassion or generosity (Achtziger, 2022). Wealth allocation was another factor found to impact expected overspending (Sui et al., 2021). According to the BLCH, wealth allocation is the imaginary categorization of financial mental accounts by the following types: checking accounts, savings accounts, investments, and retirement savings (Shefrin & Thaler, 1988; Sui et al., 2021). Individuals have been found to spend from checking and savings accounts more freely (Shefrin & Thaler, 1988), which led Sui et al. (2021) to find that financial mental accounts were related to overspending. While overspending has been attributed to various causes, the research literature nearly was unanimous in its conclusion that it is a self-harming financial behavior.

Measurements of Overspending

Researchers have operationalized overspending in various ways. The common ones were summarized here, including spending more than income and revolving credit card balances. This section concluded the literature review of the constructs of retirement preparation and overspending.

Spending More Than Income

Comparing income to expenses, a technique identified by Borsch-Supan and Lusardi (2003) for measuring savings, has been employed to determine overspending. Overspending is considered negative savings. Negative savings occurs when expenditures are greater than income (Ferdous et al., 2010). Past research considered negative savings to represent overspending (Kim & Hanna, 2015; Sui et al., 2021). A subjective way to detect overspending is by measuring one's perception of spending more than income. Multiple data sets have questions that could be operationalized for spending more than income, and read along the lines of this SCF example by Sui et al. (2021): "Over the past year, would you say that your family's spending exceeded your

family's income, that it was about the same as your income, or that you spent less than your income?" (p. 233). Other ways spending more than income has been operationalized is through expected overspending, where respondents were asked how their spending compared in the past twelve months compared to a "normal year" (Sui et al., 2021). For those who reported their spending expectation was higher than a "normal" year, they were categorized as overspending as measured by spending more than income (Sui et al., 2021).

SCF data from 1994-2004 indicated that 57 percent of households spent less than income (Yuh & Hanna, 2010). Yuh and Hanna (2010) found that age was negatively related to the spending more than income measure, where ages 30-39 were sixteen percent less likely than ages under 30 to spend less than income, and ages 40-49 were 23 percent less likely than ages under 30 to spend less than income. Yao and Cheng (2017) found the probability among millennials of having a retirement account was nine percent lower for those who overspent in the past year.

Revolving Credit Card Balance

Another indication of overspending is when debt instruments, such as credit cards, are utilized during periods of negative savings (Ferdous et al., 2010), meaning an individual makes charges on the credit card that they are unable to pay off by the end of the month. If a consumer wishes to make a purchase on a product or service beyond what they have the funds to pay for it outright, they often borrow using credit cards to "…fund immediate consumption, neglecting the costs of future repayments"(Gärling & Ranyard, 2020, p. 271). In this way, overspending is a considered a present-biased temporal discounting that explains the use of borrowing on credit to fund consumption (Gärling & Ranyard, 2020).

Past research has identified credit card revolving as a measure of overspending (Ming et al., 2021; Sensenig, 2021; Sotiropoulos & d'Astous, 2013; Sui et al., 2021). Furthermore, Kim et

al. (2016) operationalized low levels of self-control as credit card revolving using SCF data. Some studies used simple measures of credit card overspending, such as questions asking how often respondents pay off their credit card (Sui et al., 2021), while other studies used more elaborate measures, such as the 11-item scale used by (Sotiropoulos & d'Astous, 2013).

One study on holiday spending, using Survey of Household Economics and Decisionmaking (SHED) data, provided some insight into the attitude towards credit card revolving (Larrimore, 2016). When asked about the plan to pay for holiday gifts, 22 percent of households anticipated putting it on a credit card and over half of those respondents didn't plan to pay it off until the following summer or later (Larrimore, 2016). While these consumers were the minority, the data was concerning, given the high cost of credit card debt.

In summary of the literature review, there is abundant prior literature published on the construct of retirement preparation, but relatively little on the construct of overspending. Research indicates there is a retirement preparation crisis, although how overspending may be contributing factor is unknown. The current study added to the body of knowledge by exploring the relationship between retirement preparation and overspending using the BLCH and LHT as theoretical frameworks.

Chapter 3 - Methodology

Previous chapters reviewed empirical evidence that gave credence to the current study's research question, as well as reviewed the literature on the primary constructs. This chapter focused on the methodology used to answer the research question. First, the three data sets were introduced, followed by a section dedicated to each data set that detailed its sample, the predictor variables, dependent variables, control variable measurements, as well as the analyses conducted in each data set.

Three Data Sets

The current study utilized three separate cross-sectional datasets: the Survey of Household Economics and Decisionmaking (SHED), the Survey of Consumer Finances (SCF), and the National Financial Capability Study (NFCS). This strategy was modeled after previous work that used both the SCF and SHED (Heckman et al., 2022). Using three nationally representative surveys added to the credibility of the findings because each survey offered similar yet different measures of the constructs. The current study considered the use of three data sets to provide robustness and a richer data set. The current study utilized 2019 data from the SCF and SHED, and 2018 data from the NFCS. While it would have been ideal to use data collected in the same year for all datasets, it was not possible due to inconsistent survey year schedules. While the NFCS and SHED surveys had more recent survey data available, the aim of the current study was to take advantage of the most recent data available while also pre-dating the COVID pandemic consumer issues that started occurring in 2020.

Sample Restrictions

Prior retirement preparation studies limited their sample in various ways. Some studies limited the sample to the respondent or spouse working full time (Kim et al., 2016), or simply

being in the labor force (Fisher & Montalto, 2010; Kim & Hanna, 2015). Similar studies have also limited the sample by age (Kim & Hanna, 2015; Kim et al., 2016; Lee et al., 2018), presumably to capture the typical working years an individual would likely be preparing for retirement. The age range varied by study; some restricted to the ages 35 to 60 (Kim & Hanna, 2015), some used ages 35 to 70 (Kim et al., 2016), others used 46 to 67 (Lee et al., 2018), and another used ages 25 to 64 (Sturr et al., 2021).

The current study enforced only one restriction on the sample, which was limiting the sample to full-time workers, excluding part-time, self-employed workers, retirees, those disabled, unemployed, full-time students, or homemakers. The full-time employment restriction was based on the respondent's employment status in the SHED, SCF, and NFCS analyses, ignoring the employment status of a spouse's working status. This restriction was employed because of the assumption that individuals who were not working, disabled, unemployed, or retired at the time of the survey would not actively be preparing for retirement. Self-employed individuals were excluded from the sample because they often heavily rely on their business to fund their retirement, which is different in nature than the retirement preparation captured in this study, which relies on consistent contribution to one's retirement account throughout one's working career. Part-time employees and self-employed individuals were originally included in the analysis but were ultimately removed in the NFCS and SCF analyses for a more conservative approach, because part-time employees may have had less financial ability to save for retirement, and self-employed individuals may have placed more importance on building their business as their retirement strategy. By removing the part-time and self-employed respondents, the scope was narrowed to the individuals most likely to be actively saving for retirement. Age was not

restricted in the current study as it was in other studies, because employment status was considered to be the most critical element of capturing periods prescribed for positive savings.

Study 1: Survey of Household Economics and Decisionmaking

Background on the SHED was obtained from the Federal Reserve Board's annual report (Canilang et al., 2020). Starting in 2013, the Federal Reserve Board started conducting the SHED on an annual basis in response to the Great Recession of 2008 to identify potential financial risks to US households. Its aim was to measure economic well-being and identify economic vulnerabilities of adults ages 18 and older living in the U.S. The SHED was designed to complement the SCF, a sister survey of the Federal Reserve Board, by including some overlapping questions to facilitate direct comparisons between datasets.

While the Federal Reserve Board coordinated the survey design, a private consumer research firm, Ipsos, administered the survey online. Ipsos used a probability-, addressed-based sampling technology, called KnowledgePanel, to select respondents for a nationally representative sample based on the following categories: gender, age, race, ethnicity, education, census region, household income, homeownership status, and metropolitan status. In previous SHED surveys, low-income households were over-sampled to obtain nationally representative data, whereas this oversampling was not needed in 2019. Despite the effort to provide nationally representative data, the Federal Reserve Board acknowledged potential gaps in representation, such as homeless populations, non-English speaking populations, and other disparities that present a challenge to survey conduction.

The survey has typically been conducted in the fourth quarter of the year, and two supplements were also issued during the COVID pandemic for the 2020 edition (Kenneth et al., 2021). Data was gathered for the 2019 survey, which was the seventh edition of the SHED, from

October 11-24th of 2019. Of the 19,994 panel members contacted, 12,238 participated with a cumulative response rate of five percent. The final survey numbers included 12,173 respondents. The sample was restricted to respondents working as paid employees, excluding from the sample those who were unemployed, retired, disabled, or not working for a reason unmentioned. Note the SHED was the only data set of the three studied that did not distinguish between full-time workers, part-time workers, or self-employed workers. This sample restriction reduced the sample size to 6,651 respondents. All respondents received five dollars as a monetary incentive for completing the survey, and targeted groups a higher monetary incentive, up to twenty dollars. This targeted incentive plan helped achieve a nationally representative sample. Ipsos' online survey offered the added benefit of re-interviewing past respondents, which offered a limited (i.e., three-year) longitudinal component. The current study only utilized the cross-sectional SHED data because the methodological strategy was to cross-sectionally compare three nationally representative data sets.

Predictor Variables

Short-Term Time Preference

The first predictor in the BLCH conceptual model, as seen in Figure 1.2, was time-preference. It represented the dual preference framework of the doer versus the planner. Short-term time preference was measured in each data set by availability. Short-term time preference was measured in the SHED by the following question: "in the past 12 months, have you borrowed money from or cashed out money from any of your other retirement savings accounts?" If the respondent answered "yes" they were treated as having a short-term time preference, because utilizing money earmarked for future consumption (i.e., retirement account funds) for current consumption was aligned with the doer's short-term orientation that prioritizes

current consumption at the expense of future consumption. In other words, withdrawing money from a retirement plan was assumed to indicate a short-term time preference, no matter the reason for the withdrawal. The logic behind this assumption was that although retirement accounts are an attractive financial source during financial hardship, tapping into one's retirement assets diminishes one's retirement asset balance and retirement preparation level. Pre-retirement withdrawals from retirement assets for rational reasons, such as re-investing in other long-term investments, were disregarded in the measurement, which was a limitation of the current study. There were 538 missing observations that were treated as missing data.

Risk Perception

The LHT was an alternative theory that helped answer the research question of how overspending affects retirement preparation. LHS characteristics were categorized by risk perception. A fast LHS represented a high-risk perception, whereas a slow LHS represented a low-risk perception. Risk perception was measured four ways. Short-term time preference was a holistic measurement of risk perception. Risky behaviors represented a short-term measure of risk perception. Poor economic expectations represented a medium-term measure of risk perception. Retirement life expectancy represented a long-term measure of risk perception. The SHED did not capture lottery ticket purchases or retirement life expectancy, and therefore the SHED analysis did not predict the relationship between risky behavior or retirement life expectancy and overspending. The measurements were described in detail below.

Short-Term Time Preference.

Some LHT scholars have referred to time preference as time orientation (e.g., Sng et al., 2017), and other as time horizon (e.g., Mishra et al., 2017). Regardless of the terminology, LHT scholars viewed time preference as a key variable (e.g., Mishra et al., 2017; Sng et al., 2017). A

short-term time preference was considered to apply a greater discount to the future, representing a high-risk perception or a fast LHS. Short-term time preference was measured with the same question as the short-term time preference measurement above in the BLCH model. If the respondent answered "yes," they were treated as having a high-risk perception because distributing funds from a long-term savings vehicle for the assumed purpose of current consumption was indicative a fast life history strategy. The same 538 missing observations were also treated as missing data.

Poor Economic Expectations.

Poor economic expectations measured the individual's attitude regarding financial risk on the horizon. If a respondent believed the financial future would be worse than the present (i.e., poor economic expectations), it was an indication of high-risk perception. The question, "in this country, how would you rate economic conditions today?" was used to operationalized poor economic expectations. If the respondent answered "poor" they were treated as having a high-risk perception. If the respondent answered, "only fair," "good," or "excellent," they were not treated as having a high-risk perception. There were 13 respondents who refused to answer this question; these observations were treated as missing data.

Overspending

Overspending in the current study was defined as spending more than income, revolving credit card balance, utilizing AFS, and the absence of an emergency fund. These four measures were chosen for three reasons. First, previous researchers have operationalized overspending, specifically spending more than income and credit card revolving, in similar ways (e.g., Borsch-Supan & Lusardi, 2003 Kim & Hanna, 2015; Ming et al., 2021; Sensenig, 2021; Sui et al., 2021). Second, they were measures available in all three datasets featured in the current study. Third,

using four different measures for overspending provided a more dynamic view than one measure alone. For example, an individual may have been revolving credit card debt instead of taking out payday loans to fund overspending behavior, or vice versa. The other self-control measures reviewed in chapter two were not included in the study because they were not available in the data sets.

Spending More Than Income.

Operationalizing overspending with spending more than income was consistent with prior research (Borsch-Supan & Lusardi, 2003).[1] If income exceeded expenditures, the household was assumed to be saving. It was plausible then to assume if expenditures exceeded income, the household was overspending. The SHED survey question utilized for this measurement read: "in the past month, would you say that your [household] total spending was (a) less than your income, (b) the same as your income, (c) more than your income, or (d) refused to answer.*"* Only the respondents that selected (c) more than income, were treated as overspending as measured by spending more than income in the SHED. The 22 "refused to answer" responses were treated as missing.

Revolving Credit Card Balance.

Gärling and Ranyard (2020) considered revolving credit card balance to be an indicator of overspending, caused by low levels of self-control. Experts have suggested that credit cards facilitate overspending because they are easy to obtain and use, they reduce the pain of payment,

[1] A data limitation of this measurement was that researchers have operationalized it both as spending less than income (e.g., Borsch-Supan & Lusardi, 2003) as well as a retirement preparation measurement (e.g., Ferdous et al., 2010; Heckman & Hanna, 2015; Kim & Hanna, 2017; Yuh & Hanna, 2010)**.** Because retirement preparation was not operationalized in this way in the current study, it was assumed to not cause any methodological concerns, but still warranted disclosure.

and the credit limit and minimum payment due displayed on statements may act as anchors that induce higher levels of consumption (Gärling & Ranyard, 2020). Furthermore, Sensenig suggested a possible link between credit card usage and deficient retirement preparation: "…credit card debt may supersede seemingly less-urgent priorities, like retirement saving" (2021, p. 2). Tescher and Stone (2022) reported a similar connection between revolving credit card debt and saving in that high interest consumer debt erodes the ability to save money. Revolving credit card debt has also been considered financially damaging because of the interest and fees charged. A 2021 study found that that amount of interest and fees paid by around half of the households who revolved credit card debt was nearly as much as the interest paid by all households on auto loans and lease interest (Tescher & Stone, 2022). The current study assumed that revolving credit card debt was representative of a low-level of self-control, where a household's short-term orientation (e.g., consumption in the present for immediate gratification) trumped a long-term orientation (e.g., saving in the present for future needs).

Two survey questions were utilized in the SHED to measure revolving credit card balance categorized in three ways: (a) credit card revolvers, (b) non-credit card revolvers, and (c) non-credit card holders. The first was: "do you currently have any outstanding unpaid credit card debt?" Respondents were offered a binary "yes" or "no" answer choice. A "yes" answer was treated as overspending. The second question was, "in the past 12 months, how frequently have you carried an unpaid balance on one or more of your credit cards?" The categorical answers choices included: (a) never carried an unpaid balance, (b) once, (c) some of the time, (d) most of the time, or (e) refused to answer. If the respondent answered (b) once, (c) some of the time, (d) most of the time, the household was treated as overspending. If either of these two measures indicated the household was overspending, the household was treated as overspending as

measured by revolving credit card balance. There were 23 respondents that refused to answer, and these observations were treated as missing data. A robustness check was run in each applicable analysis to test the exclusion of non-credit card holders, of which there were 767 missing observations, representing those who did not own a credit card, which were treated as missing data.

Alternative Financial Service Usage.

Alternative financial services (AFS) usage was a third measure of overspending. AFS are high-cost debt instruments (Robb et al., 2015) used to "…fund purchases of desired consumer products" (Gärling & Ranyard, 2020, p. 272). Such products include payday loans, rent-to-own financing, pawn shops, auto title loans, and tax refund anticipation loans (Gärling & Ranyard, 2020; Robb et al., 2015). Due to the high cost of alternative financial services, researchers have not considered them to be a reasonable option for households (e.g., Robb et al., 2015). The usage of alternative financial services suggested a household was not following the prescribed LCH model of setting consumption levels lower than income levels and were thus indicative of overspending.

Lee and Kim (2018) found that overspending increased the odds of AFS usage, specifically payday loans, by 88 percent. Chen and Livermore (2020) found, using SHED data, that AFS usage was inversely related to financial well-being and financial security. They also found that the impact of AFS usage on these measures disproportionately affected lower income households (Chen & Livermore, 2020). In sum, AFS usage has been framed in the literature as a poor financial decision due to the lack of emergency funds (e.g., Chen & Livermore, 2020). The current study considered AFS usage as an acceptable proxy of overspending using the following

logic: because AFS products were egregiously financially disadvantageous to the consumer, utilizing them indicated spending beyond one's budget.

Three questions were used from the SHED to operationalize AFS usage. The first question assessed if the household had taken out a payday loan or payday advance in the past 12 months. Respondents were offered a binary answer choice of "yes" or "no." The second question assessed if the household had taken out a pawn shop loan or auto title loan in the past 12 months. Respondents were offered a binary answer choice of "yes" or "no." The third question addressed if the household had obtained a tax refund advance to receive a tax refund faster in the past 12 months. Respondents were offered a binary answer choice of "yes" or "no." If any of these three measures indicated the household was overspending, the household was treated as overspending as measured by AFS usage in the SHED. The 26 "refused to answer" observations were treated as missing data.

Absence of Emergency Fund.

The absence of an emergency fund was the final measurement of overspending. Maintaining an emergency fund has been considered a critical component of managing personal finances to weather unexpected expenses or income dips (Farrell et al, 2019). The SHED question "have you set aside emergency or rainy day funds that would cover your expenses for 3 months in the case of sickness, job loss, economic downturn, or other emergencies?" operationalized absence of an emergency fund. If a respondent answered "no" to this question, they were treated as overspending. The 17 "refused to answer" observations were treated as missing data.

Dependent Variables

Retirement preparation is a challenging construct to objectively measure because everyone has unique goals and requirements which require modification to adapt to life events. To address the measurement challenge that objective retirement preparation presented, the current study used four measurements to operationalize retirement preparation. Three were objective: (a) retirement account ownership, (b) active contribution to a retirement account, and (c) retirement account assets. The final measure, perceived retirement preparation, was subjective. The decision to include both objective and subjective measures was intentional because it more broadly illustrated retirement preparation, rather than objective or subjective alone. The current study specifically chose to not utilize benchmark ratios because of the imbedded, over-reaching assumptions (Binswanger & Schunk, 2012).

The SHED offered suitable measurements for three of the four measurements of retirement preparation. The three measurements included retirement account ownership, perceived retirement preparation, and retirement account assets. The SHED did not have a suitable measure for active contribution to a retirement plan. The measurements were described in detail below.

Retirement Account Ownership

Retirement account ownership was assumed to be a viable proxy for retirement preparation because researchers (e.g., Adams & Rau, 2011; Kim & Hanna, 2015; Lim & Lee, 2021; Oakley & Kenneally, 2019; Sturr et al., 2021) considered defined contribution plans to be the foundational vehicle for funding retirement income. This decision was made based on data set availability, as well as modeling after Yao and Cheng (2017), who operationalized retirement preparation as ownership of a defined contribution plan and/or an IRA using SCF data.

The six questions used in the SHED survey to measure retirement account ownership asked respondents whether they own any of these types of retirement accounts: 401(k), 403(b), Keogh, other defined contribution plan through an employer, pension with a defined benefit through an employer that will pay a fixed monthly amount in retirement, IRA, Roth IRA, savings outside a retirement account, a business or real estate that will provide income in retirement, or other retirement savings. Because the question specifically framed each of these assets as being used for retirement, owning any of these types of assets was treated as a "yes" in this binary measurement. There were 529 missing observations in the restricted sample of the current study which were treated as missing data.

Retirement Account Assets

Retirement account assets require a large enough balance to sustain steady distributions for the duration of one's retirement. While there is no one formula to reveal the "right" amount of retirement account assets, the current study assumed that retirement preparation may be operationalized by retirement account assets because it represented a source of the respondents' future retirement income stream. The level of retirement account assets was measured by the current balance of the household's retirement accounts. This decision was made based on prior literature (e.g., Sensenig, 2021; Tamborini & Purcell, 2016; Yao & Cheng, 2017), and data set availability.

The SHED captured this measure with the question: "approximately how much money do you currently have saved for retirement?" Respondents were given the following categorical answer choices to select from: (a) less than $10,000, (b) $10,000-$49,999, (c) $50,000-$99,999, (d) $100,000-$249,999, (e) $250,000-499,999, (f) $500,000-999, (g) $1,000,000 or more. Respondents were also given the choice to respond, "don't know" or "refuse to answer." In total,

the retirement account assets measurement had 1,702 missing observations, which were treated as missing data. Lower levels of retirement account assets corresponded to lower levels of retirement preparation, whereas higher levels of retirement account assets corresponded with higher levels of retirement preparation.

Perceived Retirement Preparation

Perceived retirement preparation was measured by a subjective question capturing how well an individual felt financially prepared for retirement. This was considered to be a valid operationalization of retirement preparation because, as Reyers (2018) explained, "perception drives action" (p. 345). The decision to operationalize retirement preparation this way was based on data set availability, as well as modeling after related studies, such as Kim and Hanna (2015), who assessed respondents' perception of retirement income adequacy.

The SHED question utilized for this measurement read, "do you think that your retirement savings plan is currently on track?" The answer choices were the binary options of "yes" or "no." The respondents who responded "yes" were treated as positive in the binary dependent variable measure of perceived retirement preparation. There were 1,481 missing observations for perceived retirement preparation, which were explained by the question being limited to respondents who self-reported as not currently retired, as well as those who answered, "don't know" or refused to answer.[2]

[2] In the SHED, respondents were asked if they considered themselves to be retired, which was separate from the employment status measure used to apply the sample restriction. Those who considered themselves to be retired were not asked the perceived retirement preparation question, which contributed to the missing observations of this measure.

Control Variables

Control variables were included to represent additional elements of the LCH, BLCH and the LHT. The LCH called for socio-economic characteristics to be included in the study, while the BLCH called for behavioral variables to be included in the study (Rha et al., 2006). Socio-economic and behavior variables may have had a distinct and significant impact on retirement preparation (Muratore & Earl, 2010; Ozgen & Esiyok, 2020), and therefore needed to be controlled for to eliminate the possibility of the effect being captured in the error term. The section below identified the socio-economic and behavioral factors controlled for in this study.

Socio-Economic Characteristics

Age.

Age was included a control variable, in line with previous research (Biljanovska & Palligkinis, 2018; Birkenmaier & Fu, 2021; Z. Chen & Livermore, 2020; Hurtado & Topa, 2019; Kim & Hanna, 2015; Lim & Lee, 2021; Moore, 2019; Morgan & Eckert, 2004; Muratore & Earl, 2010; Stawski et al., 2007; Van Dalen et al., 2010; Yuh & Hanna, 2010; Zan & Hanna, 2008). As discussed in the literature review section, age was important to be controlled for because it represented the stage one was at within the life cycle, which can affect the saliency and feasibility of retirement preparation. Therefore, age was expected to be positively related to retirement preparation. The SHED analyses measured age as an ordinal variable, with the following categories: (a) under 35, (b) 35-44, (c) 45-54, (d) 55-64, and (e) 65 and over**.**

Income.

Previous related research included income as control variable (Biljanovska & Palligkinis, 2018; Birkenmaier & Fu, 2021; Chen & Livermore, 2020; Heckman et al., 2022; Kim & Hanna, 2015; Lee et al., 2018; Lim & Lee, 2021; Morgan & Eckert, 2004; Muratore & Earl, 2010;

Newmeyer et al., 2020; Reyers, 2018; Rha et al., 2006; Stawski et al., 2007). As discussed in the literature review section, income was important to control for because it is non-linearly and, in general, positively related to retirement preparation. Based on prior research, income was expected to positively relate to retirement preparation and negatively relate to overspending. Income data was categorized by: (a) $0-$24,999, (b) $25,000-$49,999, (c) $50,000-$74,999, (d) $75,000-$99,999, (e) $100,000-$149,000, and (f) $150,000 or more. Non-normal income data was addressed by using at least five income categories.

Gender.

The current study included gender as a control variable, which was in line with previous research (e.g., Birkenmaier & Fu, 2021; Lim & Lee, 2021; Reyers, 2018). There were no theoretical grounds for hypothesizing how gender related to research question. Gender was categorized as male or female.

Education.

As discussed in the literature review, related studies also controlled for education (e.g., Biljanovska & Palligkinis, 2018; Chen & Livermore, 2020; Fan, 2000; Kim & Hanna, 2015; Lim & Lee, 2021; Morgan & Eckert, 2004; Rha et al., 2006; Yuh & Hanna, 2010; Zan & Hanna, 2008). Therefore, the current study also included education as a control variable. Based on prior research, education was expected to be positively related to retirement preparation. Education was measured as an ordinal variable using the following categories: no high school degree, high school degree, some college, and bachelor's degree or higher.

Marital Status.

Marital status was included as a control variable, which was in line with previous research (Birkenmaier & Fu, 2021; Coley et al., 2016; Copeland, 2020; Fan, 2000; Kim &

Hanna, 2015; Koposko et al., 2016; Rha et al., 2006; Yuh & Hanna, 2010). Based on prior research, married couples were expected to have higher levels of retirement preparation compared to their counterparts. Marital status was categorized by (a) married, (b) living with a partner, single, or never married, (c) separated or divorced, or (d) widowed.

Race.

Race was included as a control variable, in line with previous related research (Birkenmaier & Fu, 2021; Z. Chen & Livermore, 2020; Fan, 2000; Kim & Hanna, 2015; Lim & Lee, 2021; Morgan & Eckert, 2004; Reyers, 2018; Yuh & Hanna, 2010; Zan & Hanna, 2008). No directional hypotheses were made based on race. This SHED analysis assessed race of the respondent as a categorical variable, using the following categories: (a) White, (b) Black, (c) Hispanic, and (d) other. If the respondent selected more than one race, the answer was categorized as "other."

Behavioral Controls

Financial Knowledge.

Financial knowledge was controlled for in the current study, in-line with previous research (Babiarz & Robb, 2014; Chou et al., 2015; Kimiyagahlam et al., 2019; Nolan & Doorley, 2019; Reyers, 2018; Segel-Karpas & Werner, 2014; Van Dalen et al., 2010; Vasudeva, 2021; Yeh, 2022). Financial knowledge needed to be controlled for because of its possible impact on retirement preparation, where retirement preparation would be more salient to those respondents with higher levels of financial knowledge. Based on the literature review of financial knowledge in chapter two, financial knowledge was expected to be positively related to retirement preparation. Objective financial knowledge was measured using the average of three questions on stocks, inflation, and compound interest. Among the three questions, there were

5,372 answers of "don't know" or "refused to say," which were treated as incorrect answers. Subjective financial knowledge was not captured in the SHED.

Cognitive Ability.

Some retirement preparation studies controlled for cognitive ability, as discussed in the literature review. The current study used education as a proxy for cognitive ability, in line with previous research (Kim & Hanna, 2015; Stango & Zinman, 2020). The education variable was discussed in the section under socio-economic characteristics. Therefore, education served a dual role in the current study – as a socio-economic characteristic and as a proxy for cognitive ability.

Health.

Several retirement preparation-related studies included health as a control variable in the model (Biljanovska & Palligkinis, 2018; Lee et al., 2018; Lim & Lee, 2021; Morgan & Eckert, 2004; Reyers, 2018; Topa et al., 2009). Health needed to be controlled for where possible because of its possible impact on retirement preparation, where low levels of health may be associated with a short-term time preference. The SHED asked respondents to rate their general physical health, which was used to operationalize health. It was treated as an ordinal variable, with the categories of excellent, fair, or poor. The 812 missing responses were treated as missing data.

Socialization.

Some retirement preparation studies controlled for socialization. Kimiyagahlam et al., (2019) operationalized parental influence with parent's education level. The current study considered it important to control for socialization as it was an important factor in LHT; early life conditions reveal parental investment, and parental investment was indicative of LHS (Xu et

al., 2018). This study followed suit and operationalized the construct of socialization with parental education. There were 268 missing responses which were treated as missing data.

Risk Tolerance.

Risk tolerance has been identified as a behavioral factor that needs to be controlled for in retirement preparation studies (Reyers, 2018; Rha et al., 2006). A high-risk tolerance may accelerate the growth of retirement assets, but it also magnifies the risk of loss. The SHED measured willingness to take risk on a Likert-type scale from zero to ten, where zero was the least amount of risk and ten was the greatest amount of risk. The 23 "refused to answer" choices were treated as missing data.

Analyses

Descriptive statistics were conducted for the SHED dataset. To explore the reliability of the high risk perception, overspending, and retirement preparation constructs, additive scales, and confirmatory factor analyses (CFA) were employed. To understand the relationship of overspending on short-term time preference (see Figure 3.1) and risk perception (see Figure 3.2), two separate binary logistic regressions were employed. Three regressions were used to analyze the relationship between overspending (the independent variables) and retirement preparation (the dependent variables), as illustrated in Figure 3.1 and Figure 3.2. First, a binary logistic regression was used to estimate the relationship between overspending and retirement account ownership. Second, an ordinal logistic regression was run for retirement account assets. Third, a binary logistic regression was run for perceived retirement preparation. Interaction effects were tested between overspending and income with retirement preparation, due to the suspicion that the relationship between overspending and retirement preparation may have depended on the level of income. Listwise deletion was used to handle missing data, which was the default setting

in Stata. Robustness checks were also ran using (a) an unweighted sample, (b) multiple imputation, and (c) excluding non-credit card holders.

Figure 3.1.

Empirical Model as Informed by the BLCH

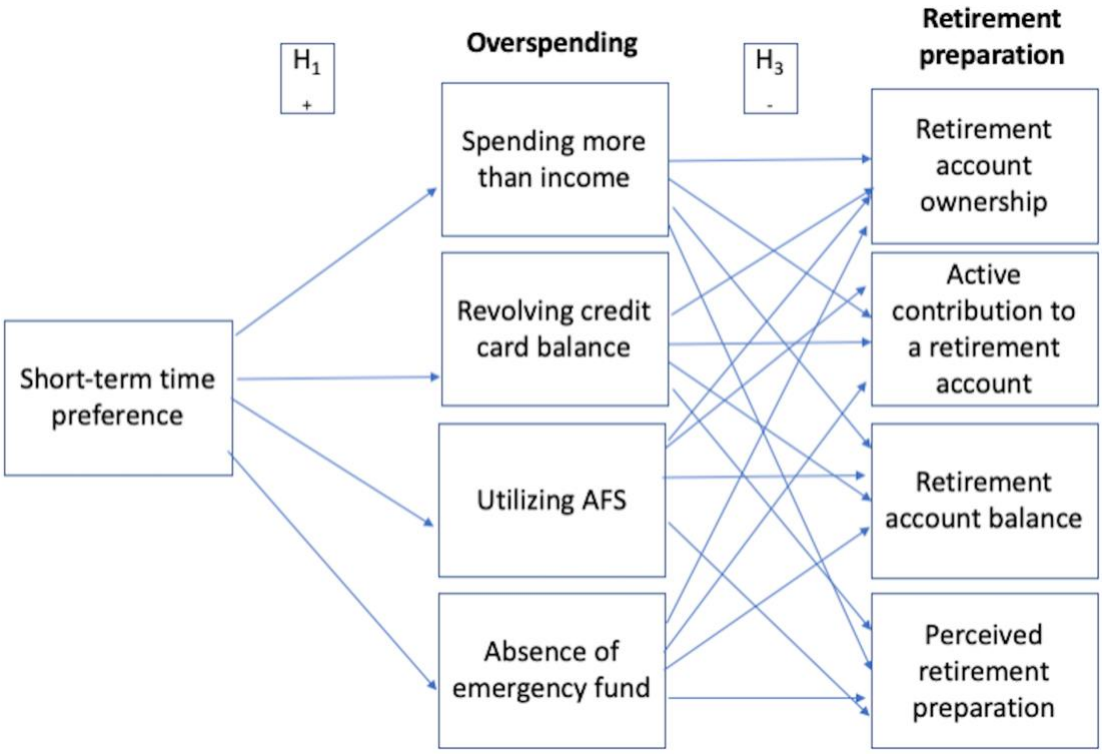
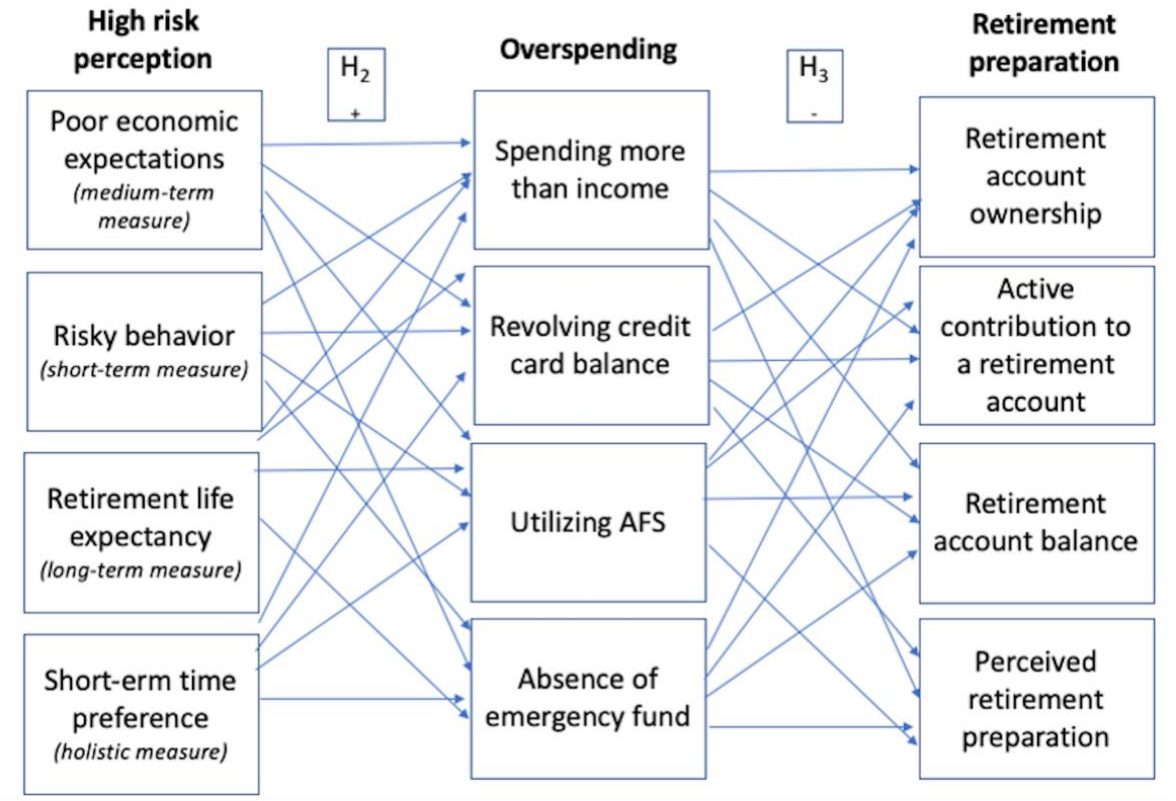


Figure 3.2.

Empirical Model as Informed by the LHT



Study 2: Survey of Consumer Finance

The Survey of Consumer Finances (SCF) was a cross-sectional data set, also conducted by the Federal Reserve Board, which operated with the cooperation of the Department of Treasury (Kennickell & Starr-McCluer, 1994). It has been conducted every three years after tax-season and contained data reflecting families' financial details. The SCF has typically surveyed approximately 6,500 families, but over sampled wealthier households to collect enough pertinent data. To account for missing data and protect the identity of individuals, five imputed data sets were provided. The imputed data sets had no missing data to account for. The current study utilized the 2019 SCF data, which had a sample size of 5,777. Upon restricting the sample to full-time workers, the final sample size was 3,361.

The current study relied on data corresponding to the head of the household where a choice was required, and otherwise reflected household-level data. Lindamood et al. (2007) explained the importance of clarifying the respondent versus household when using the SCF because of its impact on responses about race, education, and subjective answers. Specifically for education, age, and race, the head of the household's response was reflected. In primary economic units that involved couples, the head of the household was the male in a mixed-sex couple or the older individual in a same-sex couple.

Predictor Variables

Short-Term Time Preference

Some behavioral finance researchers have operationalized time preference with planning horizon (Kim & Hanna, 2017; Middlewood et al., 2018; Rha et al., 2006). Hong and Hanna (2014) studied the efficacy of utilizing financial planning horizon as a measurement for time preference and found it was a better measurement of situational factors rather than a constant time preference. Given data set limitations of available measures and building upon past operationalizations (e.g., Kim & Hanna, 2017; Middlewood et al., 2018; Rha et al., 2006), the current study utilized planning horizon as a proxy for short-term time preference. Based on prior research (Rha et al., 2006), long-term planning horizons were assumed to be indicative of a long-term orientation and expected to positively relate to retirement planning. The SCF question used operationalize planning horizon read, "in planning or budgeting your (family's) saving and spending, which of the time periods listed on this page is most important to you (and your family living here)?" There were answer five options to select from as an answer, ranging from "next few months" to "longer than ten years." The current study treated this variable as a binary measure, where "next few months" to "next year" was categorized as a short-term time

preference, and “next few years” to “longer than ten years” was categorized as a long-term time preference. The reason for dividing the binary measurement up along these lines was based upon financial planning logic that would classify a time horizon of a year or less as a short-term horizon.

A second operationalization of short-term time preference was explored as a robustness check. This alternative measure utilized the question, “do you currently smoke.” Heckman et al. (2022) made a case for this operationalization because smokers tend to have a shorter-term time preference. If the respondent answered “yes” they were treated as having a short-term time preference.

Risk Perception

Short-Term Time Preference.

The holistic measure of risk perception was short-term time preference, which was measured the same as short-term time preference under the BLCH model using SCF data. It was a binary measure. A short-term time preference was considered to be indicative of a high-risk perception, representing a fast LHS.

Poor Economic Expectations.

The SCF question, “over the next year, do you expect the economy to perform better, worse, or about the same as now?” was used to operationalize poor economic expectations. If the respondent answered “worse” they were treated as having a high-risk perception, which was indicative of a fast LHS. This was a binary measure.

Retirement Life Expectancy.

Retirement life expectancy measured the individual’s attitude about how long he or she expected to spend in retirement; a short retirement life expectancy was an indication of higher

expected mortality risk, or higher risk perception. Retirement life expectancy was measured by the respondent's self-reported life expectancy less their self-reported expected retirement age. Respondents reported life expectancies up to age 150. The current study top-coded responses at 105 because that was considered the maximum value a financial planner would use as a life expectancy when creating a financial plan. For those respondents who reported no expectation to retire, the self-reported expected retirement age was replaced with the respondent's self-reported life expectancy. Because the SCF did not capture lottery ticket purchases, the SCF analyses did not predict the relationship between risky behaviors and overspending.

Overspending

Spending More Than Income.

The SCF asked a comparable question to the SHED, which read: "which of the following comes closest to describing your and your [household's] savings habits?" Respondents chose from the following responses: (a) don't save – usually spend more than income, (b) don't save – usually spend about as much as income, (c) save whatever is left over at the end of the month – no regular plan, (d) save income of one family member, spend the other, (e) spend regular income, save other income, (f) save regularly by putting money aside each month. Only the respondents who answered (a) don't save - usually spend more than income, were categorized as overspending as measured by spending more than income in the SCF. There was an alternative, more restrictive**,** measure of spending more than income that was also tested as a robustness check in the SCF. This measurement came from a follow-up question to the original survey question, asking if any spending included the purchase of a home or automobile or saving for investments. The respondent was asked to answer the spending more than income question again, ignoring purchases made on those items mentioned.

Revolving Credit Card Balance.

The SCF had two questions to measure overspending in terms of revolving credit card balance. The first read: "thinking only about Visa, MasterCard, Discover, American Express cards you can pay off over time, and store cards, do you almost always, sometimes, or hardly ever pay off the total balance owed on the account each month?" The categorical answer choices included: (a) always or almost always, (b) sometimes, or (c) hardly ever. If the respondent answered (b) sometimes, or (c) hardly ever, then the household was treated as overspending. There were 445 respondents who did not own credit cards who were included in the analyses as a third category and treated as non-credit card revolvers.

The second SCF question to measure revolving credit card balance read "other than the store accounts where you have credit cards, do you (or your family living here) have any charge or revolving charge accounts at stores where you owed money after your last payment?" The answer choice was binary: "yes" or "no" where "yes" was treated as overspending. If either of these two measures indicated the household was overspending, the household was treated as overspending.

AFS Usage.

The SCF question used to operationalize AFS usage read: "during the past year, [has your household] taken out a 'payday loan,' that is, borrowed money that was supposed to be repaid in full out of your next paycheck?" The survey question also included the instructions to "please do not include personal loans from family members or friends" which helped increased the validity of the measurement by reducing potential confusion. The answer choices were binary, either "yes" or "no," where a "yes" was treated as overspending.

Absence of Emergency Fund.

The SCF question that captured absence of an emergency fund read, "if tomorrow you experienced a financial emergency that left you unable to pay all of your bills, how would you deal with it? Would you borrow money, would you spend out of savings or investments, would you postpone paying bills, work more or get an extra job, or would you do something else?" If the respondent answered anything other than "spend out of savings or investments," they were treated as not having an emergency fund and thus were overspending.

Dependent Variables

Retirement Account Ownership

There were two SCF questions used to measure retirement account ownership. The first asked respondents if they anyone in their family living there had any Keoghs. The answer choices were "yes" or "no," and there was no missing data on this question. The second question asked respondents if there were any pension, retirement, or tax-deferred savings plan connected with their job that had not already been disclosed. The answer choice was a binary "yes" or "no." A "yes" to either of these questions was treated as a "yes" for retirement account ownership.

Active Contribution to a Retirement Account

Active contribution to a retirement account was reflective of active household retirement savings, and thus was assumed to be a viable operationalization of retirement preparation (Sturr et al., 2021). This decision was based on prior literature (e.g., Hassan & Lawrence, 2007; Lee et al., 2018; Morgan & Eckert, 2004; Stawski et al., 2007; Sturr et al., 2021), and data set availability. The SCF offered a suitable measurement of active contributions to a retirement account, captured by two questions. One question captured whether anyone in the household made contributions to IRAs or Keoghs in the previous year (2018), and also instructed the

respondent to not include rollovers or cash outs from other pension plans or IRAs as new IRA contributions. The second question asked respondents if anyone in the household had contributed to a traditional pension, 401(k), 403(b), Thrift Savings Plan, profit sharing plan, supplemental retirement annuity, cash balance plan, portable cash option plan, Simplified Employee Pension (SEP), Simplified Incentive Match Plan for Employees (SIMPLE), money purchase plan, stock purchase plan (ESOP), 457 plan, or other retirement account. This was a binary measurement, with answer choices of "yes" or "no." If the respondent answered "yes" to either of these questions, they were treated as "yes" for active contributions to a retirement account. If the respondent did not have a retirement account, they were treated as not actively contributing to a retirement account.

Retirement Account Assets

The SCF also had several questions that were combined to capture a household's retirement account asset level. The following account balances were combined to arrive at the total household retirement asset balance, measured as a continuous variable: Roth IRAs, roll-over IRAs, regular or other IRAs, Keoghs, and employer-sponsored plans. While the SCF also gathered data on account asset levels of other family members in the household, the current study limited the balance to the respondent and spouses' or partners' assets." The log of retirement account assets was used to account for skewness associated with this measure. Lower balances of total retirement account assets were indicative of lower levels of retirement preparation. Higher balances of total retirement account assets were indicative of higher levels of retirement preparation.

Perceived Retirement Preparation

The SCF question that captured perceived retirement preparation read "how would you rate the retirement income you receive (or expect to receive) from all sources?" Respondents could respond on a five-point Likert type scale, where one represented totally inadequate and five represented very satisfactory. A score of one was indicative of the lowest levels of perceived retirement preparation. A score of five was indicative of the highest level of perceived retirement preparation.

Control Variables

This SCF analysis provided age as a continuous variable, generated from the respondent's date of birth, and top-coding at age 95. The SCF measured income as a continuous variable. To account for skewness, income was log-transformed. Gender was categorized as a binary variable, either male or female. Education was measured as an ordinal variable, using the following categories: no high school degree, high school degree, some college, bachelor's degree, and advanced degree. This SCF analysis measured marital status as a categorical variable, and the current study categorized them as follows: (a) married, (b) living with a partner or never married, (c) separated or divorced, (d) widowed. The SCF analysis treated respondent race as a categorical variable, using the following categories: (a) White, (b) Black, (c) Hispanic, and (d) Asian/other households.

The SCF analysis measured objective financial knowledge using the average of three questions assessing the respondent's knowledge on stocks, interest rates, and inflation. Among the three questions there were 723 observations of "don't know," which were treated as the wrong answer data. The SCF contained a question asking respondents to rank their knowledge of personal finances on a scale from zero to ten, where zero represented "not knowledgeable at all

about personal finances" and ten represented "very knowledgeable about personal finances," which was used to operationalize subjective financial knowledge. The SCF asked respondents to rate their general physical health, which was used to operationalize health. It was treated as an ordinal variable, with the categories of excellent, fair, or poor. The SCF measured willingness to take risk on a Likert-type scale from zero to ten and it was treated as a continuous variable. Retirement saliency was indirectly controlled for by expected retirement age being included in the calculation for retirement life expectancy.

Analyses

Descriptive statistics were run for the SCF dataset. To explore the reliability of the constructs for risk perception, overspending, and retirement preparation, additive scales and CFA models were employed. To understand the relationship of overspending on short-term time preference (see Figure 4) and risk perception (see Figure 5), separate binary logistic regressions were employed. Four regressions were utilized to analyze the relationship between overspending (independent variable) and retirement preparation (dependent variable). First, a binary logistic regression was used to estimate the relationship between overspending and retirement account ownership. Second, a binary logistic regression was run for active contributions to a retirement account. Third, an OLS regression was run for retirement account assets (log). Fourth, an OLS regression was run for perceived retirement preparation. Interaction effects were tested between overspending and income with retirement preparation. The "scfcombo" command used a Repeated-Imputation Inference (RII) method as well as bootstrapped standard errors. The RII method was used for all five implicates, which provided variance estimates that were more conservative and more accurate than using only one implicate (Kim & Hanna, 2015). RII adjusted the standard errors because multiple imputation was used to handle the missing data.

The bootstrapped standard errors adjusted for possible heteroskedasticity due to the complex sample, correcting the standard errors (Shin & Hanna, 2017). Robustness checks were also ran using (a) an unweighted sample, (b) the alternative short-term time preference measurement, and (c) the alternative, more restrictive, measurement of spending more than income.

Study 3: National Financial Capability Study

The current study also utilized data the 2018 National Financial Capability Study (NFCS), a survey funded by the FINRA Foundation and research conducted by ARC Research (FINRA Investor Education Foundation, 2022). In response to the increased complexity of financial tools and products, the has NFCS focused on assessing the financial capability of adults aged 18 and older in the U.S. (FINRA Investor Education Foundation, 2022). The survey has been conducted every three years, starting in 2009 (Lin et al., 2019). The 2018 NFCS offered two separate surveys: the State-by-State Survey, and the Investor Survey (Lin et al., 2019). Because survey questions in the Investor Survey were not pertinent to the current study, only the data from the State-by-State Survey was utilized. The survey was conducted online between June and October 2018 on adults in the U.S. Non-probability quota sampling was utilized, and participants were offered incentives in exchange for participating. The survey was weighted to be nationally representative in terms of age, gender, ethnicity, education, and Census Division, based on data from the American Community Survey (FINRA Investor Education Foundation, 2022). Approximately 500 individuals were surveyed from each state, plus the District of Columbia, and Oregon and Washington were each oversampled by 1,250 (FINRA Investor Education Foundation, 2022). The total sample consisted of 27,091 respondents (FINRA Investor Education Foundation, 2022). After restricting the sample to full-time working respondents only, the final sample size was 10,800.

Predictor Variables

Short-Term Time Preference

The NFCS analysis also utilized planning horizon as a proxy for short-term time preference. The NFCS planning horizon question read, “I worry about running out of money in retirement” with a Likert-type scale as an answer choice from one to seven, where one represented the longest time preference and seven represented the shortest time preference. Responses of six or seven were treated as a short-term time preference. The 211 responses of “don’t know” or “prefer not to say” were treated as missing data. A second short-term time preference measure was tested as a robustness check. The alternative short-term time preference measure utilized the question “have you ever tried to figure out how much you need for retirement?” If the respondent answered “no,” they were treated as having a short-term time preference.

Risk Perception

Short-Term Time Preference.

Short-term time preference under the LHT framework was measured the same as short-term time preference under the BLCH framework in the NFCS: planning horizon. A short-term planning horizon represented a high-risk perception. Thus, a short-term planning horizon was indicative of a fast LHS.

Risky Behavior.

LHT scholars have considered risky behavior to be indicative of one’s LHS (Mishra et al., 2018). Furthermore, risky behavior has been associated with risk-associated personality traits such as impulsivity and low levels of self-control (Mishra et al., 2018). Mishra et al. (2018) operationalized risky behavior as gambling behavior, where gambling behavior (i.e., lottery

ticket purchases) was predictive of a faster LHS. The current study also operationalized risky behavior as lottery ticket purchases, proposing that it represented a high-risk perception because the chances are so slim that a consumer would win the lottery, purchasing a lottery ticket was considered wasting, or over-allocating, current resources. Over allocating current resources at the expense of future resources indicated a high-risk perception. If the respondent had purchased a lottery ticket in the past twelve months, they were treated as portraying risky behavior. It was treated as a binary measure, where the 165 responses of "don't know" and "prefer not to say" were treated as missing data.

Poor Economic Expectations.

The NFCS question that operationalized poor economic expectations read, "because of my money situation, I feel like I will never have the things I want in life." This was treated as a binary measure where respondents who answered "describes me very well" or "describes me completely" were treated as having a high-risk perception. Those who answered, "does not describe me at all," "describes me very little," or "describes me somewhat" were not treated as having a high-risk tolerance. It was assumed that those who felt like they would never get the things they want in life sensed that resources would be limited in the future, which was indicative a high-risk perception. The 294 responses of "don't know" or "prefer not to say" were treated as missing data. Retirement life expectancy was not measured in the NFCS because self-reported life expectancy and retirement age were not measured.

Overspending

Spending More Than Income.

The question measuring spending more than income in the NFCS was also comparable to the SHED and the SCF. It read, "over the past year, would you say your household's spending

was less than, more than, or equal to your household's income? Respondents could choose one of five categorical responses: (a) spending less than income, (b) spending more than income, (c) spending about equal to income, (d) don't know, and (e) prefer not to say. The respondents who answered (b) spending more than income were categorized as overspending. The 290 responses of "don't know" and "prefer not to say" were treated as missing data.

Revolving Credit Card Balance.

The NFCS also had two suitable questions to measure revolving credit card balance. The first read "in some months, I carried over a balance and was charged interest." The binary response of "yes" or "no" were the answer choices, and respondents could also respond with "don't know" or "prefer not to say." The second question in the NFCS used to measure revolving credit card balance was "in some months, I paid the minimum payment only" with a binary answer choice of "yes" or "no" and respondents could also answer "don't know" or "prefer not to say." If respondent answered "yes" to either of these two questions, they were treated as a "yes" to revolving credit cards. Non-credit card holders were included as third category, which were treated as not credit card revolving. The 190 responses among the two survey questions of "don't know" or "prefer not to say" were treated as missing data. A robustness check was run to test the exclusion of non-credit card holders, of which there were 1,533 missing observations, representing those who did not own a credit card and were treated as missing data.

Use of Alternative Financial Services.

The NFCS had five suitable questions to measure AFS usage, all measuring behavior in the past five years of the household with categorical answer choices of (a) never, (b) one time, (c) two times, (d) three times, (e) four or more times, (f) don't know, or (g) prefer not to say. The first question assessed the household's use of auto title loans. It also explained that "auto title

loans are loans where a car title is used to borrow money for a short period of time. They are NOT loans used to purchase an automobile," which helped improve validity by reducing misunderstanding around the definition of auto title loans. The second question assessed "short term 'payday' loans." The third question assessed if households had obtained an advance on their tax refund. The question also explained that "this is sometimes called a 'refund anticipation check' or 'Rapid Refund' (not the same as e-filing)," which helped increase validity by reducing misunderstanding of the definition of a tax advance. The fourth question assessed a household's usage of a pawn shop. The fifth question assessed a household's usage of a rent-to-own store. If the respondent indicated they had used any of these five AFS usage measures at least once, they were treated as "yes" for AFS usage. There were 266 responses of "don't know" or "prefer not to say," which were treated as missing data.

Absence of Emergency Fund.

The NFCS question, "have you set aside emergency or rainy-day funds that would cover your expenses for 3 months, in case of sickness, job loss, economic downturn, or other emergencies?" was used to operationalized absence of an emergency fund. This was a binary measure, where "yes" responses were treated as overspending. There were 406 "I don't know" responses or "prefer not to say," which were treated as missing data.

Dependent Variables

Retirement Account Ownership

The NFCS had two questions suitable to capture retirement account ownership. The first read "[does your household] have any retirement plans through a current or previous employer, like a pension plan, a Thrift Savings Plan (TSP) or a 401(k)?" The second question read "[does your household] have any other retirement accounts NOT through your employer, like an IRA,

Keogh, SEP, or any other type of retirement account that you have set up yourself?" These were binary variables, with the answer choices of "yes," "no," "don't know," and "prefer not to say." If the responded answered "yes," to either of these two questions, they were treated as "owns a retirement account." There were 846 "don't know" or "prefer not to say" responses among the two questions which were treated as missing data.

Active Contribution to a Retirement Account

The NFCS measure for active contribution to a retirement plan read, "does your household regularly contribute to a retirement account like a Thrift Savings Plan (TSP), 401(k), or IRA?" This was a binary measure, where respondents could answer "yes" or "no." Those who responded "yes" to this question were treated as actively contributing to a retirement account. Respondents were also given the option to respond with "don't know" or "prefer not to say." Only 6,874 respondents answered this question because 3,926 were not prompted to answer this question because they did not answer "yes" to either of the following survey questions: "are any of these retirement plans the kind where your household get to choose how the money is invested?" or "does your household have any other retirement accounts NOT through an employer, like an IRA, Keogh, SEP, or any other type of retirement account that you have set up yourself?" Including the "don't know" or "prefer not to say" responses, there were 4,024 missing observations for retirement account contribution which were treated as missing data.

Perceived Retirement Preparation

The NFCS question that captured perceived retirement preparation read, "I worry about running out of money in retirement." Respondents could respond on a seven-point Likert-type scale, where one represented "strongly disagree", and seven represented "strongly agree." It was reverse coded to directionally align with measure in the SHED and SCF, such that one

represented the lowest level of perceived retirement preparation and seven represented the highest level of perceived retirement preparation. There were 211 “don’t know” and “prefer not to say” responses which were treated as missing data. The NFCS did not have a suitable measure for the retirement account assets measurement.

Control Variables

This NFCS analysis measured age as an ordinal variable, with the following categories: (a) under 35, (b) 35-44, (c) 45-54, (d) 55-64, and (e) 65 and over. The following categories were used for income: (a) $0-$24,999, (b) $25,000-$49,999, (c) $50,000-$74,999, (d) $75,000-$99,999, (e) $100,000-$149,000, and (f) $150,000 or more, which was condensed from an original eight categories. Non-normal income data was addressed by using at least five income categories. Gender was categorized as male or female. Education was measured as an ordinal variable, using the following categories: no high school degree, high school degree, some college, bachelor’s degree, and advanced degree. Parental education, used to operationalize socialization, was measured as the highest education level completed by the person who raised the respondent, with the same education categories as the respondent. There were 141 missing values for parental education that were treated as missing data. Marital status had the following categories: (a) married, (b) single, (c) separated or divorced, and (d) widowed. Because the NFCS only measured White or non-White race in the public version of their data set, only these two categories were included for analyses using the NFCS data.

The NFCS analyses measured financial knowledge using the average of six questions, assessing the respondent’s knowledge of interest rates, savings accounts, inflation, rate of return, mortgages, and stocks. “Don’t know” or “prefer not to say” responses were treated as wrong answers. The NFCS analysis also controlled for subjective knowledge, measured as an ordinal

variable. The subjective financial knowledge question had 209 responses of "don't know" or "prefer not to say" which were treated as missing data. The NFCS did not measure physical health, and therefore the analyses using NFCS data did not control for it. Risk tolerance was operationalized by the NFCS question, "when thinking of your financial investments, how willing are you to take risks?" This question was measured on a Likert-type scale from one to ten, and the 216 responses of "don't know" or "prefer not to say" were treated as missing data. Financial attitude was operationalized as a binary variable with a question asking respondents if they would agree with the following question: "thinking about my personal finances can make me feel anxious." There were 118 missing observations for financial attitude due to "don't know" or "prefer not to say" which were treated as missing data.

Analyses

Descriptive statistics were conducted for the NFCS Dataset. To explore the reliability of the constructs LHS, overspending, and retirement preparation, additive scales and CFA models were employed. To understand the relationship of overspending on time and LHS, two separate binary logistic regressions were employed, as illustrated in Figure 3.1 and Figure 3.2. Three regressions were utilized to analyze the relationship between overspending and retirement preparation, also illustrated in Figure 3.1 and Figure 3.2. First, a binary logistic regression was run for overspending and retirement account ownership. Second, a binary logistic regression was run for active contribution to a retirement account. Third, an OLS regression was run for perceived retirement preparation. Interaction effects were tested between overspending and income with retirement preparation. Listwise deletion was used to handle missing data. Robustness checks were also ran using (a) an unweighted sample, (b) multiple imputation, (c)

excluding non-credit card holders, and (d) the alternative measurement for a short-term time preference.

Chapter 4 - Results

Descriptive statistics, CFA model results, regression results, and interaction effects are reported in this chapter by data set. First, results from the SHED analyses are listed, then the SCF, and finally from the NFCS analyses. Results for all three studies are described in this chapter for the weighted sample. Statistical analyses were conducted using Stata version 16.1 for Mac.

Study 1: SHED Data

Descriptive Statistics of Study 1: SHED Sample

Demographic Statistics

Demographic statistics for the SHED demographics, representing 6,651 respondents after the sample restriction to working individuals only, are represented in Table 4.1. The most common age group is under 35 (n = 2,328, 35%). The age groups between 35 and 64 are similarly represented, with each group representing 17 to 22 percent of the sample. Respondents 65 or older are the least represented (6%), which was to be expected considering the sample restriction eliminating non-working respondents. Most of the respondents are married (55%) and white (62%). Males represent slightly over half of the sample (52%). The most common education category is a bachelor's degree or higher (41%), while some college is the second most common category (28%). The most common education category for parental education is a high school degree (29%) and some college is the second most common parental education category (25%). The income categories are well distributed, ranging from 15 to 23 percent between annual income categories of $25,000 to over $150,000; there are fewer respondents in the $0-$24,999 income range (8%). A small minority of the sample consider their health to be poor (1%), while over half consider themselves to be in excellent health (58%). The sample has a mean score of

1.84 on a scale of zero to three on objective financial knowledge, and a mean score of 4.58 on a scale of zero to ten on risk tolerance.

Table 4.1.

Sample Demographics of the SHED Sample (N = 6,651)

	unweighted			weighted				
Variable	*n*	*M/%*	*SD*	*n*	*M/%*	*SD*	*min*	*max*
Age								
Under 35	2,039	30.66%	-	2,328	35.00%	-	-	-
35-44	1,306	19.64%	-	1,454	21.87%	-	-	-
45-54	1,268	19.06%	-	1,158	17.41%	-	-	-
55-64	1,490	22.40%	-	1,310	19.69%	-	-	-
65+	548	8.24%	-	401	6.02%	-	-	-
Marital Status								
Married	3,700	55.63%	-	3,655	54.96%	-	-	-
Living w/ partner, single, never married	2,094	31.48%	-	2,241	33.69%	-	-	-
Separated/divorced	741	11.14%	-	651	9.79%	-	-	-
Widowed	116	1.74%	-	103	1.55%	-	-	-
Race								
White	4,495	67.58%	-	4,145	62.32%	-	-	-
Black	713	10.72%	-	797	11.98%	-	-	-
Hispanic	882	13.26%	-	569	8.56%	-	-	-
Other	561	8.43%	-	1,141	17.15%	-	-	-
Gender								
Male	3,605	54.20%	-	3,426	51.52%	-	-	-
Female	3,046	45.80%	-	3,225	48.49%	-	-	-
Education of respondent								
No high school degree	159	2.39%	-	420	6.32%	-	-	-
High school degree	1,244	18.70%	-	1,614	24.27%	-	-	-
Some college	1,990	29.92%	-	1,875	28.19%	-	-	-
Bachelor’s degree or higher	3,258	48.99%	-	2,742	41.22%	-	-	-
Parental education *(higher of mother or father's)*								
No high school degree	544	8.52%	-	648	10.16%	-	-	-
Highschool degree	1,855	29.06%	-	1,856	29.09%	-	-	-
Some college	1,642	25.72%	-	1,618	25.34%	-	-	-
Bachelor’s degree	1,272	19.93%	-	1,208	18.93%	-	-	-

Advanced degree	1,070	16.76%	-	1,052	16.49%	-	-	-
Income								
$0-$24,999	620	9.32%	-	564	8.47%	-	-	-
$25,000-$49,999	1,148	17.26%	-	1,088	16.35%	-	-	-
$50,000-$74,999	1,216	18.28%	-	1,129	16.97%	-	-	-
$75,000-$99,999	1,079	16.22%	-	998	15.01%	-	-	-
$100,000-$149,999	1,395	20.97%	-	1,372	20.63%	-	-	-
$150,000 or more	1,193	17.94%	-	1,501	22.56%	-	-	-
Health								
Excellent	3,208	54.94%	-	3,196	57.74%	-	-	-
Fair	2,550	43.67%	-	2,558	43.81%	-	-	-
Poor	81	1.39%	-	85	1.45%	-	-	-
Objective financial knowledge	6,651	1.93	1.08	6,651	1.84	1.10	0	3
Risk tolerance	6,628	4.59	2.53	6,628	4.58	2.56	0	10

Note. This table is based on the 2019 SHED. Sample was restricted to only those working as a paid employee.

Overspending Descriptive Statistics

Table 4.2 displays conflicting measures of overspending descriptive statistics for the SHED sample. Only about one-sixth of the sample consider themselves to be overspending, as measured by spending more than income (16%). Even fewer are overspending as measured by AFS usage (5%). Over half the respondents, however, are overspending as measured by revolving credit card debt (52%), and almost half the sample overspends as measured by absence of emergency fund (47%).

Table 4.2.

Overspending Descriptive Statistics of the SHED Sample (N = 6,651)

	unweighted		weighted	
Variable	*n*	*%*	*n*	*%*
Spends more than income	1,051	15.85%	1,034	15.60%
Revolves credit card debt	3,488	52.63%	3,437	51.87%

Uses AFS	316	4.77%	351	5.30%
Absence of emergency fund	3,026	45.61%	3,143	47.37%

Note. This table is based on the 2019 SHED. Sample was restricted to only those working as a paid employee.

Risk Perception Descriptive Statistics

Risk perception descriptive statistics are listed in Table 3 for the SHED restricted sample. A short-term time preference, as previously noted, was measured the same as under the BLCH framework. Around one-tenth of the sample has a high-risk perception, as measured by short-term time preference (9%) and poor economic expectations (10%).

Table 4.3.

BLCH and LHT Descriptive Statistics of the SHED Sample (N = 6,651)

	unweighted		weighted	
Variable	*n*	*%*	*n*	*%*
Short-term time preference	562	9.19%	553	9.05%
Poor economic expectations	651	9.81%	675	10.17%

Note. This table is based on the 2019 SHED. Sample was restricted to only those working as a paid employee.

Retirement Preparation Descriptive Statistics

Retirement preparation descriptive statistics are listed in Table 4 for the SHED restricted sample. Over four-fifths of the sample own a retirement account (84%), but a smaller portion feels on track for retirement (52%). Over half of the sample has under $50,000 saved for retirement (46%), and almost a fourth of the sample has under $10,000 saved for retirement (24%).

Table 4.4.

Retirement Preparation Descriptive Statistics of the SHED Sample (N = 6,651)

	unweighted		weighted	
Variable	*n*	*%*	*n*	*%*
Owned a retirement account	5,222	85.30%	5,104	83.50%
Retirement account asset balance				
Under $24,999	1,620	32.73%	1,732	35.00%
$25,000-$249,999	1,910	38.59%	1,902	38.43%
$250,000-$1,000,000+	1,419	28.67%	1,314	26.57%
Perceived retirement preparation: on track	2,702	52.26%	5,170	51.59%

Note. This table is based on the 2019 SHED. Sample was restricted to only those working as a paid employee.

CFA Models: SHED Data

CFA models were employed to test how the chosen measurements represented the constructs of overspending, risk perception, and retirement preparation. The model fit statistics included the comparative fit index (CFI), the Tucker Lewis index (TLI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). The results reveal an acceptable model fit for overspending, $\chi^2[2] = 43.20$, $p < 0.001$, CFI = 0.97, TLI = 0.92, RMSEA = 0.056, and SRMR = 0.02. The CLI and TLI results are both above the benchmarks of 0.90 (Kenny, 2020). RMSEA is slightly above the benchmark of 0.05, and the SRMR was below the benchmark of 0.05 (Kenny, 2020). As reflected in Table 5, the factor loadings are strongest for the absence of an emergency fund and credit card revolving balance. The factor loading factors for spending more than income and AFS usage are weak, suggesting an improved construct measurement for overspending should be explored in the future. Figure 4.1 illustrated the CFA model for overspending. The additive scale for overspending has a Cronbach's alpha of 0.39, revealing a low internal consistency. However, the acceptable fit for

the CFA model of overspending leads to the assumption that the current study's measurement of the overspending construct is acceptable. Estimates for the risk perception and retirement preparation CFA models could not be computed because the models were not identified. Retirement preparation was not tested as an additive scale because there were only two objective measures of retirement preparation.

Table 4.5.

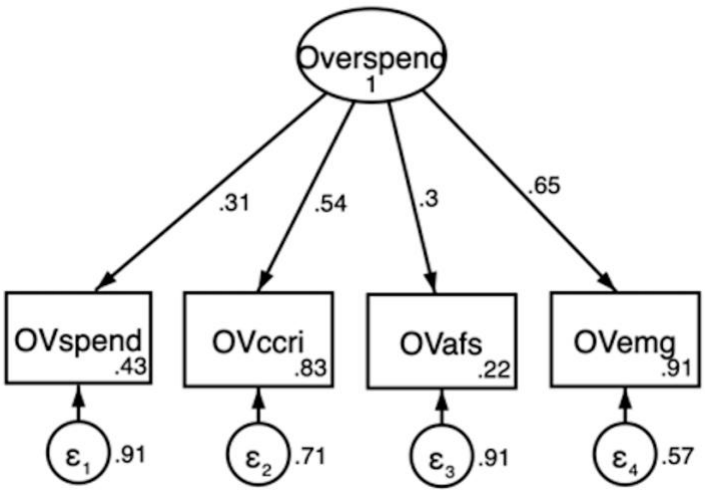
Standardized Loadings for Overspending CFA: SHED Sample

Variable	Standardized Loading
Spent more than income	0.31
Credit card revolving balance	0.54
AFS usage	0.30
Absence of emergency fund	0.65

Note. This table is based on the 2019 SHED. Sample was restricted to only those working as a paid employee.

Figure 4.1.

Standardized Loading CFA Model for Overspending: SHED Sample



*α = 0.39

Regression Results: SHED Data

Overspending on Short-Term Time Preference Regression Results

Spending More than Income on Short-Term Time Preference Regression Results.

The results from the analysis informed by the BLCH are discussed first, followed by the results from predictor variables from the analysis informed by the LHT. The full list of results is displayed in Table 4.6. After accounting for the missing data, the sample size for this analysis is 5,108. Those who have a short-term time preference, compared to those who had a mid-to-long-term time preference, have 2.53 times the odds of overspending as measured by spending more than income, holding all other factors constant (OR = 2.53, $p < 0.001$). Robustness checks for weighting and multiple imputation reveal no change in significance for the predictor variable.

Compared to respondents under the age of 35, ages 55-64 (OR = 0.64, $p = 0.003$) and ages 65 or older (OR = 0.48, $p = 0.015$) are less likely to spend more than income, holding all other factors constant. Females, compared to males, are more likely to spend more than income, holding all other factors constant (OR = 1.28, $p = 0.011$). Those with fair health (OR = 1.80, $p < 0.001$) and poor health (OR = 3.98, $p < 0.001$), as compared with those with excellent health, also have a positive association with spending more than income, holding all other factors constant. Risk tolerance is negatively associated with the likelihood of spending more than income (OR = 0.95, $p = 0.036$), holding all other factors constant. Compared to those who earn under $25,000 annually, those with income ranges between $50,000-$74,999 (OR = 0.70, $p = 0.045$) and $100,000-$149,999 (OR = 0.42, $p < 0.001$) are less likely to spend more than income, holding all other factors constant. Marital status, race, education, parental education, and objective financial knowledge are not significantly associated with spending more than income.

The following are the main results from the analysis informed by the LHT, which are also displayed in Table 4.6. After accounting for the missing data, the sample size for this analysis is 5,099. Those who have a short-term time preference, compared to a mid-to-long-term time preference, have 2.51 times the odds of overspending as measured by spending more than income, holding all other factors constant (OR = 2.51, $p < 0.001$). Those who have poor economic expectations, compared to those who had fair to positive economic expectations, have 1.80 times the odds of overspending as measured by spending more than income, holding all other factors constant (OR = 1.80, $p < 0.001$). Robustness checks for weighting and multiple imputation reveal no change in significance for the predictor variables. The control variables results can be found in Table 4.6.

Table 4.6.

SHED Binary Logistic Regression of Spending More Than Income

	BLCH, *n* = 5,108			LHT, *n* = 5,099		
Variable	B	SE	*OR*	B	SE	*OR*
Intercept	-1.33**	0.38	0.19	-1.76***	0.27	0.17
Short-term time preference	0.93***	0.14	2.53	0.92***	0.14	2.51
Poor economic expectations	-	-	-	0.59***	0.14	1.80
Control variables						
Age (under 35)						
35-44	-0.18	0.13	0.83	-0.17	0.13	0.84
45-54	-0.14	0.14	0.87	-0.11	0.14	0.90
55-64	-0.45**	0.15	0.64	-0.43**	0.15	0.65
65 or older	-0.73*	0.30	0.48	-0.69*	0.30	0.50
Marital status (married)						
living with partner or never married	-0.13	0.11	0.88	-0.13	0.11	0.88
separated or divorced	0.24	0.15	1.27	0.23	0.15	1.26
widowed	0.19	0.39	1.21	0.16	0.38	1.17
Race of respondent (White)						
Black	0.21	0.14	1.24	0.15	0.14	1.17
Hispanic	-0.19	0.18	0.83	0.11	0.15	1.12

Asian or other	0.13	0.15	1.14	-0.22	0.18	0.80
Gender of respondent (male)	0.24*	0.10	1.28	0.23*	0.09	1.26
Education (high school degree)						
no high school degree	0.43	0.28	1.54	0.44	0.28	1.56
some college	0.22	0.13	1.25	0.21	0.13	1.24
bachelor's degree	0.24	0.01	1.27	0.24	0.14	1.27
advanced degree	-	-	-	-	-	-
Parental education (high school degree)						
no high school degree	-0.10	0.21	0.90	-0.10	0.21	0.90
some college	-0.09	0.13	0.91	-0.08	0.13	0.92
bachelor's degree	-0.18	0.14	0.83	-0.17	0.15	0.84
advanced degree	0.05	0.15	1.05	0.06	0.15	1.06
Risk tolerance	-0.04*	0.02	0.95	-0.04	0.02	0.96
Income (under $25,000)	-	-	-	-	-	-
$25,000-$49,999	-0.12	0.17	0.89	-0.11	0.17	0.90
$50,000-$74,999	-0.36*	0.18	0.70	-0.32	0.18	0.73
$75,000-$99,999	-0.37	0.19	0.69	-0.34	0.19	0.71
$100,000-$149,999	-0.88***	0.19	0.42	-0.85***	0.19	0.43
$150,000 or more	-0.93	0.24	0.40	-0.9	0.24	0.41
Objective financial knowledge	-0.09	0.05	0.91	-0.08	0.05	0.92
Subjective financial knowledge	-	-	-	-	-	
Financial attitude	-	-	-	-	-	-
Health (excellent)						
fair	0.59***	0.10	1.80	0.58***	0.10	1.78
poor	1.38***	0.30	3.98	1.23***	0.32	3.42
Model Fit Statistics	C-statistic	0.70		C-statistic	0.70	
	Pseudo R^2	0.08		Pseudo R^2	0.08	

Note. This table is based on the 2019 SHED using a weighted sample. Sample was restricted to only those working as a paid employee. * $p < .05$; ** $p < .01$; *** $p < .001$

Credit Card Revolving on Short-Term Time Preference Regression Results.

The full list of results from the analysis informed by the BLCH are displayed in Table 4.7. After accounting for the missing data, the sample size for this analysis is 5,108. Those who

have a short-term time preference, compared to a mid-to-long-term time preference, have 3.79 times the odds of overspending as measured by credit card revolving, holding all other factors constant (OR = 3.79, p <0.001). Robustness checks for weighting, multiple imputation, and excluding non-credit card holders reveal no change in significance for the predictor variable.

As compared to those under age 35, ages 35-44 (OR = 1.30, p = 0.018), ages 45-54 (OR = 1.27, p = 0.036), and those over age 65 (OR = 0.53, p = 0.001) are significantly related to credit card revolving, holding all other factors constant. Compared to White households, Black households (OR = 3.35, p < 0.001) and Hispanic households (OR = 1.47, p = 0.003) are more likely to revolve credit card debt, holding all other factors constant. Asian/other households, compared to White households, are less likely to revolve credit card debt, holding all other factors constant (OR = 0.65, p = 0.002). Females, compared to males, are positively associated with credit card revolving, holding all other factors constant (OR = 1.19, p = 0.023). Those with a bachelor's degree or beyond, compared to those with a high school degree, are negatively associated with credit card revolving, holding all other factors constant (OR = 0.68, p = 0.001). Those whose parents had a bachelor's degree (OR = 0.77, p = 0.014), or an advanced degree (OR = 0.73, p = 0.009), compared to a high school degree, are negatively associated with credit card revolving, holding all other factors constant. Those who earned $75,000-$99,999 annually (OR 0.64, p = 0.021) and over $150,000 annually (OR = 0.48, p < 0.001), as compared those who earned under $25,000 annually, are negatively associated with credit card revolving, holding all other factors constant. Objective financial knowledge (OR = 0.77, p < 0.001) has a negative association with credit card revolving, holding all other factors constant. Compared to those with excellent health, those with fair health (OR = 1.68, p < 0.001) and poor health (OR = 3.06, p =

0.001) are positively associated with credit card revolving, holding all other factors constant. Risk tolerance and marital status are not significant factors in the model.

The full list of results from the analysis informed by the LHT is also displayed in Table 4.7. After accounting for the missing data, the sample size for this analysis is 5,097. Those who have a short-term time preference, compared to those who had a mid-to-long-term time preference, have 3.75 times the odds of overspending as measured by credit card revolving, holding all other factors constant (OR = 3.75, $p < 0.001$). Poor economic expectations is not significantly related to credit card revolving in the model. Upon running a robustness check using multiple imputation, poor economic expectations becomes significantly associated with credit card revolving. The other robustness checks reveal no change in significance for the predictor variables.

Table 4.7.

SHED Binary Logistic Regression of Credit Card Revolving

	BLCH, *n* = 5,108			LHT, *n* = 5,097		
Variable	B	SE	*OR*	B	SE	*OR*
Intercept	1.09***	0.24	2.96	1.07***	0.25	2.92
Short-term time preference	1.33***	0.19	3.79	1.32***	0.19	3.75
Poor economic expectations	-	-	-	0.15	0.14	1.16
Control variables						
Age (under 35)						
35-44	0.26*	0.11	1.30	0.26*	0.11	1.30
45-54	0.24*	0.11	1.27	0.24	0.11	1.28
55-64	-0.06	0.12	0.94	-0.05	0.12	0.95
65 or older	-0.64**	0.20	0.53	-0.63*	0.20	0.53
Marital status (married)						
living with partner or never married	-0.09	0.09	0.91	-0.09	0.09	0.91
separated or divorced	0.25	0.13	1.28	0.24	0.13	1.27
widowed	-0.30	0.36	0.74	-0.31	0.36	0.73
Race of respondent (White)						

Black	1.21***	0.16	3.35	1.21***	0.16	3.36
Hispanic	0.38**	0.13	1.47	0.38**	0.13	1.46
Asian or other	-0.43**	0.14	0.65	-0.43**	0.14	0.65
Gender of respondent (male)	0.17*	0.08	1.19	0.17*	0.08	1.18
Education (high school degree)						
no high school degree	0.12	0.30	1.13	0.11	0.30	1.12
some college	0.06	0.12	1.07	0.05	0.12	1.06
bachelor's degree	-0.39**	0.12	0.68	-0.40**	0.12	0.67
Parental education (high school degree)						
no high school degree	-0.09	0.17	0.91	-0.10	0.17	0.91
some college	-0.04	0.10	0.96	-0.03	0.10	0.97
bachelor's degree	-0.26*	0.11	0.77	-0.26*	0.11	0.77
advanced degree	-0.31**	0.12	0.73	-0.30*	0.12	0.74
Risk tolerance	-0.02	0.01	0.98	-0.02	0.02	0.93
Income (under $25,000)	-	-		-	-	-
$25,000-$49,999	0.06	0.18	1.06	0.08	0.18	1.08
$50,000-$74,999	-0.19	0.18	0.83	-0.18	0.18	0.83
$75,000-$99,999	-0.44*	0.19	0.64	-0.43*	0.19	0.65
$100,000-$149,999	-0.32	0.19	0.73	-0.31	0.19	0.74
$150,000 or more	-0.73***	0.2	0.48	-0.72***	0.20	0.49
Objective financial knowledge	-0.26***	0.04	0.77	-0.26***	0.04	0.77
Health (excellent)						
fair	0.52***	0.08	1.68	0.51***	0.08	1.67
poor	1.12**	0.34	3.06	1.09**	0.34	2.97
Model Fit Statistics	C-statistic	0.75		C-statistic	0.75	
	Pseudo R^2	0.15		Pseudo R^2	0.15	

Note. This table is based on the 2019 SHED using a weighted sample. Sample was restricted to only those working as a paid employee. * $p < .05$; ** $p < .01$; *** $p < .001$

AFS Usage on Short-Term Time Preference Regression Results.

The full list of results from the analysis informed by the BLCH is displayed in Table 4.8. After accounting for the missing data, the sample size for this analysis is 5,104. Those who have a short-term time preference, compared to a mid-to-long-term time preference, have 2.71 times

the odds of overspending as measured by AFS usage, holding all other factors constant (OR = 2.71, $p < 0.001$). Robustness checks for weighting and multiple imputation reveal no change in significance for the predictor variable.

Compared to those under age 35, ages 45-54 (OR = 0.54, $p = 0.020$) and those over age 65 (OR = 0.08, $p = 0.012$) are significantly related to AFS usage, holding all other factors constant. Compared to married respondents, those who are separated or divorced are positively associated with AFS usage, holding all other factors constant (OR = 1.74, $p = 0.038$). Compared to White households, Black households are significantly related to AFS usage, holding all other factors constant (OR = 3.15, $p < 0.001$). Those with no high school degree (OR = 2.45, $p = 0.016$) and those with a bachelor's degree or beyond (OR = 0.57, $p = 0.023$), compared to those with a high school degree, are significantly associated with AFS usage, holding all other factors constant. Risk tolerance is positively related to AFS usage, holding all other factors constant (OR = 1.09, $p = 0.019$). Those who earn \$25,000-\$49,999 annually (OR = 0.56, $p = 0.044$), \$75,000-\$99,999 annually (OR = 0.38, $p = 0.005$), \$100,000-\$149,999 annually (OR = 0.22, $p < 0.001$), and over \$150,000 annually (OR = 0.31, $p = 0.008$), compared with those who earn under \$25,000 annually, are negatively associated with AFS usage, holding all other factors constant. Objective financial knowledge has a negative association with AFS usage, holding all other factors constant (OR = 0.82, $p = 0.047$). Compared to those with excellent health, those with fair health (OR = 2.10, $p < 0.001$) and poor health (OR = 3.57, $p = 0.004$) are positively associated with AFS usage, holding all other factors constant. Gender and parental education are not significant factors with AFS usage in the model.

The full list of results from the analysis informed by the LHT is also displayed in Table 4.8. After accounting for the missing data, the sample size for this analysis is 5,095. Those who

have a short-term time preference, compared to a mid-to-long-term time preference, have 2.69 times the odds of overspending as measured by AFS usage, holding all other factors constant (OR = 2.69, p <0.001). Those who have poor economic expectations, compared to fair to positive economic expectations, have 1.73 times the odds of overspending as measured by AFS usage, holding all other factors constant (OR = 1.73, p = 0.009). Upon running a robustness check using multiple imputation, poor economic expectations no longer has a significant relationship with AFS usage. The other robustness checks reveal no change in significance for the predictor variables.

Table 4.8.

SHED Binary Logistic Regression of AFS Usage

	BLCH, *n* = 5,104			LHT, *n* =5,095		
Variable	B	SE	OR	B	SE	OR
Intercept	-3.10***	0.53	0.05	-3.21***	0.53	0.04
Short-term time preference	0.99***	0.21	2.71	0.99***	0.21	2.69
Poor economic expectations	-	-	-	0.55**	0.20	1.73
Control variables						
Age (under 35)						
35-44	-0.07	0.22	0.93	-0.07	0.22	0.93
45-54	-0.62*	0.27	0.54	-0.61*	0.27	0.54
55-64	-0.53	0.29	0.59	-0.58	0.30	0.56
65 or older	-2.52*	1.00	0.08	-2.49*	1.00	0.08
Marital status (married)						
living with partner or never married	0.27	0.22	1.31	0.25	0.22	1.29
separated or divorced	0.55*	0.27	1.74	0.57*	0.27	1.77
widowed	0.60	0.65	1.82	0.54	0.62	1.72
Race of respondent (White)						
Black	1.15***	0.20	3.15	1.12***	0.20	3.08
Hispanic	0.02	0.26	1.02	0.01	0.27	1.01
Asian or other	0.64	0.34	1.89	0.61	0.35	1.83
Gender of respondent (male)	0.14	0.19	1.14	0.12	0.19	1.13
Education (high school degree)						

no high school degree	0.90*	0.37	2.45	0.93*	0.37	2.54
some college	0.01	0.20	1.01	0.03	0.21	1.03
bachelor's degree	-0.56*	0.24	0.57	-0.52*	0.24	0.59
Parental education (high school degree)						
no high school degree	-0.48	0.34	0.62	-0.45	0.35	0.64
some college	-0.17	0.22	0.85	-0.17	0.22	0.84
bachelor's degree or beyond	-0.53	0.28	0.59	-0.51	0.29	0.60
advanced degree	-0.31	0.28	0.74	-0.29	0.28	0.74
Risk tolerance	0.09*	0.04	1.09	0.09*	0.04	1.10
Income (under $25,000)						
$25,000-$49,999	-0.52*	0.26	0.56	-0.53*	0.26	0.59
$50,000-$74,999	-0.32	0.25	0.73	-0.3	0.25	0.72
$75,000-$99,999	-0.97**	0.35	0.38	-0.95**	0.35	0.39
$100,000-$149,999	-1.51***	0.36	0.22	-1.49***	0.36	0.23
$150,000 or more	-1.18**	0.44	0.31	-1.18**	0.43	0.30
Objective financial knowledge	-0.19*	0.10	0.82	-0.18	0.10	0.84
Health (excellent)						
fair	0.74***	0.18	2.10	0.74***	0.18	2.09
poor	1.27**	0.45	3.57	1.09*	0.46	2.99
Model Fit Statistics	C-statistic 0.82			C-statistic 0.82		
	Pseudo R^2 0.19			Pseudo R^2 0.20		

Note. This table is based on the 2019 SHED using a weighted sample. Sample was restricted to only those working as a paid employee. * $p < .05$; ** $p < .01$; *** $p < .001$

Absence of Emergency Fund on Short-Term Time Preference Regression Results.

The full list of results from the analysis informed by the BLCH is displayed in Table 4.9. After accounting for the missing data, the sample size for this analysis is 5,109. Those who have a short-term time preference, compared to a mid-to-long-term time preference, have 2.21 times the odds of overspending as measured by absence of emergency fund, holding all other factors constant (OR = 2.21, $p < 0.001$). Robustness checks for weighting and multiple imputation reveal no change in significance for the predictor variable.

Compared to those under age 35, ages 45-54 (OR = 0.76, $p = 0.016$), ages 55-64 (OR = 0.48, $p < 0.001$) and those over age 65 (OR = 0.25, $p < 0.001$) are significantly related to the absence of an emergency fund, holding all other factors constant. Compared to married respondents, those are separated or divorced are positively associated with the absence of an emergency fund, holding all other factors constant (OR = 1.36, $p = 0.009$). Compared to White households, Black households have a significant association with the absence of an emergency fund, holding all other factors constant (OR = 1.33, $p = 0.023$). Those with a bachelor's degree or beyond (OR = 0.58, $p < 0.001$), compared to those with a high school degree, are significantly associated with the absence of an emergency fund, holding all other factors constant. Risk tolerance is negatively related to the absence of an emergency fund, holding all other factors constant (OR = 0.91, $p < 0.001$). Those who earn $50,000-$74,999 annually (OR = 0.65, $p = 0.011$), $75,000-$99,999 annually (OR 0.61, $p = 0.005$), $100,000-$149,999 annually (OR = 0.41, $p < 0.001$), and over $150,000 annually (OR = 0.29, $p < 0.001$), compared those who earn under $25,000 annually, are negatively associated with the absence of an emergency fund, holding all other factors constant. Objective financial knowledge has a negative association with the absence of an emergency fund, holding all other factors constant (OR = 0.82, $p < 0.001$). Compared to those with excellent health, those with fair health (OR = 1.52, $p < 0.001$) and poor health (OR = 4.30, $p < 0.001$) are positively associated with the absence of an emergency fund holding all other factors constant. Gender and parental education are not significant factors with the absence of an emergency fund in the model.

The full list of results from the analysis informed by the LHT are displayed in Table 4.9. After accounting for the missing data, the sample size for this analysis is 5,100. Those who have a short-term time preference, compared to a mid-to-long-term time preference, have 2.17 times

the odds of overspending as measured by the absence of an emergency fund, holding all other factors constant (OR = 2.17, p <0.001). Those who have poor economic expectations, compared to fair to positive economic expectations, have 1.41 times the odds of overspending as measured by the absence of an emergency fund, holding all other factors constant (OR = 1.41, p = 0.002). Robustness checks for weighting and multiple imputation reveal no change in significance for the predictor variables.

Table 4.9.

SHED Binary Logistic Regression of Absence of Emergency Fund

	BLCH, n = 5,109			LHT, n = 5,100		
Variable	B	SE	OR	B	SE	*OR*
Intercept	1.52***	0.24	4.57	1.46***	0.24	4.34
Short-term time preference	0.79***	0.14	2.21	0.78***	0.14	2.17
Poor economic expectations	-	-	-	0.34**	0.10	1.41
Control variables						
Age (under 35)						
35-44	-0.06	0.11	0.94	-0.05	0.11	0.95
45-54	-0.28*	0.11	0.76	-0.26*	0.11	0.77
55-64	-0.74***	0.12	0.48	-0.73***	0.12	0.48
65 or older	-1.37***	0.21	0.25	-1.35***	0.21	0.26
Marital status (married)						
living with partner or never married	-0.03	0.09	0.70	-0.04	0.09	0.96
separated or divorced	0.31**	0.12	1.36	0.30*	0.12	1.34
widowed	-0.35	0.34	0.97	-0.37	0.34	0.69
Race of respondent (White)						
Black	0.29*	0.13	1.33	0.28*	0.13	1.32
Hispanic	0.04	0.18	1.04	0.03	0.12	1.04
Asian or other	-0.06	0.15	0.94	-0.07	0.15	0.93
Gender of respondent (male)	0.03	0.08	1.03	0.03	0.08	1.03
Education (high school degree)						
no high school degree	0.36	0.27	1.43	0.36	0.27	1.44
some college	-0.08	0.11	0.92	-0.09	0.11	0.91
bachelor's degree	-0.55***	0.12	0.58	-0.55***	0.12	0.58

Parental education (high school degree)						
no high school degree	-0.13	0.16	0.88	-0.13	0.16	0.88
some college	0.02	0.10	1.02	0.03	0.10	1.03
bachelor's degree	-0.08	0.11	0.92	-0.08	0.11	0.93
advanced degree	-0.11	0.12	0.90	-0.10	0.12	0.91
Risk tolerance	-0.10***	0.02	0.91	-0.10***	0.02	0.91
Income (under $25,000)						
$25,000-$49,999	-0.17	0.17	0.85	-0.14	0.17	0.87
$50,000-$74,999	-0.43*	0.17	0.65	-0.41*	0.17	0.67
$75,000-$99,999	-0.49**	0.17	0.61	-0.47**	0.17	0.63
$100,000-$149,999	-0.89***	0.17	0.41	-0.86***	0.17	0.42
$150,000 or more	-1.24***	0.19	0.29	-1.23***	0.19	0.29
Objective financial knowledge	-0.20***	0.04	0.82	-0.20***	0.04	0.82
Health (excellent)						
fair	0.42***	0.07	1.52	0.41***	0.07	1.50
poor	1.46***	0.24	4.30	1.40***	0.31	4.07
Model Fit Statistics	C-statistic 0.76			C-statistic 0.76		
	Pseudo R^2 0.16			Pseudo R^2 0.16		

Note. This table is based on the 2019 SHED using a weighted sample. Sample was restricted to only those working as a paid employee. * $p < .05$; ** $p < .01$; *** $p < .001$

Retirement Preparation on Overspending Regression Results

Retirement Account Ownership on Overspending Regression Results.

The full list of results is displayed in Table 4.10. After accounting for the missing data, the sample size for this analysis is 5,069. Those who spend more than their income have 31 percent less odds of owning a retirement account (OR = 0.69, $p < 0.001$), those who revolved credit card debt have 22 percent less odds of owning a retirement account (OR = 0.78, $p < 0.001$), and those who do not have an emergency fund had 65 percent less odds of owning a retirement account (OR = 0.35, $p < 0.001$), holding all other factors constant. Those who utilize AFS do not have a significant relationship with retirement account ownership in the model.

Robustness checks for weighting, multiple imputation, and excluding non-credit card holders reveal no change in significance for the predictor variables.

Compared to those under age 35, ages 35-44 (OR = 1.71, $p = 0.001$), ages 45-54 (OR = 2.10, $p < 0.001$), ages 55-64 (OR = 2.51, $p < 0.001$), and those over age 65 (OR = 2.90, $p = 0.013$) have significant positive relationships to retirement account ownership, holding all other factors constant. Compared to married respondents, those who are living with a partner or never married have a negative associated with the retirement account ownership, holding all other factors constant (OR = 0.61, $p < 0.001$). Those with no high school degree (OR = 0.45, $p = 0.003$, and those with a bachelor's degree or beyond (OR = 2.80, $p < 0.001$), compared to those with a high school degree, are significantly associated with retirement account ownership, holding all other factors constant. Risk tolerance is positively related to the retirement account ownership, holding all other factors constant (OR = 1.08, $p = 0.001$). Those who earn $25,000-$59,999 annually (OR = 2.02, $p < 0.001$), $50,000-$74,999 annually (OR = 2.71, $p < 0.001$), $75,000-$99,999 annually (OR = 2.46, $p < 0.001$), $100,000-$149,999 annually (OR = 4.20, $p < 0.001$), and over $150,000 annually (OR = 4.04, $p < 0.001$), compared to those who earn under $25,000 annually, are positively associated with the retirement account ownership, holding all other factors constant. Objective financial knowledge has a positive association with retirement account ownership, holding all other factors constant (OR = 1.41, $p < 0.001$). Gender, race, parental education, and health are not significant factors in the model.

Table 4.10.

SHED Binary Logistic Regression of Retirement Account Ownership

		n = 5,069	
Variable	B	SE	OR
Intercept	0.39	0.34	1.48
Spends more than income	-0.36*	0.14	0.69

Revolves credit card debt	-0.25***	0.04	0.78
Uses AFS	0.14	0.23	1.15
Absence of emergency fund	-1.05***	0.15	0.35
Control variables			
Age (under 35)			
35-44	0.54***	0.16	1.71
45-54	0.74***	0.18	2.10
55-64	0.92***	0.20	2.51
65 or older	1.06*	0.43	2.90
Marital status (married)			
living with partner or never married	-0.49***	0.14	0.61
separated or divorced	-0.29	0.18	0.75
widowed	1.53	0.96	4.63
Race of respondent (White)			
Black	0.10	0.18	1.11
Hispanic	-0.12	0.17	0.95
Asian or other	-0.05	0.24	0.87
Gender of respondent (male)	0.15	0.12	1.17
Education (high school degree)			
no high school degree	-0.79**	0.27	0.45
some college	0.18	0.15	1.20
bachelor's degree	1.03***	0.18	2.80
Parental education (high school degree)			
no high school degree	0.01	0.23	1.01
some college	0.06	0.16	1.06
bachelor's degree	-0.14	0.17	0.87
advanced degree	0.13	0.22	1.14
Risk tolerance	0.08**	0.02	1.08
Income (under $25,000)			
$25,000-$49,999	0.70***	0.18	2.02
$50,000-$74,999	1.00***	0.19	2.71
$75,000-$99,999	0.91***	0.22	2.46
$100,000-$149,999	1.43***	0.24	4.20
$150,000 or more	1.40***	0.30	4.04
Objective financial knowledge	0.34***	0.06	1.41
Health (excellent)			
fair	-0.14	0.12	0.87

poor		0.27	0.44
Model Fit Statistics	C-statistic	0.88	
	Pseudo R^2	0.32	

Note. This table is based on the 2019 SHED using a weighted sample. Sample was restricted to only those working as a paid employee. * $p < .05$; ** $p < .01$; *** $p < .001$

Retirement Account Balance on Overspending Regression Results.

The full list of results is displayed in Table 4.11. After accounting for the missing data, the sample size for this ordered logit regression is 4,207. Credit card revolving (B = -0.29, $p < 0.001$) and the absence of an emergency fund (B = -0.92, $p < 0.001$) have a significant negative relationship with retirement account balance, holding other factors constant. Spending more than income and AFS usage do not have a significant relationship with retirement account balance. Robustness checks for weighting, multiple imputation, and excluding non-credit card holders reveal no change in significance for the predictor variables.

Compared to those under age 35, ages 35-44 (B = 1.74, $p < 0.001$), ages 45-54 (B = 2.63, $p < 0.001$), ages 55-64 (B = 3.21, $p < 0.001$), and those over age 65 (B = 3.39, $p < 0.001$) have significant positive relationships to retirement account balance, holding all other factors constant. Compared to married respondents, those are living with a partner or never married (B = -0.21, $p < 0.001$) and those are separated of divorced (B = -0.30, $p < 0.001$) have a negative association with the retirement account balance, holding all other factors constant. Black households (B = -0.83, $p < 0.001$) and Hispanic households (B = -0.42, $p = 0.004$), compared to White households, are negatively associated to retirement account balance, holding other factors constant. Females, compared to males, are negatively associated with retirement account balance, holding all other factors constant. Risk tolerance is positively related to the retirement account balance, holding other factors constant (B = 0.14, $p < 0.001$). Those who earn $50,000-$74,999 annually (B =

1.27, $p < 0.001$), $75,000-$99,999 annually (B = 1.70, $p < 0.001$), $100,000-$149,999 annually (B = 2.19, $p < 0.001$), and over $150,000 annually (B = 2.87, $p < 0.001$), compared to those who earn under $25,000 annually, are positively associated with the retirement account balance, holding all other factors constant. Objective financial knowledge has a positive association with retirement account balance, holding all other factors constant (B = 0.19, $p < 0.001$). Education, parental education, and health are not significant factors in the model.

Table 4.11.

SHED Ordinal Regression of Retirement Account Asset Balance

	n = 4,207		
Variable	B	SE	OR
Intercept	-	-	-
Overspending predictor variables			
Spends more than income	-0.18	0.12	0.84
Revolves credit card debt	-0.29***	0.05	0.75
Uses AFS	-0.27	0.28	0.76
Absence of emergency fund	-0.92***	0.09	0.40
Control variables			
Age (under 35)			
35-44	1.74***	0.13	5.70
45-54	2.63***	0.14	13.87
55-64	3.21***	0.15	24.78
65 or older	3.39***	0.18	29.67
Marital status (married)			
living with partner or never married	-0.21*	0.11	0.81
separated or divorced	-0.30*	0.13	0.74
widowed	-0.43	0.26	0.65
Race of respondent (White)			
Black	-0.83***	0.15	0.44
Hispanic	-0.42**	0.14	0.66
Asian or other	0.07	0.16	1.07
Gender of respondent (male)	-0.20*	0.08	0.82
Education (high school degree)			
no high school degree	-0.07	0.46	0.93

some college	0.01	0.13	1.01
bachelor's degree	0.42	0.14	1.52
advanced	-	-	
Parental education (high school degree)			1.00
no high school degree	-0.33	0.17	0.72
some college	-0.04	0.12	0.96
bachelor's degree or beyond	-0.02	0.12	0.98
advanced degree	-0.04	0.12	0.96
Risk tolerance	0.14***	0.02	
Income (under $25,000)			1.00
$25,000-$49,999	0.53	0.34	1.70
$50,000-$74,999	1.27***	0.33	3.56
$75,000-$99,999	1.70***	0.34	5.47
$100,000-$149,999	2.19***	0.34	8.94
$150,000 or more	2.87***	0.35	17.64
Objective financial knowledge	0.19***	0.05	1.21
Subjective financial knowledge	-	-	-
Financial attitude	-	-	-
Health (excellent)			
fair	-0.16	0.08	0.85
poor	-0.22	0.48	0.80
Model Fit Statistics	Pseudo R^2		0.34

Note. This table is based on the 2019 SHED using a weighted sample. Sample was restricted to only those working as a paid employee. * $p < .05$; ** $p < .01$; *** $p < .001$

Perceived Retirement Preparation on Overspending Regression Results.

The full list of results is displayed in Table 4.12. After accounting for the missing data, the sample size for this analysis is 4.317. Those who spend more than their income have 43 percent lower odds of feeling on track for retirement (OR = 0.57, $p < 0.001$), those who revolve credit card debt have 23 percent lower odds of feeling on track for retirement (OR = 0.77, $p < 0.001$), and those who do not have an emergency fund had 65 percent lower odds of feeling on track for retirement (OR = 0.35, $p < 0.001$), holding all other factors constant. AFS usage does

not have a significant relationship with perceived retirement preparation. Robustness checks for weighting, multiple imputation, and excluding non-credit card holders reveal no change in significance for the predictor variables.

Compared to those under age 35, ages 55-64 have significant positive relationships to perceived retirement preparation, holding all other factors constant (OR = 1.43, $p = 0.005$). Compared to married respondents, those who are living with a partner or never married have a negative association with the perceived retirement preparation, holding all other factors constant (OR = 0.79, $p = 0.027$). Hispanic households, compared to White households, are negatively associated to perceived retirement preparation, holding other factors constant (OR = 0.79, $p < 0.001$). A bachelor's degree or beyond, compared to those with a high school degree, have a positive relationship with perceived retirement preparation, holding other factors constant (OR = 1.37, $p = 0.018$). Risk tolerance is positively related to perceived retirement preparation, holding all other factors constant (OR = 1.12, $p < 0.001$). Those who earn $25,000-$49,999 (OR = 2.19, $p < 0.001$), $50,000-$74,999 annually (OR = 2.66, $p < 0.001$), $75,000-$99,999 annually (OR = 2.89, $p < 0.001$), $100,000-$149,999 annually (OR = 2.95, $p < 0.001$), and over $150,000 annually (OR = 3.79, $p < 0.001$), compared to those who earn under $25,000 annually, are positively associated with perceived retirement preparation, holding all other factors constant. Those with fair health (OR = 0.61, $p < 0.001$) and poor health (OR = 0.35, $p = 0.014$), compared to those with excellent health, have a negative association with perceived retirement preparation, holding all other factors constant. Gender, parental education, and objective financial knowledge are not significant factors in the model.

Table 4.12.

SHED Ordinal Regression of Retirement Account Asset Balance

	n = 4,207	
Variable	B	SE
Intercept	-	-
Overspending predictor variables		
Spends more than income	-0.18	0.12
Revolves credit card debt	-0.29***	0.05
Uses AFS	-0.27	0.28
Absence of emergency fund	-0.92***	0.09
Control variables		
Age (under 35)		
35-44	1.74***	0.13
45-54	2.63***	0.14
55-64	3.21***	0.15
65 or older	3.39***	0.18
Marital status (married)		
living with partner or never married	-0.21*	0.11
separated or divorced	-0.30*	0.13
widowed	-0.43	0.26
Race of respondent (White)		
Black	-0.83***	0.15
Hispanic	-0.42**	0.14
Asian or other	0.07	0.16
Gender of respondent (male)	-0.20*	0.08
Education (high school degree)		
no high school degree	-0.07	0.46
some college	0.01	0.13
bachelor's degree	0.42	0.14
Parental education (high school degree)		
no high school degree	-0.33	0.17
some college	-0.04	0.12
bachelor's degree or beyond	-0.02	0.12
advanced degree	-0.04	0.12
Risk tolerance	0.14***	0.02
Income (under $25,000)		
$25,000-$49,999	0.53	0.34

$50,000-$74,999	1.27***	0.33
$75,000-$99,999	1.70***	0.34
$100,000-$149,999	2.19***	0.34
$150,000 or more	2.87***	0.35
Objective financial knowledge	0.19***	0.05
Health (excellent)		
fair	-0.16	0.08
poor	-0.22	0.48
Model Fit Statistics	Pseudo R^2	0.34

Note. This table is based on the 2019 SHED using a weighted sample. Sample was restricted to only those working as a paid employee. * $p < .05$; ** $p < .01$; *** $p < .001$

Interaction Effects Between Income and Overspending with Retirement Preparation

Results indicate there is not a significant interaction effect of between any of the four overspending measures and income with retirement account ownership. As shown in Table A.1, results indicate there is a significant relationship between revolving credit card debt and income with retirement account balance (B = -0.08, $p = 0.008$); Figure 4.2 displays nearly parallel lines in the margins plot for this interaction effect. As shown in Table A.2, results also indicate there is a significant interaction effect between revolving credit card debt and income with perceived retirement preparation (B = -0.06, $p = 0.032$); Figure 4.3 displays the margins plot for this interaction effect. The other overspending measurements do not reveal a significant interaction with income.

Figure 4.2.

Interaction Effect of Credit Card Revolving and Income with Retirement Account Balance

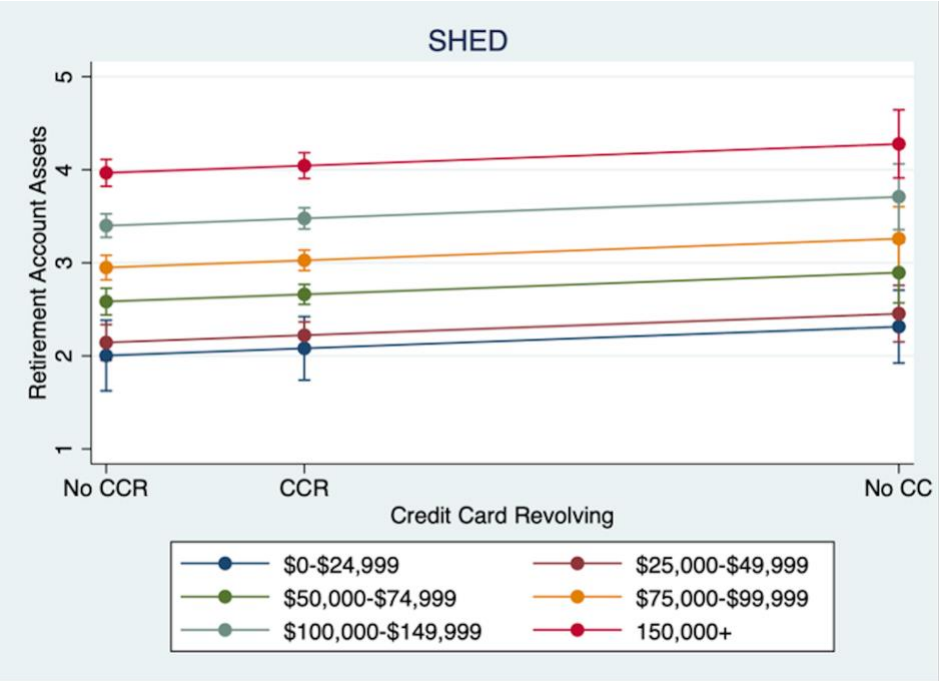
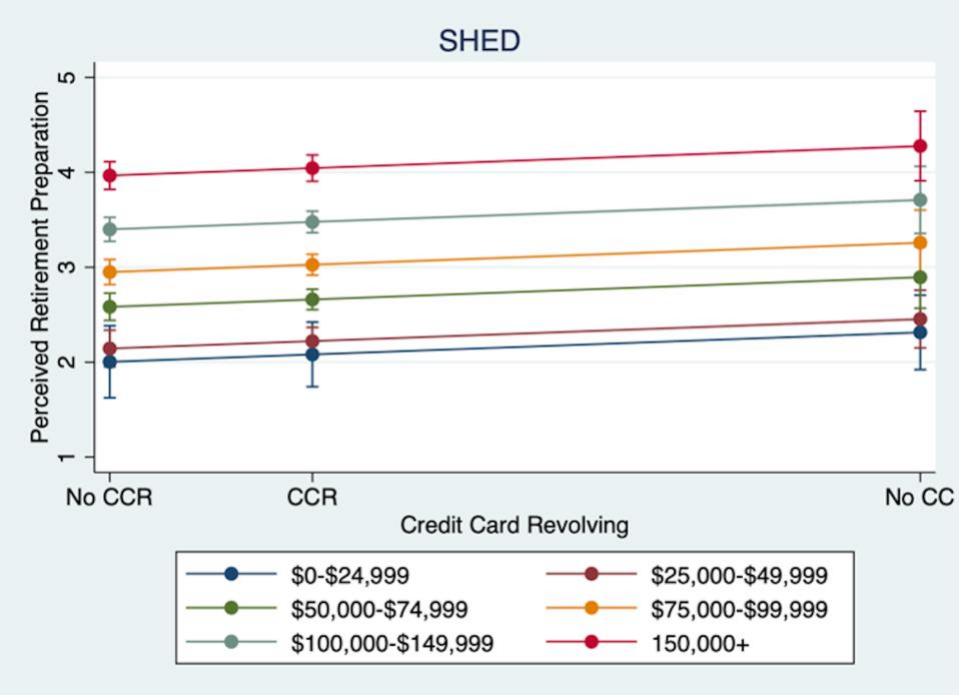


Figure 4.3.

Interaction Effect of Credit Card Revolving and Income with Perceived Retirement Preparation



Study 2: SCF Data

Descriptive Statistics of Study 2: SCF Sample

Demographic Statistics

Demographic statistics for the SCF demographics, representing 3,361 respondents after the sample restriction to full-time workers only, are represented in Table 4.13. The average age is 44. Most of the respondents were married (n = 1,644, 49%) and white (65%). There are more males than females in the sample (males 58%). The most common education category is some college (29%), while a bachelor's degree is the second most common category (27%). The most common education category for parental education is a bachelor's degree or beyond (37%). The median income is $76,359 on a scale of zero to $704,000,000. A small minority of the sample consider their health to be poor (1%), while most consider themselves to be in excellent health (82%). The sample has a mean score of 2.23 on a scale of zero to three for objective financial knowledge, and a mean score of 7.11 on a scale of zero to ten for subjective financial knowledge. Respondents have a mean score of 4.78 on a scale of zero to ten on risk tolerance.

Table 4.13.

Sample Demographics of the SCF Sample (N = 3,361)

	unweighted			weighted				
Variable	*n*	*M/%*	*SD*	*n*	*M/%*	*SD*	*min*	*max*
Age	3,361	47.46	13.40	3,361	43.96	13.02	18	90
Marital Status								
Married	1,913	56.91%	-	1,644	48.90%	-	-	-
Living with partner or never married	924	27.49%	-	1,136	33.78%	-	-	-
Separated/divorced	42	13.64%	-	509	15.15%	-	-	-
Widowed	66	1.96%	-	73	2.16%	-	-	-
Race			-			-	-	-
White	2,333	69.41%	-	2,169	64.54%	-	-	-
Black	436	12.98%	-	541	16.09%	-	-	-
Hispanic	362	10.78%	-	427	12.71%	-	-	-
Asian/other Households	229	6.82%	-	224	6.66%	-	-	-
Gender								
Male	2,168	64.50%	-	1,935	57.57%	-	-	-
Female	1,193	35.50%	-	1,426	42.43%	-	-	-
Education of respondent								
No high school degree	190	5.66%	-	217	6.46%	-	-	-
High school degree	576	17.14%	-	673	20.01%	-	-	-
Some college	809	24.07%	-	960	28.56%	-	-	-
Bachelor’s degree	938	27.91%	-	899	26.73%	-	-	-
Advanced degree	848	25.23%	-	613	18.23%	-	-	-

Parental education (higher of mother or father's)								
No high school degree	399	11.87%	-	441	13.11%	-	-	-
High school degree	1,003	29.84%	-	1,059	31.50%	-	-	-
Some college	568	16.90%	-	623	18.53%	-	-	-
Bachelor’s degree or beyond	1,391	41.39%	-	1,239	36.85%	-	-	-
Health								
Excellent	2,819	83.88%	-	2,754	81.93%	-	-	-
Fair	503	14.98%	-	562	16.73%	-	-	-
Poor	39	1.15%	-	45	1.34%	-	-	-
Income	3,361	$1,272,932	$13,000,000	3,361	$76,359	$557,981	0.00	$704,000,000
Objective financial knowledge	3,361	2.38	0.81	3,361	2.23	0.85	0.00	3.00
Subjective financial knowledge	3,361	7.42	1.99	3,361	7.11	1.98	0.00	10.00
Risk tolerance	3,361	5.27	2.54	3,361	4.78	2.51	0.00	10.00

Note. The 2019 SCF data was used. Median is reported for income. Mean is reported for age, objective and subjective financial knowledge, and risk tolerance. Sample was restricted to only those working full-time.

Overspending Descriptive Statistics

Table 4.14 displays the descriptive statistics of overspending for the SCF sample. Very few respondents are overspending as measured by spending more than income (4%) and AFS usage (3%). Over one-third of the sample is overspending as measured by revolving credit card debt (38%). Half the sample overspends as measured by the absence of an emergency fund (50%).

Table 4.14.

Overspending Descriptive Statistics of the SCF Sample (N = 3,361)

	unweighted		weighted	
Variable	*n*	*M/%*	*n*	*M/%*
Spends more than income	102	3.05%	123	3.67%
Revolves credit card debt	1,071	31.87%	1,288	38.31%
Uses AFS	85	2.53%	101	3.01%
Absence of emergency fund	1,415	42.11%	1,678	49.93%

Note. The 2019 SCF data was used. Sample was restricted to only those working full-time.

Risk Perception Descriptive Statistics

Table 4.15 displays risk perception descriptive statistics for the SCF sample. One-third of the sample reports a short-term time preference (33%), and around one-fifth of the sample reports poor economic expectations (19%). The mean retirement life expectancy is 18 years. The minimum on scale for retirement life expectancy is -20, indicating that some respondents expected to have retired 20 years ago. Negative values for retirement life expectancy were not removed as they were considered to provide interesting data on retirement expectations and was not considered to skew the retirement life expectancy mean.

Table 4.15.

Risk Perception Descriptive Statistics of the SCF Sample (N = 3,361)

	unweighted			weighted				
Variable	*n*	*M/%*	*SD*	*n*	*M/%*	*SD*	*min*	*max*
Short-term time preference	928	27.61%	-	1,120	33.31%	-	-	-
Poor economic expectations	705	20.97%	-	639	19.01%	-	-	-
Retirement Life Expectancy	3,361	17.76	13.21	3,361	18.26	13.61	-20	72

Note. The 2019 SCF data was used. Sample was restricted to only those working full-time.

Retirement Preparation Descriptive Statistics

Table 4.16 displays the descriptive statistics for retirement preparation of the SCF sample. The majority of the SCF sample own a retirement account (64%). About half of the sample actively contributes to a retirement account (49%). On a scale from zero to $16,400,000, the median retirement account balance is $2,000. The average respondent reports moderate perceived retirement preparation (M = 3.03, SD = 1.25).

Table 4.16.

Retirement Preparation Descriptive Statistics of the SCF Sample (N = 3,361)

	unweighted			weighted				
Variable	*n*	*M/%*	*SD*	*n*	*M/%*	*SD*	*min*	*max*
Owns a retirement account	2,286	68.01%	-	2,135	63.53%	-	-	-
Actively contributed to a retirement acct.	1,659	50.08%	-	1,652	49.15%	-	-	-
Retirement account asset balance	3,361	$10,000	5.79	3,361	$2,000	$288,783	0	$16,400,000
Perceived retirement preparation (on track)	3,361	3.33	1.31	3,361	3.03	1.25	1	5

Note. The 2019 SCF data was used. Median is reported for retirement account asset balance. Mean is reported for perceived retirement preparation. Sample was restricted to only those working full-time.

CFA Models: SCF Data

CFA models were employed to test how the chosen measurements represented the constructs of overspending, risk perception, and retirement preparation. The CFA model for overspending and risk perception would not converge. The results reveal moderately good model fit for retirement preparation: $\chi^2[2] = 532$, $p < 0.001$, CFI = 0.98, TLI = 0.94, RMSEA = 0.13, and SRMR = 0.03. CFI and TLI are above their acceptable benchmarks of 0.90, SRMR is below its acceptable benchmark of 0.05, but RMSEA is above its acceptable benchmark of 0.05 (Kenny, 2020). As reflected in Table 4.17, the factor loadings are strongest for owning a retirement account and retirement account balance. Perceived retirement preparation has a weak factor loading, which calls for future research to further refine this construct. Figure 4.4 illustrates the CFA model for retirement preparation. The additive scale for the three objective measures of retirement preparation has a Cronbach's alpha of 0.27, which reveals low internal consistency (Lucas & Donnellan, 2013). While the additive scale displays low internal consistency, the moderately good fit for the CFA model on retirement preparation led to the assumption that the current's study's measurement of the retirement preparation construct is acceptable.

Table 4.17.

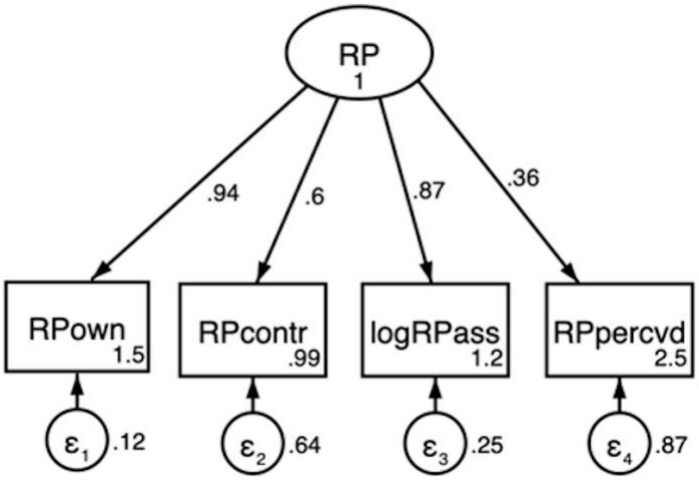
Standardized Loadings for Retirement Preparation CFA: SCF Data

Variable	Standardized Loading
Owned a retirement account	0.94
Actively contributed to a retirement account	0.60
Retirement account balance (log)	0.87
Perceived retirement account (on track)	0.36

Note. The 2019 SCF data was used. Sample was restricted to only those working full-time.

Figure 4.4.

Standardized Loading CFA Model for Retirement Preparation: SCF Data



Regression Results: SCF Data

Overspending on Short-Term Time Preference Regression Results

Spending More than Income on Short-Term Time Preference Regression Results.

The full list of results of the analysis informed by the BLCH for this model is listed in Table 4.18. The sample size is 3,361; RII accounted for all the missing data. Those who have a short-term time preference, compared to those who had a mid-to-long-term time preference, have 2.01 times the odds of overspending as measured by spending more than income, holding all other factors constant (OR = 2.01, $p < 0.001$). Robustness checks for the alternative, more conservative, measure of spending more than income reveal a non-significant relationship between short-term time preference and spending more than income. The weighting and short-term time preference robustness checks reveal no change in significance for the predictor variable.

Black households, compared to White households, are more likely to spend more than income, holding all other factors constant (OR = 1.86, $p = 0.002$). Those whose parent's have a bachelor's degree or beyond (OR = 0.55, $p = 0.040$) are positively associated with spending more than income, holding all other factors constant. Risk tolerance (OR = 0.93, $p = 0.029$), income (OR = 0.87, $p = 0.015$), and subjective financial knowledge (OR = 0.90, $p = 0.002$) all have a significant negative relationship with spending more than income, holding all other factors constant. The widow category of marital status was too small to run using the "scfcombo" command in Stata, so for all SCF analyses, widows were combined with divorced and separated respondents. Marital status, gender, education, objective financial knowledge, and health are not significantly associated with spending more than income.

The full list of results from the analysis informed by the LHT is displayed in Table 4.18. The sample size is 3,361. Those who have a short-term time preference, compared to those who had a mid-to-long-term time preference, have 2.08 times the odds of overspending as measured by spending more than income, holding all other factors constant (OR = 2.08, $p < 0.001$). Neither poor economic expectations nor retirement life expectancy are significantly related to spending more than income. Robustness tests without weights, using the alternative short-term time preference, and the alternative measurement for spending more than income reveal no change in significance in change for the predictor variables. The control variables results can be found in Table 4.18.

Table 4.18.

SCF Binary Logistic Regression of Spending More than Income

	BLCH, *n* = 3,361			LHT, *n* = 3,361		
Variable	B	SE	*OR*	B	SE	*OR*
Intercept	-1.81*	0.77	0.16	-1.89*	0.75	0.15
Short-term time preference	0.72***	0.20	2.01	0.73***	0.19	2.08
Poor economic expectations				0.21	0.28	1.23
Retirement life expectancy				0.00	0.01	1.00
Control variables						
Age	0.01	0.01	1.01	0.01	0.01	1.01
Marital status (married)						
living with partner or never married	-0.35	0.19	0.70	-0.35	0.20	0.70
separated, divorced, or widowed	0.14	0.17	1.15	0.14	0.18	1.15
Race of respondent (White)						
Black	0.62**	0.20	1.86	0.60**	0.19	1.82
Hispanic	-0.18	0.30	0.84	-0.19	0.30	0.83
Asian or other	0.07	0.46	1.07	0.07	0.48	1.07
Gender of respondent (male)	0.32	0.19	1.38	0.31	0.21	1.36
Education (high school degree)						
no high school degree	0.52	0.25	1.68	0.53*	0.26	1.70
some college	0.24	0.22	1.27	0.23	0.21	1.26
bachelor's degree	-0.46	0.29	0.63	-0.48	0.30	0.62
advanced degree	-0.01	0.30	0.99	-0.05	0.30	0.95
Parental education (high school degree)						
no high school degree	-0.01	0.23	0.99	0.00	0.22	1.00
some college	-0.35	0.27	0.70	-0.35	0.26	0.70
bachelor's degree	-0.60*	0.29	0.55	-0.61*	0.28	0.54
Risk tolerance	-0.07*	0.03	0.93	-0.07*	0.03	0.93
Income (log)	-0.14*	0.06	0.87	-0.15*	0.06	0.86
Objective financial knowledge	0.07	0.11	1.07	0.07	0.11	1.07
Subjective financial knowledge	-0.11**	0.04	0.90	-0.11**	0.04	0.90
Health (excellent)						
fair	-0.34	0.19	0.71	-0.34	0.19	0.71
poor	0.14	0.25	1.15	0.16	0.28	1.17

Model Fit Statistics	Log likelihood	-480	Log likelihood	-480
	Pseudo R^2	0.10	Pseudo R^2	0.10

Note. The 2019 SCF data was used, using a weighted sample. Sample was restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Credit Card Revolving on Short-Term Time Preference Regression Results.

The full list of results from the analysis informed by the BLCH is displayed in Table 4.19. The sample size is 3,361. Those who have a short-term time preference, compared to those who have a mid-to-long-term time preference, have1.46 times the odds of overspending as measured by credit card revolving, holding all other factors constant (OR = 1.46, $p < 0.001$). The robustness checks for weighting and the alternative short-term time preference reveal no change in significance for the predictor variable.

Black households, compared to their White counterparts, are positively associated with credit card revolving, holding all other factors equal (OR = 0.94, $p < 0.001$). Females, compared to males, are positively associated with credit card revolving, holding all other factors constant (OR = 1.21, $p = 0.016$). Those with a bachelor's degree (OR = 0.59, $p < 0.001$), and an advanced degree (OR = 0.49, $p < 0.001$), compared to those with a high school degree, have a significant negative relationship with credit card revolving, holding all other factors. Those whose parents do not have a high school degree (OR = 0.72, $p = 0.007$), and have a bachelor's degree (OR = 0.59, $p < 0.001$), compared to a high school degree, are negatively associated with credit card revolving, holding all other factors constant. Risk tolerance (OR = 0.96, $p = 0.047$), income (OR = 0.69, $p < 0.001$), objective financial knowledge (OR = 0.85, $p = 0.001$), and subjective financial knowledge (OR = 0.91, $p < 0.001$) are negatively associated with credit card revolving, holding all other factors. Compared to those with excellent health, those with fair health (OR =

1.55, $p < 0.028$) and poor health (OR = 1.80, $p = 0.036$) are positively associated with credit card revolving, holding all other factors constant. Age and marital status are not significant factors with credit card revolving in the model.

The full list of results from the analysis informed by the LHT are displayed in Table 4.19. The sample size is 3,361. Those who have a short-term time preference, compared to those who have a mid-to-long-term time preference, have 1.46 times the odds of overspending as measured by credit card revolving, holding all other factors constant (OR = 1.46, $p < 0.001$). Retirement life expectancy is also negatively associated with credit card revolving, which is in line with H2; a one unit increase in retirement life expectancy is associated with a one percent lower odds of credit card revolving (OR = 0.99, $p < 0.001$). Poor economic expectations does not have a significant relationship with credit card revolving. There is no change in significance for the predictor variables when robustness checking for weights and the alternative short-term time preference.

Table 4.19.

SCF Binary Logistic Regression of Credit Card Revolving

	BLCH, n = 3,361			LHT, n = 3,361		
Variable	B	SE	*OR*	B	SE	*OR*
Intercept	5.66***	0.69	287.15	5.78***	0.70	323.76
Short-term time preference	0.38***	0.07	1.46	0.38***	0.07	1.46
Poor economic expectations	-	-	-	-0.02	0.08	0.98
Retirement life expectancy	-	-	-	-0.01***	0.00	0.99
Control variables						
Age	-0.00	0.00	1.00	-0.00	0.00	1.00
Marital status (married)						
living with partner or never married	-0.06	0.09	0.94	-0.07	0.09	0.93
separated, divorced, or widowed	0.05	0.12	1.05	0.04	0.12	1.04
Race of respondent (White)						
Black	0.54***	0.10	1.72	0.60***	0.11	1.82

Hispanic	0.22	0.12	1.25	0.24	0.12	1.27
Asian or other	-0.28	0.16	0.76	-0.30	0.16	0.74
Gender of respondent (male)	0.19**	0.08	1.21	0.22**	0.08	1.25
Education (high school degree)						
no high school degree	-0.12	0.19	0.89	-0.14	0.19	0.87
some college	-0.07	0.11	0.93	-0.06	0.11	0.94
bachelor's degree	-0.53***	0.11	0.59	-0.52***	0.11	0.59
advanced degree	-0.72***	0.14	0.49	-0.70***	0.14	0.50
Parental education (high school degree)						
no high school degree	-0.33**	0.12	0.72	-0.34**	0.12	0.71
some college	-0.12	0.10	0.89	-0.12	0.10	0.89
bachelor's degree	-0.53***	0.08	0.59	-0.52***	0.08	0.59
Risk tolerance	-0.04*	0.02	0.96	-0.03	0.02	0.98
Income (log)	-0.37***	0.06	0.69	-0.36***	0.06	0.70
Objective financial knowledge	-0.16**	0.05	0.85	-0.16**	0.05	0.85
Subjective financial knowledge	-0.09***	0.02	0.91	-0.09***	0.02	0.91
Health (excellent)						
fair	0.44***	0.10	1.55	0.39***	0.10	1.48
poor	0.59*	0.29	1.80	0.53	0.28	1.70
Model Fit Statistics	Log likelihood		-1,998	Log likelihood		-1,993
	Pseudo R^2		0.14	Pseudo R^2		0.14

Note. The 2019 SCF data was used, using a weighted sample. Sample was restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

AFS Usage on Short-Term Time Preference Regression Results.

The full list of results from the analysis informed by the BLCH are displayed in Table 4.20. The sample size is 3,361. Those who have a short-term time preference, compared to those who have a mid-to-long-term time preference, had 2.41 times the odds of overspending as measured by AFS usage, holding all other factors constant (OR = 2.41, $p < 0.001$). The robustness checks for the alternative short-term time preference, smoking, reveal a non-

significant relationship with AFS usage. The robustness checks for weighting reveal no change in significance for the predictor variable.

Compared to White households, Black households (OR = 2.20, $p = 0.001$) are positively related to AFS usage, holding all other factors constant. Risk tolerance has a negative association with AFS usage, holding all other factors constant (OR = 0.92, $p = 0.048$). Age, marital status, gender, education, parental education, objective financial knowledge, subjective financial knowledge, and health are not significant factors with AFS usage in the model.

The full list of results is displayed in Table 4.20. The sample size is 3,361. Those who have a short-term time preference, compared to those who have a mid-to-long-term time preference, had 2.41 times the odds of overspending as measured by AFS usage, holding all other factors constant (OR = 2.41, $p < 0.001$). Those who have a poor economic expectation have 2.14 times the odds of overspending as measured by AFS usage, compared to those who have fair to positive economic expectations (OR = 2.14, $p = 0.001$). Retirement life expectancy does not have a significant relationship with AFS usage in the model. The robustness checks for the alternative short-term time preference, smoking, reveal a non-significant relationship with AFS usage, but there is no change in significance for poor economic expectations or retirement life expectancy. The robustness checks for weighting reveal no change in significance for the predictor variable.

Table 4.20.

SCF Binary Logistic Regression of AFS Usage

	BLCH, n = 3,361			LHT, n = 3,361		
Variable	B	SE	OR	B	SE	OR
Intercept	-3.59*	1.49	0.03	-3.39***	0.95	0.03
Short-term time preference	0.88***	0.21	2.41	0.88***	0.20	2.41
Poor economic expectations	-	-	-	0.76**	0.22	2.14

Retirement life expectancy	-	-	-	0.00	0.01	1.01
Control variables						
Age	-0.01	0.01	0.99	-0.01*	0.01	0.99
Marital status (married)						
living with partner or never married	-0.01	0.23	0.99	-0.04	0.23	0.96
separated, divorced, or widowed	0.13	0.26	1.14	0.09	0.27	1.09
Race of respondent (White)						
Black	0.79**	0.24	2.20	0.79	0.23	2.20
Hispanic	-0.25	0.36	0.78	-0.27	0.36	0.76
Asian or other	-0.57	0.57	0.57	-0.59	0.77	0.55
Gender of respondent (male)	0.4	0.22	1.49	0.40*	0.20	1.49
Education (high school degree)						
no high school degree	0.36	0.42	1.43	0.30	0.47	1.35
some college	0.52	0.28	1.68	0.53*	0.22	1.70
bachelor's degree	-0.56	0.40	0.57	-0.61	0.67	0.54
advanced degree	0.11	0.4	1.12	0.06	0.35	1.06
Parental education (high school degree)						
no high school degree	0.50	0.32	1.65	0.55	0.33	1.73
some college	0.40	0.28	1.49	0.44	0.28	1.55
bachelor's degree or beyond	-0.16	0.29	0.85	-0.23	0.31	0.79
advanced degree						
Risk tolerance	-0.08*	0.04	0.92	0.08	0.04	1.08
Income (log)	-0.06	0.13	0.94	-0.10	0.06	0.90
Objective financial knowledge	0.10	0.13	1.11	0.10	0.12	1.11
Subjective financial knowledge	-0.02	0.05	0.98	-0.01	0.05	0.99
Health (excellent)						
fair	0.15	0.26	1.16	0.13	0.26	1.14
poor	0.36	0.31		0.36	0.29	1.43
Model Fit Statistics	Log likelihood -412			Log likelihood. -408		
	Pseudo R^2 0.10			Pseudo R^2 0.11		

Note. The 2019 SCF data was used, using a weighted sample. Sample was restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Absence of Emergency Fund on Short-Term Time Preference Regression Results.

The full list of results is displayed in Table 4.21. The sample size is 3,361. Those who have a short-term time preference, compared to those who have a mid-to-long-term time preference, have 1.17 times the odds of overspending as measured by absence of emergency fund, holding all other factors constant (OR = 1.17, $p = 0.027$). The robustness checks for the alternative short-term time preference, smoking, reveal a non-significant relationship with the absence of an emergency fund. The robustness checks for weighting reveal no change in significance for the predictor variable.

Those separated, divorced, or widowed, compared to those who were married, have a significant positive relationship with the absence of an emergency fund, holding all other factors constant (OR = 1.32, $p = 0.049$). Asian/other households, compared to White households, have a significant positive relationship with the absence of an emergency fund, holding other factors constant (OR = 1.38, $p = 0.016$). Those with a bachelor's degree (OR = 0.65, $p < 0.001$) or an advanced degree (OR = 0.64, $p < 0.001$), compared to those with a high school degree, have a negative relationship with the absence of an emergency fund, holding other factors constant. Those whose parents had a bachelor's degree or beyond, compared to a high school degree, also have a negative relationship with the absence of an emergency fund, holding other factors constant (OR = 0.75, $p = 0.002$). Income (OR = 0.82, $p < 0.001$) and objective financial knowledge (OR = 0.78, $p < 0.001$) both have a negative association with absence of an emergency fund, holding other factors constant. Gender, risk tolerance, subjective financial knowledge, and health are control variables that have no significant relationship with the absence of an emergency fund in the model.

The full list of results is displayed in Table D2. The sample size is 3,361. Those who have a short-term time preference, compared to those who have a mid-to-long-term time preference, have 1.15 times the odds of overspending as measured by absence of emergency fund, holding all other factors constant (OR = 1.15, $p = 0.049$). Those who have poor economic expectations, compared to those with fair or positive economic expectations, have 34 percent lower odds of not having an emergency fund, holding all other factors constant (OR = 0.66, $p < 0.001$). Retirement life expectancy also has a slightly negative relationship with the absence of an emergency fund (OR = 0.99, $p = 0.019$). The robustness checks for weighting and the alternative short-term time preference reveal no significant change in relationship the predictor variables and the absence of an emergency fund.

Table 4.21.

SCF Binary Logistic Regression of Absence of Emergency Fund

	BLCH, *n* = 3,361			LHT, *n* = 3,361		
Variable	B	SE	OR	B	SE	OR
Intercept	3.80***	0.57	55.15	3.83***	0.57	46.06
Short-term time preference	0.16*	0.07	1.17	0.14*	0.07	1.15
Poor economic expectations	-	-	-	-0.41***	0.08	0.66
Retirement life expectancy	-	-	-	-0.01*	0.00	0.99
Control variables						
Age	-0.02***	0.00	0.98	-0.02***	0.00	0.98
Marital status (married)						
living with partner or never married	0.04	0.08	1.04	0.06	0.08	1.06
separated, divorced, or widowed	0.19*	0.10	1.32	0.21*	0.10	1.23
Race of respondent (White)						
Black	0.09	0.09	1.09	0.12	0.10	1.13
Hispanic	0.18	0.13	1.20	0.19	0.13	1.21
Asian or other	0.32*	0.13	1.38	0.32*	0.13	1.38
Gender of respondent (male)	0.00	0.07	1.00	0.03	0.07	1.03
Education (high school degree)						
no high school degree	-0.12	0.19	0.89	-0.15	0.19	0.86

some college	-0.04	0.11	0.96	-0.04	0.11	0.96
bachelor's degree	-0.43***	0.11	0.65	-0.40***	0.11	0.67
advanced	-0.45***	0.13	0.64	-0.40**	0.13	0.67
Parental education (high school degree)						
no high school degree	-0.08	0.14	0.92	-0.09	0.14	0.91
some college	-0.02	0.11	0.98	-0.02	0.11	0.98
bachelor's degree	-0.29**	0.1	0.75	-0.29**	0.1	0.75
Risk tolerance	0.01	0.01	1.01	0.02	0.01	1.02
Income (log)	-0.20***	0.05	0.82	-0.19***	0.05	0.83
Objective financial knowledge	-0.25***	0.06	0.78	-0.24***	0.05	0.79
Subjective financial knowledge	-0.02	0.02	0.98	-0.03	0.02	0.97
Health (excellent)						
fair	0.09	0.09	1.09	0.06	0.09	1.06
poor	0.15	0.28	1.16	0.13	0.29	1.14
Model Fit Statistics	Log likelihood	-2,179		Log likelihood	-2,151	
	Pseudo R^2	0.07		Pseudo R^2	0.08	

Note. The 2019 SCF data was used, using a weighted sample. Sample was restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Retirement Preparation on Overspending Regression Results

Retirement Account Ownership on Overspending Regression Results.

The full list of results is displayed in Table 4.22. The sample size is 3,361. Those who overspend, as measured by credit card revolving, have 26 percent lower odds of owning a retirement account, holding all other factors constant (OR = 0.74, $p < 0.001$). Those who overspend, as measured by the absence of an emergency fund, have 30 percent lower odds of owning a retirement account, holding all other factors constant (OR = 0.70, $p < 0.001$). Spending more than income and AFS usage does not have a significant relationship with the retirement account ownership. The robustness checks for weighting and the alternative, more conservative,

measurement of spending more than income reveals no change in significance for the predictor variables in the model.

Age has a slight positive relationship with the retirement account ownership, holding all other factors constant (OR = 1.01, $p < 0.001$). Hispanic households, compared to White households, have a significant negative relationship with retirement account ownership, holding all other factors constant (OR = 0.64, $p < 0.001$). Those with no high school degree (OR = 0.47, $p < 0.001$), a bachelor's degree (OR = 1.86, $p < 0.001$) or an advanced degree (OR = 2.46, $p < 0.001$), compared to those with a high school degree, have a significant relationship with the retirement account ownership, holding all other factors constant. Those whose parents have no high school degree, compared to a high school degree, have a negative relationship with retirement account ownership, holding all other factors constant (OR = 0.70, $p = 0.003$). Income (OR = 1.90, $p < 0.001$), and objective financial knowledge (OR = 1.19, $p < 0.001$) both have a positive association with retirement account ownership, holding all other factors constant. Those who have poor health, compared to those with excellent health, are negatively associated with retirement account ownership, holding all other factors constant (OR = 0.31, $p = 0.001$). Marital status, gender, risk tolerance, and subjective financial knowledge are control variables that have no significant relationship with retirement account ownership.

Table 4.22.

SCF Binary Logistic Regression of Retirement Account Ownership

	n = 3,361		
Variable	B	SE	*OR*
Intercept	-7.43***	0.87	0.00
Spends more than income	0.03	0.22	1.03
Revolves credit card debt	-0.30***	0.07	0.74
Uses AFS	0.14	0.19	1.15
Absence of emergency fund	-0.35***	0.07	0.70

Control variables			
Age	0.01**	0.00	1.01
Marital status (married)			
living with partner or never married	0.10	0.10	1.11
Separated, divorced, or widowed	-0.01	0.11	0.99
Race of respondent (White)			
Black	-0.05	0.08	0.95
Hispanic	-0.45***	0.13	0.64
Asian or other	0.10	0.17	1.11
Gender of respondent (male)	0.12	0.10	1.13
Education (high school degree)			
no high school degree	-0.76***	0.20	0.47
some college	0.13	0.09	1.14
bachelor's degree	0.62***	0.12	1.86
advanced	0.90***	0.13	2.46
Parental education (high school degree)			
no high school degree	-0.36**	0.12	0.70
some college	-0.08	0.11	0.92
bachelor's degree	0.03	0.10	1.03
Risk tolerance	0.02	0.02	1.02
Income (log)	0.64***	0.07	1.90
Objective financial knowledge	0.17***	0.04	1.19
Subjective financial knowledge	-0.01	0.02	0.99
Health (excellent)			
fair	-0.16	0.09	0.85
poor	-1.18**	0.34	0.31
Model Fit Statistics	Log likelihood		-1,772
	Pseudo R^2		0.20

Note. The 2019 SCF data was used, using a weighted sample. Sample was restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Retirement Account Contribution on Overspending Regression Results.

The full list of results was displayed in Table 4.23. The sample size is 3,361. Those who overspend, as measured by the credit card revolving, have 21 percent lower odds of contributing

to a retirement account, holding all other factors constant (OR = 0.79, $p < 0.001$). Spending more than income, AFS usage, and absence of an emergency fund do not have a significant relationship with the retirement account contribution. The robustness checks for weighting and the alternative, more conservative, measure for spending more than income reveal no change significance for the predictor variables.

Age has a slight negative relationship with the retirement account contribution, holding all other factors constant (OR = 0.99, $p = 0.041$). Those living with a partner or never married, compared to those who were married, have a positive association with contributing to a retirement account, holding other factors constant (OR = 1.21, $p = 0.017$). Hispanic households (OR = 0.71, $p = 0.005$) have a negative relationship whereas Asian/other households have a positive relationship with retirement account contribution, compared to their White counterparts, holding other factors constant (OR = 1.32, $p = 0.013$). Females, compared to males, have a positive relationship with retirement account contribution (OR = 1.26, $p = 0.013$). Those with no high school degree (OR = 0.47, $p < 0.001$), and a bachelor's degree (OR = 1.30, $p = 0.007$), compared to those with a high school degree, have significant relationships with the retirement account contribution, holding all other factors constant. Those whose parents have no high school degree, compared to a high school degree, have a negative relationship with retirement account contribution, holding all other factors constant (OR = 0.72, $p = 0.001$). Income (OR = 1.73, $p < 0.001$), and objective financial knowledge (OR = 1.12, $p = 0.011$) both have a positive association with retirement account contribution, holding all other factors constant. Risk tolerance, subjective financial knowledge, and health were control variables that have no significant relationship with retirement account contribution in the model.

Table 4.23.

SCF Binary Logistic Regression of Active Contributions to a Retirement Account

	n = 3,361		
Variable	B	SE	OR
Intercept	-6.16***	0.80	0.00
Spends more than income	0.06	0.22	1.06
Revolves credit card debt	-0.24***	0.06	0.79
Uses AFS	-0.02	0.18	0.98
Absence of emergency fund	-0.12	0.07	0.89
Control variables			
Age	-0.01*	0.00	0.99
Marital status (married)			
living with partner or never married	0.19*	0.08	1.21
Separated, divorced, or widowed	0.02	0.10	1.02
Race of respondent (White)			
Black	-0.09	0.09	0.91
Hispanic	-0.34**	0.12	0.71
Asian or other	0.28*	0.12	1.32
Gender of respondent (male)	0.23*	0.09	1.26
Education (high school degree)			
no high school degree	-0.76***	0.19	0.47
some college	-0.09	0.08	0.91
bachelor's degree	0.26**	0.09	1.30
advanced	0.16	0.13	1.17
Parental education (high school degree)			
no high school degree	-0.33**	0.10	0.72
some college	0.10	0.10	1.11
bachelor's degree	-0.04	0.08	0.96
Risk tolerance	0.01	0.02	1.01
Income (log)	0.55***	0.06	1.73
Objective financial knowledge	0.11*	0.04	1.12
Subjective financial knowledge	-0.01	0.01	0.99
Health (excellent)			
fair	-0.13	0.09	0.88
poor	-0.60	0.31	0.55
Model Fit Statistics	Log likelihood		-2,096
	Pseudo R^2		0.10

Note. The 2019 SCF data was used, using a weighted sample. Sample was restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Retirement Account Balance on Overspending Regression Results.

The full list of results are displayed in Table 4.24. Standardized coefficients are reported so they could be compared across predictors of the same model. The sample size is 3,361. Revolving credit card debt ($\beta = -0.05$, $p < 0.001$) and the absence of an emergency fund ($\beta = -0.08$, $p < 0.001$), both have significant negative relationships with retirement account balance, holding other factors constant. Spending more than income and AFS usage does not have a significant relationship with retirement account balance. The robustness check for the alternative, more conservative, measurement of spending more than income reveals a non-significant relationship between absence of emergency fund and retirement account balance, but there is no change in significance for the other predictor variables. The robustness checks for weighting reveal no change in significance for the predictor variables in the model.

Age has a significant positive relationship with retirement account contribution, holding all other factors constant ($\beta = 0.12$, $p < 0.001$). Black households ($\beta = - 0.03$, $p = 0.013$) and Hispanic households ($\beta = -0.05$, $p = 0.001$), compared to White households, are negatively associated to retirement account balance, holding other factors constant. Those with no high school degree ($\beta = -0.03$, $p = 0.009$), a bachelor's degree ($\beta = 0.09$, $p < 0.001$), and an advanced degree ($\beta = 0.11$, $p < 0.001$), compared to those with a high school degree, have a significant relationship with retirement account balance, holding all other factors constant. Those whose parents have no high school degree, compared to a high school degree, have a significant negative relationship with retirement account balance, holding all other factors constant ($\beta = -$

0.05, $p < 0.001$). Risk tolerance (β = 0.06, $p < 0.001$), income (β = 0.43, $p < 0.001$) and objective financial knowledge (β = 0.07, $p < 0.001$) are positively associated with the retirement account balance, holding all other factors constant. Those with poor health, compared to those with excellent health, are negatively associated with retirement account balance, holding all other factors constant (β = -0.03, $p = 0.022$). Marital status, gender, and subjective financial knowledge are not significant factors in the model.

Table 4.24.

SCF OLS Regression of Logged Retirement Account Asset Balance

		n = 3,361	
Variable	B	SE B	β
Intercept	-13.35***	1.33	-
Overspending predictor variables			
Spends more than income	-0.09	0.39	0.00
Revolves credit card debt	-0.64***	0.12	-0.05
Uses AFS	-0.24	0.39	-0.01
Absence of emergency fund	-0.98***	0.15	-0.08
Control variables			
Age	0.05***	0.01	0.12
Marital status (married)			
living with partner or never married	0.27	0.17	0.01
Separated, divorced, or widowed	0.28	0.21	0.02
Race of respondent (White)			
Black	-0.54*	0.22	-0.03
Hispanic	-0.90**	0.28	-0.05
Asian or other	0.43	0.31	0.02
Gender of respondent (male)	0.08	0.15	0.01
Education (high school degree)			
no high school degree	-0.80**	0.31	-0.03
some college	-0.01	0.20	0.00
bachelor's degree	1.20***	0.21	0.09
advanced	1.47***	0.22	0.11
Parental education (high school degree)			
no high school degree	-0.82***	0.23	-0.05

some college	-0.13	0.21	-0.01
bachelor's degree or beyond	0.08	0.18	0.01
Risk tolerance	0.13***	0.03	0.06
Income (log)	1.35***	0.12	0.43
Objective financial knowledge	0.51***	0.09	0.07
Subjective financial knowledge	0.05	0.03	0.02
Health (excellent)			
fair	-0.34	0.18	-0.03
poor	-1.46*	0.64	-0.03
Model Fit Statistics	R^2		0.30
	Adjusted R^2		0.29

Note. The 2019 SCF data was used, using a weighted sample. Sample was restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Perceived Retirement Preparation on Overspending Regression Results.

The full list of results are displayed in Table 4.25. The sample size is 3,361. Spending more than income (β = -0.06, $p < 0.001$), credit card revolving (β = -0.05, $p < 0.001$), AFS usage (β = -0.04, $p < 0.001$), and the absence of an emergency fund (β = -0.06, $p < 0.001$) have a significant negative relationship with perceived retirement preparation, holding all other factors constant. Robustness checks for weights and the alternative, more conservative, measure for spending more than income reveal a non-significant relationship between AFS usage and perceived retirement preparation, but no change in significance for the other predictor variables.

Those who had never been married or were living with a partner, compared to those who were married, are positively associated with retirement account balance (β = 0.03, $p = 0.036$) Compared to White households, Black households have a positive relationship with perceived retirement preparation (β = 0.06, $p < 0.001$), whereas Asian/other households have a negative relationship with perceived retirement preparation (β = -0.04, $p = 0.001$), holding all other factors constant. Females, compared to males, have a negative association with perceived

retirement preparation, holding all other factors constant (β = -0.04, p = 0.003). Risk tolerance (β = 0.12, p < 0.001), income (β = 0.27, p < 0.001), and subjective financial knowledge (β = 0.11, p < 0.001) are positively related to perceived retirement preparation, holding all other factors constant. Those with fair health (β = -0.09, p < 0.001) and poor health (β = -0.07, p < 0.001), compared with those with excellent health, have a negative association with perceived retirement preparation, holding all other factors constant. Age, education, parental education, and objective financial knowledge are not significant factors in the model.

Table 4.25.

SCF OLS Regression of Perceived Retirement Preparation

	n = 3,361		
Variable	B	SE B	β
Intercept	0.65*	0.27	-
Spends more than income	-0.48***	0.11	-0.06
Revolves credit card debt	-0.15***	0.02	-0.05
Uses AFS	-0.36**	0.12	-0.04
Absence of emergency fund	-0.16***	0.04	-0.06
Control variables			
Age	-0.00	0.00	0.00
Marital status (married)			
living with partner or never married	0.08*	0.04	0.03
Separated, divorced, or widowed	0.04	0.05	0.01
Race of respondent (White)			
Black	0.22***	0.06	0.06
Hispanic	0.03	0.08	0.01
Asian or other	-0.21**	0.06	-0.04
Gender of respondent (male)	-0.12**	0.04	-0.04
Education (high school degree)			
no high school degree	0.08	0.11	0.00
some college	-0.04	0.06	0.00
bachelor's degree	0.12	0.07	0.04
advanced degree	0.09	0.07	0.03
Parental education (high school degree)			
no high school degree	-0.10	0.07	-0.02

some college	-0.02	0.07	0.00
bachelor's degree or beyond	0.01	0.05	0.00
Risk tolerance	0.06***	0.01	0.12
Income (log)	0.19***	0.02	0.27
Objective financial knowledge	-0.01	0.03	-0.01
Subjective financial knowledge	0.07***	0.01	0.11
Health (excellent)			
fair	-0.24***	0.05	-0.09
poor	-0.73***	0.19	-0.07
Model Fit Statistics	R^2		0.16
	Adjusted R^2		0.15

Note. The 2019 SCF data was used, using a weighted sample. Sample was restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Interaction Effects Between Income and Overspending with Retirement Preparation

Table A.3 displays the interaction effects between overspending and income with retirement account ownership. There is a significant interaction effect between AFS usage and income with retirement account ownership (B = -0.74, $p = 0.027$); Figure 4.5 displays this interaction effect. Figure 4.5 illustrates that retirement account ownership is more positively impacted when AFS usage is present for lower income households, compared to those who do not use AFS. There is also a significant interaction effect between the absence of an emergency fund and income with retirement account ownership (B = 0.30, $p = 0.020$); Figure 4.6 displays this interaction effect, which illustrates that retirement account ownership is most negatively impacted by those with higher incomes when there was an absence of emergency fund, compared to those with lower incomes. The interaction effects between spending more than income and income as well as between credit card revolving and income with retirement account ownership are not significant.

Figure 4.5.

Interaction Effect of AFS Usage and Income with Retirement Account Ownership

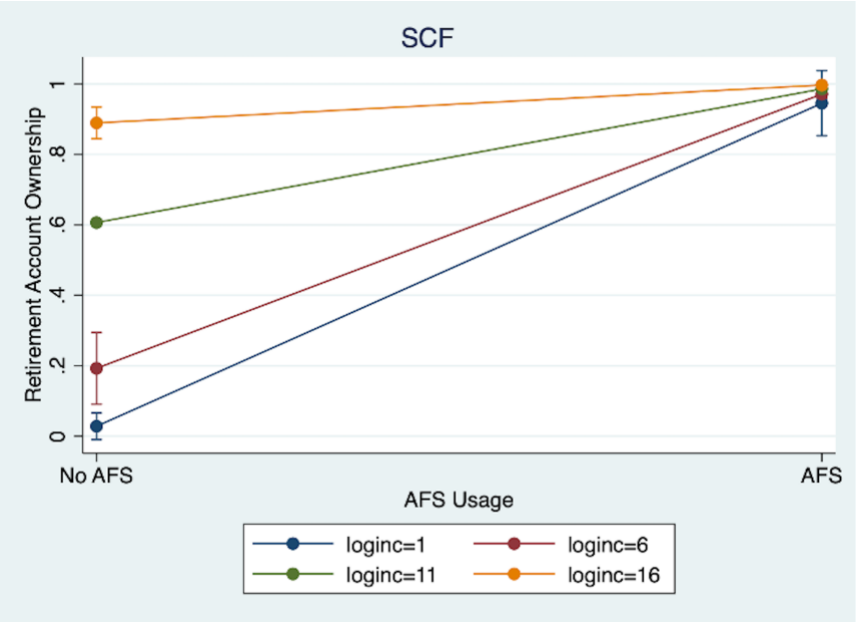
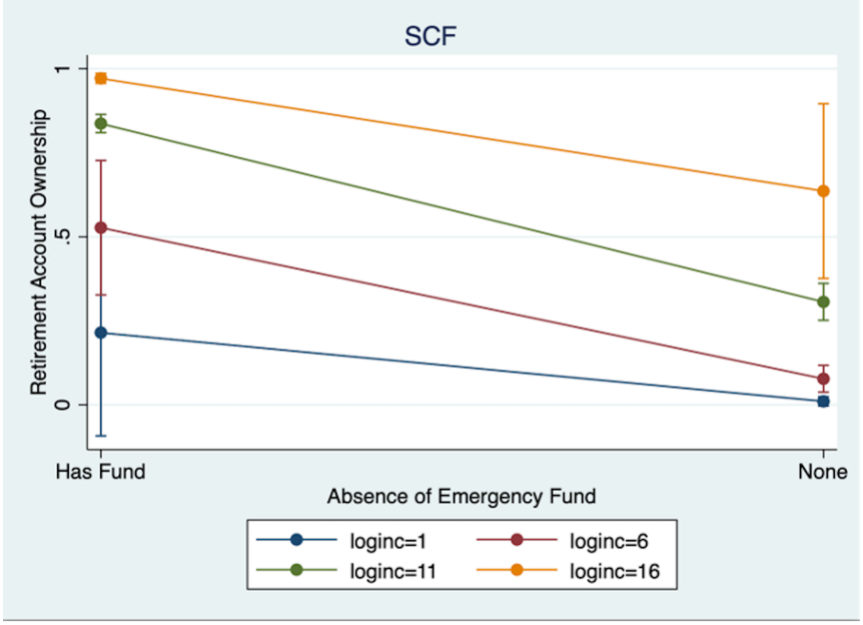


Figure 4.6.

Interaction Effect of the Absence of an Emergency Fund and Income with Retirement Account Ownership



The full results are displayed in Table A.4 for the interaction effects between overspending and income with retirement account contribution using the SCF data. The results indicate there is a significant relationship between revolving credit card debt and income with retirement account contribution (B = -0.18, p = 0.011), as displayed in Figure 4.7. Figure 4.7 illustrates that retirement account contribution is more negatively impacted when credit card revolving is present for those with higher incomes, compared to when credit card revolving is not present. There is also a significant interaction effect between the absence of emergency fund and income with retirement account contribution (B = 0.42, p <0.001), as displayed in Figure 4.8. Figure 4.8 illustrates that retirement account contribution levels fall more steeply for those with higher incomes when respondents do not have an emergency fund, compared to those who have an emergency fund. For retirement account contribution, the interaction effect between spending more than income and income, as well as AFS usage and income, are not significant. Overspending measures do not have a significant relationship with income for retirement account balance.

Figure 4.7.

Interaction Effect of Credit Card Revolving and Income with Retirement Account Contribution

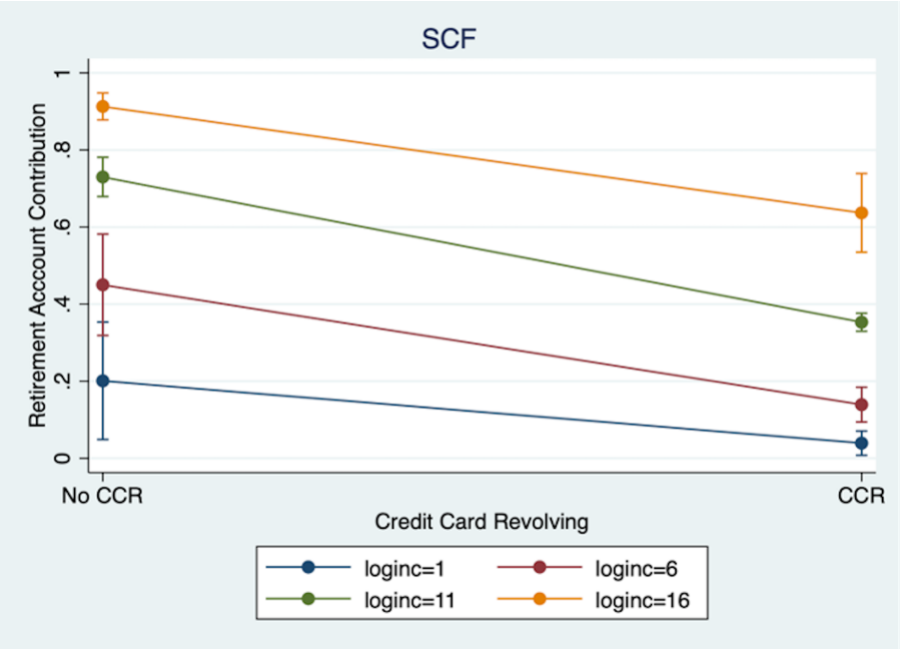
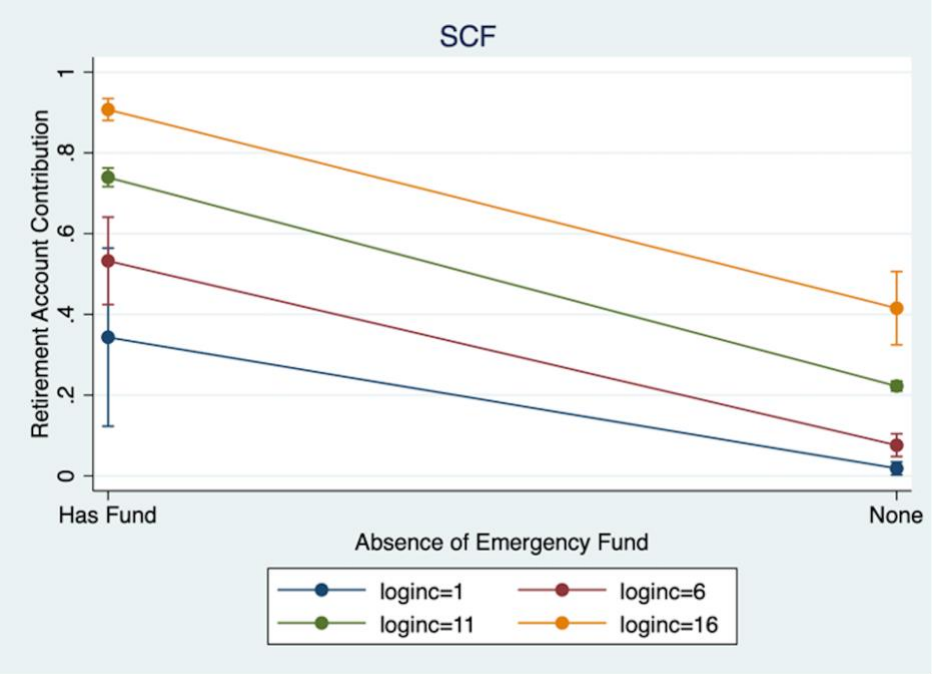


Figure 4.8.

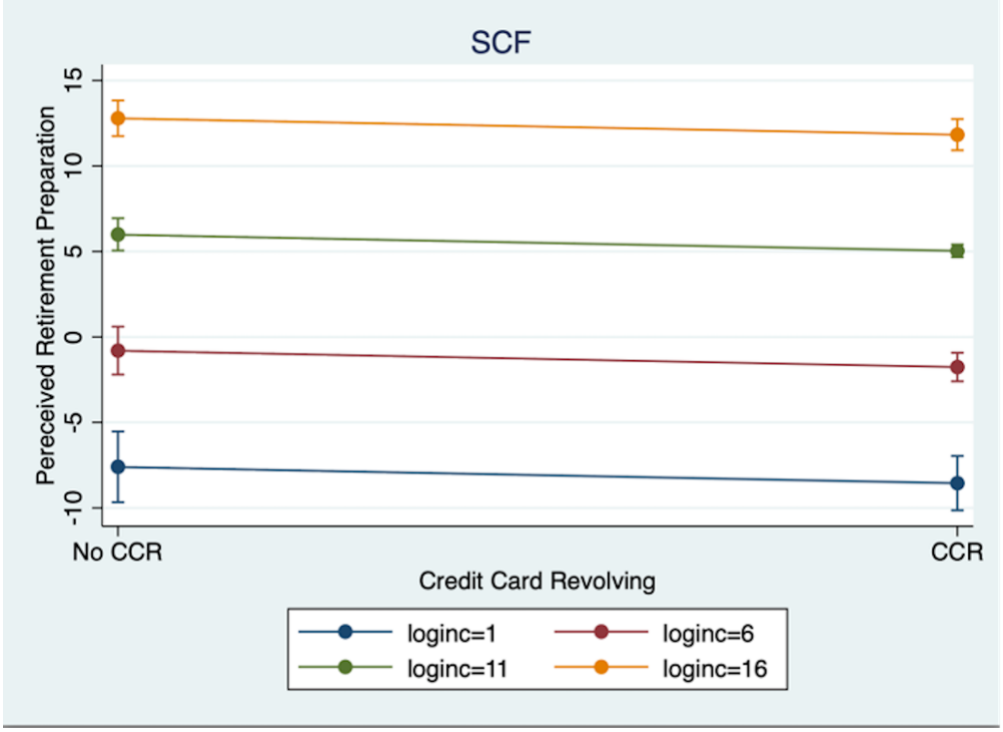
Interaction Effect of the Absence of an Emergency Fund and Income with Retirement Account Contribution



The full results are displayed in Table A.5 for the interaction effects between overspending and income with perceived retirement preparation using the SCF data. The results indicate there is a significant relationship between revolving credit card debt and income with perceived retirement preparation (B = -0.09, p = 0.004), as displayed in Figure 4.9. Figure 4.9 displays visually parallel lines for the interaction effects between credit card revolving and income with perceived retirement preparation, meaning the interaction effect is small.

Figure 4.9.

Interaction Effect of the Credit Card Revolving and Income with Perceived Retirement Preparation



Study 3: NFCS Data

Descriptive Statistics of Study 3: NFCS Sample

Demographic Statistics

The demographic statistics of the NFCS sample are displayed in Table 4.26. The most common age group is under age 35 (*n* = 3,757, 35%), age categories of 35-44 and 45-54 are similar (24%; 23%). Fewer respondents are in the 55-64 bracket (16%) and the least are over age 65 (3%). The age skewing younger is not surprising given the sample restriction to full-time workers only. Married is the most common marital status (54%). Most respondents are white (60%), and there are more males than females (males 58%). Some college is the most common education category (39%), and a bachelor's degree is the second most common (24%). Some college (30%) and high school degree (29%) are the most common parental education categories. Income is somewhat evenly distributed in the middle-income ranges: $25,000-$49,999 (24%), $50,000-$74,999 (23%), $75,000-$99,999 (18%), and $100,000-$149,999 (17%). Fewer respondents were in the lower income range of $0-$24,999 (9%) and higher income range of over $150,000 (9%). The mean score for objective financial knowledge is 3.15 on a scale from zero to six. Subjective financial knowledge is higher, with a mean score of 5.23 on a scale from one to seven. The mean risk tolerance score is 5.71 on a scale from one to ten. The mean financial attitude score is 4.68 on a scale from one to seven.

Table 4.26.

Sample Demographics of the NFCS Sample (N = 10,800)

	unweighted			weighted				
Variable	*n*	*M/%*	*SD*	*n*	*M/%*	*SD*	*min*	*max*
Age								
Under 35	3,540	32.78%	-	3,757	34.79%	-	-	-
35-44	2,648	24.52%	-	2,596	24.04%	-	-	-

45-54	2,532	23.44%	-	2,452	22.70%	-	-	-
55-64	1,757	16.27%	-	1,694	15.68%	-	-	-
65+	323	2.99%	-	301	2.79%	-	-	-
Marital status								
Married	5,984	55.41%	-	5,798	53.69%	-	-	-
Single	3,499	32.40%	-	3,750	34.72%	-	-	-
Separated/divorced	1,169	10.82%	-	1,110	10.28%	-	-	-
Widowed/widower	148	1.37%	-	142	1.31%	-	-	-
Race								
White	7,737	71.64%	-	6,488	60.07%	-	-	-
Non-White	3,063	28.36%	-	4,312	39.93%	-	-	-
Gender								
Male	5,680	52.59%	-	6,292	58.26%	-	-	-
Female	5,120	47.41%	-	4,508	41.74%	-	-	-
Education of respondent								
No high school degree	88	0.81%	-	92	0.85%	-	-	-
High school degree	2,009	18.60%	-	2,281	21.12%	-	-	-
Some college	3,892	36.04%	-	4,203	38.92%	-	-	-
Bachelor’s degree	3,021	27.97%	-	2,599	24.06%	-	-	-
Advanced degree	1,790	16.57%	-	1,625	15.04%	-	-	-
Parental education *(higher of mother or father's)*								
No high school degree	482	4.52%	-	576	5.40%	-	-	-
Highschool degree	2,941	27.59%	-	3,064	28.75%	-	-	-
Some college	3,064	28.75%	-	3,174	29.78%	-	-	-
Bachelor’s degree	2,643	24.80%	-	2,425	22.75%	-	-	-
Advanced degree	1,529	14.34%	-	1,420	13.32%	-	-	-
Income								
$0-$24,999	846	7.83%	-	966	8.94%	-	-	-
$25,000-$49,999	2,515	23.29%	-	2,540	23.52%	-	-	-
$50,000-$74,999	2,401	22.23%	-	2,446	22.64%	-	-	-
$75,000-$99,999	2,010	18.61%	-	1,964	18.19%	-	-	-
$100,000-$149,999	1,958	18.13%	-	1,877	17.38%	-	-	-

$150,000 or more	1,070	9.91%	-	1,008	9.33%	-	-	-
Objective financial knowledge	10,800	3.24	1.63	10,800	3.15	1.64	0	6
Subjective financial knowledge	10,591	5.22	1.27	10,591	5.23	1.29	1	7
Risk tolerance	10,584	5.59	2.57	10,584	5.71	2.62	1	10
Financial attitude	10,591	4.67	1.94	10,682	4.68	1.94	1	7

Note. The 2018 NFCS was used. Sample restricted to only those working full time.

Overspending Descriptive Statistics

Table 4.27 display the descriptive statistics of overspending for the SCF sample. One-fifth the sample overspends, as measured by spending more than income (20%). About one-third of the sample overspends, as measured by AFS usage in the past five years (32%). Less than half of the sample overspends, as measured by absence of emergency fund (46%), and over a third of the sample overspends, as measured by and credit card revolving (36%).

Table 4.27.

Overspending Descriptive Statistics of the NFCS Sample (N = 10,800)

	unweighted		weighted	
Variable	*n*	*M/%*	*n*	*M/%*
Spends more than income	2,052	19.52%	2,104	20.02%
Revolves credit card debt	3,725	35.11%	3,766	35.50%
AFS usage	3,085	29.29%	3,356	31.86%
Absence of emergency fund	4,871	46.86%	4,808	46.26%

Note. The 2018 NFCS was used. Sample restricted to only those working full time.

Risk Perception Descriptive Statistics

Table 4.28 displays risk perception descriptive statistics for the NFCS sample. Over half the sample has a short-term time preference (58%). About one-third has poor economic expectations (32%). Over three-fifths the sample has a high-risk perception as measured by risky behaviors (62%).

Table 4.28.

Risk Perception Descriptive Statistics of the NFCS Sample (N = 10,800)

	unweighted		weighted	
Variable	*n*	*M/%*	*n*	*M/%*
Short-term time preference	4,397	58.48%	4,448	58.00%
Poor economic Expectations	3,224	30.69%	3,315	31.55%
Risky behaviors	6,392	60.10%	6,569	61.76%

Note. The 2018 NFCS was used. Sample restricted to only those working full time.

Retirement Preparation Descriptive Statistics

Table 4.29 displays the descriptive statistics for retirement preparation of the NFCS sample. Four-fifths of the sample owns a retirement account (80%) and even more actively contribute to a retirement account (88%). Perceived retirement preparation has a mean of 3.21 on a scale of one to seven.

Table 4.29.

Retirement Preparation Descriptive Statistics of the NFCS Sample (N = 10,800)

	unweighted			weighted				
Variable	*n*	*M/%*	*SD*	*n*	*M/%*	*SD*	*min*	*max*
Owns a retirement account	8,173	82.11%	-	8,012	80.49%	-	-	-
Actively contributes to a retirement acct.	5,974	86.16%	-	5,954	87.87%	-	-	-
Perceived retirement preparation (on track)	10,589	3.22	1.92	10,589	3.21	1.93	1	7

Note. The 2018 NFCS was used. Sample restricted to only those working full time.

CFA Models: NFCS Data

The results do not reveal good model fit for overspending, $\chi^2[2] = 631$, $p < 0.001$, CFI = 0.90, TLI = 0.71, RMSEA = 0.11, and SRMR = 0.04. The model's CFI and SRMR display good model fit, but the TLI result is beyond the acceptable benchmark of 0.90 and the RMSEA result

is above the acceptable benchmark of 0.05 (Kenny, 2020). Figure 4.10 illustrates the CFA model for overspending, and Table 4.30 displays the standardized factor loadings for the CFA model of overspending. AFS usage and spending more than income have weak factor loadings. The additive scale for the overspending indicators has a Cronbach's alpha of 0.44, which does not display high levels of internal consistency because it is the below the acceptable benchmark of 0.70. The low internal consistency of the overspending construct could reflect overspending being a broad construct (Clark & Watson, 1995), or it could also suggest the need for future research to determine a better measurement for overspending.

The risk perception CFA results displays a just-identified model, $\chi 2[0] = 0.00$, $p < 0.001$, CFI = 1.00, TLI = 1.00, RMSEA = 0.00, and SRMR = 0.00. As reflected in Table 4.31, the risk perception factor loading is strongest for poor economic expectations. Risky behaviors and short-term time preference have weak factor loadings. Figure 4.11 illustrates the CFA model for risk perception. Estimates for the retirement preparation CFA model could not be computed because the model was not identified. Retirement preparation was not tested as an additive scale because there were only two objective measures of retirement preparation.

Table 4.30.

Standardized Loadings for Overspending CFA: NFCS Sample

Variable	Standardized Loading
Spends more than income	0.32
Credit card revolving balance	0.59
AFS usage	0.40
Absence of emergency fund	0.50

Note. The 2018 NFCS was used. Sample restricted to only those working full time.

Figure 4.10.

Standardized Loading CFA Model for Overspending: NFCS Sample

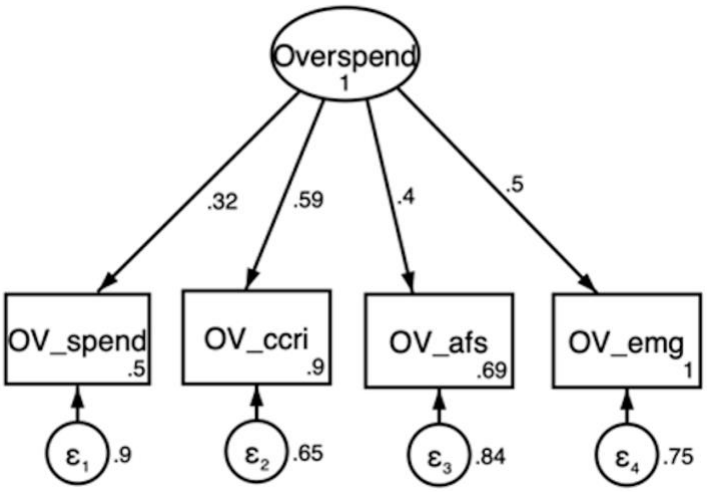


Table 4.31.

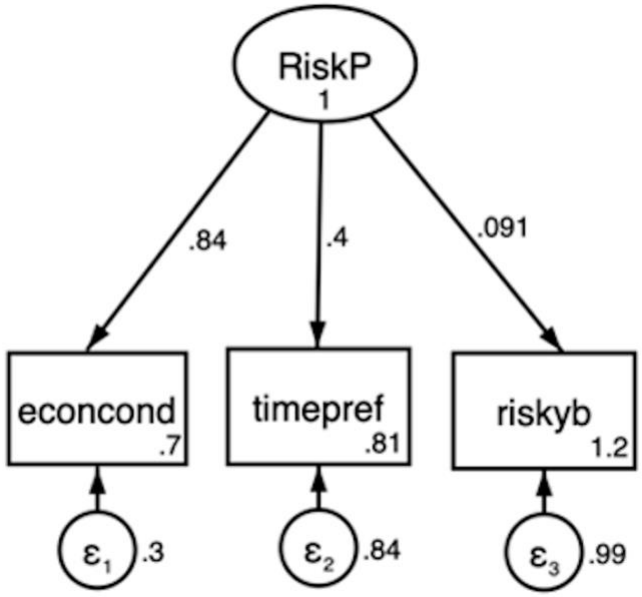
Standardized Loadings for Risk Perception CFA: NFCS Sample

Variable	Standardized Loading
Short-term time preference	0.40
Risky behaviors	0.09
Poor economic expectations	0.84

Note. The 2018 NFCS was used. Sample restricted to only those working full time.

Figure 4.11.

Standardized Loading CFA Model for Risk Perception: NFCS Sample



Regression Results: NFCS Data

Overspending on Short-Term Time Preference Regression Results

Spending More than Income on Short-Term Time Preference Regression Results.

The full list of results from the analysis informed by BLCH are displayed in Table 4.32. After accounting for the missing data, the sample size for this analysis is 10,003. Those with a short-term time preference, compared to those who have a mid-to-long-term time preference, have 1.39 higher odds of overspending as measured by spending more than income, holding other factors constant (OR = 1.39, $p < 0.001$). A robustness check for the alternative short-term time preference measurement reveals a non-significant relationship between short-term time preference and spending more than income. Robustness checks for weighting and multiple imputation reveal no change in significance for the predictor variable.

Compared to respondents under the age of 35, ages 45- 54 (OR = 0.70, $p < 0.001$), ages 55-64 (OR = 0.55, $p = 0.003$) and ages 65 or older (OR = 0.33, $p < 0.001$) have a negative association with spending more than income, holding all other factors constant. Non-White households, compared to White households, have a significant positive relationship with spending more than income, holding all other factors constant (OR = 1.38, $p < 0.001$). Females, compared to males, have a negative association with spending more than income, holding all other factors constant (OR = 0.86, $p = 0.023$). Risk tolerance (OR = 1.03, $p = 0.025$) and financial attitude (OR = 1.35, $p < 0.001$) have a positive association with spending more than income, holding all other factors constant. Objective financial knowledge (OR = 0.93, $p = 0.002$) and subjective financial knowledge (OR = 0.94, $p = 0.049$) have a negative association with spending more than income, holding all other factors constant. Marital status, education, parental education, and income are not significantly associated with spending more than income in the model.

The full list of results from the analysis informed by the LHT are displayed in Table 4.32. After accounting for the missing data, the sample size for this analysis is 9,810. Those who have a short-term time preference, compared to a mid-to-long-term time preference, have 1.19 higher odds of spending more than income, holding other factors constant (OR = 1.19, $p = 0.029$). Those who have poor economic expectations, compared to fair to positive economic expectations, have 1.82 times the odds of overspending as measured by spending more than income, holding all other factors constant (OR = 1.82, $p < 0.001$). The binary logistic regression results do not indicate a significant relationship between risky behavior and spending more than income. Robustness checks without weights and the alternative short-term time preference measurement reveal a non-significant relationship between short-term time preference and

spending more than income. The robustness check for weighting causes the relationship between risky behavior and spending more than income to become significant. The robustness check for multiple imputation reveals no change in significance for the predictor variables.

Table 4.32.

NFCS Binary Logistic Regression of Spending More than Income

	BLCH, *n* = 10,003			LHT, *n* = 9,810		
Variable	B	SE	*OR*	B	SE	*OR*
Intercept	-2.27***	0.28	0.10	-2.40***	0.29	0.09
Short-term time preference	0.33***	0.07	1.39	0.17*	0.08	1.19
Poor economic expectations	-	-	-	0.60***	0.08	1.82
Risky behavior	-	-	-	0.12	0.07	1.13
Control variables						
Age (under 35)						
35-44	-0.13	0.09	0.88	-0.11	0.09	0.89
45-54	-0.36***	0.10	0.70	-0.31***	0.10	0.73
55-64	-0.60***	0.12	0.55	-0.59***	0.12	0.56
65 or older	-1.12***	0.31	0.33	-1.03***	0.31	0.36
Marital status (married)						
living with partner or never married	-0.07	0.08	0.93	-0.07	0.08	0.94
separated or divorced	-0.00	0.12	1.00	0.01	0.12	1.01
widowed	0.53	0.29	1.70	0.56	0.29	1.75
Race of respondent (White)	0.33***	0.07	1.38	0.35***	0.07	1.42
Gender of respondent (male)	-0.16*	0.07	0.86	-0.12	0.07	0.89
Education (high school degree)						
no high school degree	0.43	0.33	1.54	0.38	0.36	1.46
some college	0.11	0.10	1.12	0.14	0.11	1.15
bachelor's degree	-0.13	0.13	0.88	-0.11	0.13	0.89
advanced degree	-0.02	0.14	0.98	-0.00	0.15	1.00
Parental education (high school degree)						
no high school degree	-0.29	0.17	0.75	-0.26	0.17	0.77
some college	-0.10	0.10	0.90	-0.12	0.10	0.89
bachelor's degree	-0.16	0.11	0.86	-0.16	0.11	0.85
advanced degree	-0.15	0.13	0.86	-0.13	0.13	0.87

Risk tolerance	0.03*	0.01	1.03	0.03	0.01	1.03
Income (under $25,000)						
$25,000-$49,999	0.13	0.13	1.13	0.14	0.14	1.15
$50,000-$74,999	0.03	0.14	1.03	0.10	0.14	1.11
$75,000-$99,999	0.17	0.15	1.18	0.25	0.15	1.28
$100,000-$149,999	0.02	0.16	1.02	0.13	0.16	1.13
$150,000 or more	-0.30	0.19	0.74	-0.17	0.20	0.84
Objective financial knowledge	-0.07**	0.02	0.93	-0.06**	0.02	0.94
Subjective financial knowledge	-0.06*	0.03	0.94	-0.06*	0.03	0.94
Financial attitude	0.30***	0.03	1.35	0.25***	0.03	1.29
Model Fit Statistics	C-statistic	0.72		C-statistic.	0.74	
	Pseudo R^2	0.09		Pseudo R^2	0.10	

Note. The 2018 NFCS data was used with weights. Sample restricted to only those working full time. * $p < .05$; ** $p < .01$; *** $p < .001$

Credit Card Revolving on Short-Term Time Preference Regression Results.

The full list of results from the analysis informed by the BLCH are displayed in Table 4.33. After accounting for the missing data, the sample size for this analysis is 10,004. Those who have a short-term time preference, compared to those who had a mid-to-long-term time preference, have 1.28 higher odds of overspending as measured by credit card revolving, holding all other factors constant (OR = 1.28, $p < 0.001$). A robustness check for the alternative short-term time preference measurement reveals a non-significant relationship between short-term time preference and credit card revolving. Robustness checks for weighting, multiple imputation, and excluding non-credit card holders reveal no change in significance for the predictor variable.

As compared to those under age 35, ages 45-54 (OR = 0.75, $p < 0.001$), ages 55-64 (B = -0.63, OR = 0.53, $p < 0.001$), and those over age 65 (OR = 0.26, $p < 0.001$) are significantly related to credit card revolving, holding all other factors constant. Non-White households, compared to White households, are significantly related to credit card revolving, holding all

other factors constant (OR = 1.18, $p = 0.006$). Those who have an advanced degree, compared to a high school degree, are negatively associated with credit card revolving, holding all other factors constant (OR = 0.67, $p = 0.001$). Those whose parents have a bachelor's degree (OR = 0.68, $p < 0.001$), or an advanced degree (OR = 0.68, $p < 0.001$), compared to a high school degree, are negatively associated with credit card revolving, holding all other factors constant. Those who earn $50,000-$74,999 (OR = 0.61, $p < 0.001$), $75,000-$99,999 annually (OR 0.61, $p < 0.001$), $100,000-$149,999 annually (OR = 0.45, $p < 0.001$), and over $150,000 annually (OR = 0.35, $p < 0.001$), compared to those who earn under $25,000 annually, are negatively associated with credit card revolving, holding all other factors constant. Objective financial knowledge (OR = 0.84, $p < 0.001$), and subjective financial knowledge (OR = 0.92, $p = 0.001$) have a negative association with credit card revolving, holding all other factors constant. Financial attitude is positively related to credit card revolving, holding all other factors constant (OR = 1.31, $p < 0.001$). Marital status, gender, and risk tolerance are not significant factors for credit card revolving in the model.

The full list of results from the analysis informed by the LTH are displayed in Table 4.33. After accounting for the missing data, the sample size for this analysis is 9,793. Those who have a short-term time preference, compared to a mid-to-long-term time preference, have 1.14 higher odds of credit card revolving, holding other factors constant (OR = 1.14, $p < 0.001$). Those who have poor economic expectations, compared to fair to positive economic expectations, have 1.65 times the odds of overspending as measured by credit card revolving, holding all other factors constant (OR = 1.65, $p <0.001$). Those who display risky behavior as measured by purchasing a lottery ticket, compared to those who did not display risky behavior, have 1.23 times the odds of overspending as measured by credit card revolving, holding all other factors constant (OR =

1.23, $p < 0.001$). Robustness checks for weighting, multiple imputation, the alternative short-term time preference measurement reveal a non-significant relationship between a short-term time preference and credit card revolving but reveal no change in significance in with the other predictor variables. The robustness check for excluding non-credit card holders also reveals no change in significance for the predictor variables.

Table 4.33.

NFCS Binary Logistic Regression of Credit Card Revolving

	BLCH, n = 10,004			LHT, n = 9,793		
Variable	B	SE	*OR*	B	SE	*OR*
Intercept	0.49*	0.23	1.63	0.32	0.24	1.38
Short-term time preference	0.25***	0.06	1.28	0.13*	0.07	1.14
Poor economic expectations	-	-	-	0.50***	0.07	1.65
Risky behavior	-	-	-	0.21***	0.06	1.23
Control variables						
Age (under 35)						
35-44	0.06	0.07	1.06	0.04	0.08	1.04
45-54	-0.28***	0.08	0.75	-0.29***	0.08	0.75
55-64	-0.63***	0.09	0.53	-0.64***	0.09	0.53
65 or older	-1.35***	0.22	0.26	-1.39***	0.22	0.25
Marital status (married)						
living with partner or never married	-0.08	0.07	0.92	-0.10	0.07	0.91
separated or divorced	0.15	0.10	1.16	0.11	0.10	1.12
widowed	-0.12	0.25	0.89	-0.12	0.25	0.89
Race of respondent (White)	0.17**	0.06	1.18	0.19**	0.06	1.21
Gender of respondent (male)	0.01	0.06	1.01	0.05	0.06	1.05
Education (high school degree)						
no high school degree	0.20	0.38	1.22	0.25	0.40	1.29
some college	0.07	0.09	1.07	0.05	0.10	1.05
bachelor's degree	-0.19	0.10	0.82	-0.20	0.11	0.82
advanced degree	-0.40**	0.12	0.67	-0.38**	0.12	0.68
Parental education (high school degree)						
no high school degree	0.24	0.15	1.27	0.28	0.15	1.32

some college	-0.06	0.09	0.94	-0.08	0.09	0.92
bachelor's degree	-0.38***	0.09	0.68	-0.40***	0.10	0.67
advanced degree	-0.38***	0.11	0.68	-0.42***	0.11	0.66
Risk tolerance	-0.01	0.01	0.98	-0.03*	0.01	0.97
Income (under $25,000)						
$25,000-$49,999	-0.13	0.13	0.88	-0.07	0.13	0.93
$50,000-$74,999	-0.51***	0.13	0.61	-0.42***	0.14	0.65
$75,000-$99,999	-0.49***	0.14	0.61	-0.42**	0.14	0.66
$100,000-$149,999	-0.79***	0.14	0.45	-0.68***	0.15	0.50
$150,000 or more	-1.04***	0.16	0.35	-0.92***	0.17	0.39
Objective financial knowledge	-0.17***	0.02	0.84	-0.16***	0.02	0.85
Subjective financial knowledge	-0.08**	0.02	0.92	-0.08**	0.03	0.92
Financial attitude	0.27***	0.02	1.31	0.24***	0.02	1.27
Model Fit Statistics	C-statistic	0.77		C-statistic	0.78	
	Pseudo R^2	0.16		Pseudo R^2	0.18	

Note. The 2018 NFCS data was used with weights. Sample restricted to only those working full time. * $p < .05$; ** $p < .01$; *** $p < .001$

AFS Usage on Short-Term Time Preference Regression Results.

The full list of results from the analysis informed by the BLCH are displayed in Table 4.34. After accounting for the missing data, the sample size for this analysis is 9,992. Those who have a short-term time preference, compared to a mid-to-long-term time preference, have 1.38 higher odds of overspending as measured by AFS usage, holding all other factors constant (OR = 1.38, $p < 0.001$). Robustness checks for weighting, multiple imputation, and the alternative short-term time preference measurement reveal no change in significance for the predictor variable.

Compared to those under age 35, ages 35-44 (OR = 0.71, $p < 0.001$), ages 45-54 (OR = 0.42, $p < 0.001$), ages 55-64 (OR = 0.24, $p < 0.001$), and those over age 65 (OR = 0.14, $p < 0.001$) have a significant negative association with AFS usage, holding all other factors constant. Compared to married respondents, those who are living with a partner or never married are

negatively associated with AFS usage, holding all other factors constant (OR = 0.75, $p < 0.001$). Non-White households, compared to White households, are positively related to AFS usage, holding all other factors constant (OR = 1.61, $p < 0.001$). Females, compared to males, are negatively associated with AFS usage, holding all other factors constant (OR = 0.73, $p < 0.001$). Those with some college (OR = 1.21, $p = 0.001$), those with a bachelor's degree (OR = 0.54, $p < 0.001$), and those with an advanced degree (OR = 0.51, $p < 0.001$), compared to those with a high school degree, are negatively associated with AFS usage, holding all other factors constant. Those whose parents had some college, compared to a high school degree, are positively related to AFS usage, holding all other factors constant (OR = 1.21, $p = 0.041$). Risk tolerance is positively related to AFS usage, holding all other factors constant (OR = 1.13, $p < 0.001$). Those who earn \$50,000-\$79,999 annually (OR = 0.60, $p < 0.001$), \$75,000-\$99,999 annually (OR = 0.62, $p < 0.001$), \$100,000-\$149,999 annually (OR = 0.46, $p < 0.001$), and over \$150,000 annually (OR = 0.33, $p < 0.001$), compared to those who earn under \$25,000 annually, are negatively associated with AFS usage, holding all other factors constant. Objective financial knowledge has a negative association with AFS usage, holding all other factors constant (OR = 0.79, $p < 0.001$). Subjective financial knowledge (OR = 1.07, $p = 0.008$) and financial attitude (OR = 1.17, $p < 0.001$) have a positive relationship with AFS usage, holding all other factors constant.

The full list of results from the analysis informed by the LHT are displayed in Table 4.34. After accounting for the missing data, the sample size for this analysis is 9,793. No significant relationship between a short-term time preference and AFS usage is found in the model. Those who have poor economic expectations, compared to fair to positive economic expectations, have 1.85 times the odds of overspending as measured by AFS usage, holding all other factors

constant (OR = 1.85, $p < 0.001$). Those who display risky behavior, compared to those who do not, have 2.16 times the odds of overspending as measured by AFS usage, holding all other factors constant. (OR = 2.16, $p < 0.001$). Upon running a robustness check using the alternative short-term time preference and multiple imputation, short-term time preference has a significant positive relationship with AFS usage, but there is no change in significance for the other predictor variables. The weighting robustness check reveal no change in significance for the predictor variables.

Table 4.34.

NFCS Binary Logistic Regression of AFS Usage

	BLCH, *n* = 9,992			LHT, *n* = 9,793		
Variable	B	SE	OR	B	SE	*OR*
Intercept	-0.35	0.24	0.70	-0.95***	0.25	0.39
Short-term time preference	0.32***	0.07	1.38	0.14	0.07	1.15
Poor economic expectations	-	-	-	0.62***	0.07	1.85
Risky behavior	-	-	-	0.77***	0.07	2.16
Control variables						
Age (under 35)						
35-44	-0.35***	0.08	0.71	-0.34***	0.08	0.71
45-54	-0.86***	0.09	0.42	-0.87***	0.09	0.42
55-64	-1.43***	0.11	0.24	-1.44***	0.12	0.24
65 or older	-1.98***	0.30	0.14	-2.06***	0.30	0.13
Marital status (married)						
living with partner or never married	-0.29***	0.07	0.75	-0.26***	0.08	0.77
separated or divorced	0.20	0.10	1.22	0.18	0.11	1.20
widowed	0.29	0.30	1.34	0.30	0.31	1.35
Race of respondent (White)	0.47***	0.06	1.61	0.51***	0.07	1.67
Gender of respondent (male)	-0.32***	0.06	0.73	-0.27***	0.07	0.76
Education (high school degree)						
no high school degree	0.53	0.34	1.70	0.44	0.34	1.56

some college	-0.32**	0.10	0.73	-0.31**	0.10	0.73
bachelor's degree	-0.61***	0.11	0.54	-0.61***	0.12	0.55
advanced degree	-0.70***	0.13	0.51	-0.60***	0.14	0.55
Parental education (high school degree)						
no high school degree	0.03	0.16	1.03	0.06	0.16	1.07
some college	0.19*	0.09	1.21	0.18	0.10	1.20
bachelor's degree or beyond	-0.11	0.11	0.90	-0.11	0.11	0.89
advanced degree	-0.17	0.12	0.84	-0.14	0.13	0.87
Risk tolerance	0.12***	0.01	1.13	0.09***	0.01	1.10
Income (under $25,000)						
$25,000-$49,999	-0.14	0.12	0.87	-0.09	0.13	0.92
$50,000-$74,999	-0.51***	0.13	0.60	-0.44**	0.13	0.64
$75,000-$99,999	-0.48***	0.14	0.62	-0.46**	0.14	0.63
$100,000-$149,999	-0.78***	0.14	0.46	-0.70***	0.15	0.49
$150,000 or more	-1.10***	0.18	0.33	-1.01***	0.19	0.37
Objective financial knowledge	-0.23***	0.02	0.79	-0.21***	0.02	0.81
Subjective financial knowledge	0.07**	0.03	1.07	0.08**	0.03	1.08
Financial attitude	0.16***	0.02	1.17	0.12***	0.02	1.12
Model Fit Statistics	C-statistic	0.78		C-statistic	0.80	
	Pseudo R^2	0.18		Pseudo R^2	0.21	

Note. The 2018 NFCS was used with weights. Sample restricted to only those working full time.

* $p < .05$; ** $p < .01$; *** $p < .001$

Absence of Emergency Fund on Short-Term Time Preference Regression Results.

The full list of results from the analysis informed by the BLCH are displayed in Table 4.35. After accounting for the missing data, the sample size for this analysis is 9,884. Those who have a short-term time preference, compared to those who had a mid-to-long-term time preference, have 1.16 higher odds of overspending as measured by the absence of an emergency fund, holding other factors constant (OR = 1.16, p = 0.022). However, the robustness check for multiple imputation reveals a non-significant relationship between short-term time preference and the absence of an emergency fund. Robustness checks for weighting and the alternative

short-term time preference measurement reveal no change in significance for the predictor variable.

Compared to those under age 35, ages 35-44 (OR = 1.30, p = 0.001), ages 45-54 (OR = 1.27, p = 0.003), ages 55-64 (OR = 0.77, p = 0.004), and those over age 65 (OR = 0.48, p < 0.001) are significantly related to the absence of an emergency fund, holding all other factors constant. Compared to married respondents, those are living with a partner or never married are negatively associated with the absence of an emergency fund, holding all other factors constant (OR = 0.82, p = 0.003). Compared to White households, Non-White households have a negative association with the absence of an emergency fund, holding all other factors constant (OR = 0.86, p = 0.016). Those whose parents attended some college (OR =0.73, p < 0.001), have a bachelor's degree (OR = 0.68, p < 0.001), or an advanced degree (OR = 0.75, p = 0.008), compared to those with a high school degree, are negatively associated with the absence of an emergency fund, holding all other factors constant. Risk tolerance is negatively related to the absence of an emergency fund, holding all other factors constant (OR = 0.89, p < 0.001). Those who earn $25,000-$49,999 (OR = 0.75, p = 0.025), $50,000-$74,999 annually (OR = 0.55, p < 0.001), $75,000-$99,999 annually (OR = 0.39, p < 0.001), $100,000-$149,999 annually (OR = 0.37, p < 0.001), and over $150,000 annually (OR = 0.27, p < 0.001), compared those who earn under $25,000 annually, are negatively associated with the absence of an emergency fund, holding all other factors constant. Subjective financial knowledge has a negative association with the absence of an emergency fund, holding all other factors constant (OR = 0.70, p < 0.001). Financial attitude has a positive association with the absence of an emergency fund, holding all other factors constant (OR = 1.33, p < 0.001). Gender, education, and objective financial knowledge are not significant factors in the absence of an emergency fund.

The full list of results from the analysis informed by the LHT are displayed in Table 4.35. After accounting for the missing data, the sample size for this analysis is 9,696. There is no significant relationship between short-term time preference and the absence of emergency fund or between risky behavior and the absence of an emergency fund. Those who have poor economic expectations, compared to fair to positive economic expectations, have 1.85 times the odds of overspending as measured by the absence of an emergency fund, holding all other factors constant (OR = 1.85, $p < 0.001$). The robustness check for the alternative short-term time preference reveals a significant relationship between short-term time preference and the absence of an emergency fund, but no change in significance is found in the other predictor variables. The weighting and multiple imputation robustness check reveal no change in significance for the predictor variables in the model.

Table 4.35.

NFCS Binary Logistic Regression of Absence of Emergency Fund

	BLCH, *n* = 9,884			LHT, *n* = 9,696		
Variable	B	SE	OR	B	SE	*OR*
Intercept	1.91***	0.23	6.75	1.88***	0.24	6.56
Short-term time preference	0.15*	0.06	1.16	-0.02	0.02	0.98
Poor economic expectations	-	-	-	0.61***	0.07	1.85
Risky behavior	-	-	-	-0.07	0.06	0.94
Control variables						
Age (under 35)						
35-44	0.26**	0.08	1.30	0.26**	0.08	1.30
45-54	0.24**	0.08	1.27	0.27**	0.08	1.31
55-64	-0.27**	0.09	0.77	-0.22*	0.10	0.80
65 or older	-0.73***	0.18	0.48	-0.70***	0.19	0.50
Marital status (married)						
living with partner or never married	-0.20**	0.07	0.82	-0.21**	0.07	0.80
separated or divorced	0.06	0.10	1.07	0.06	0.10	1.07
widowed	-0.15	0.23	0.86	-0.14	0.23	0.87

Race of respondent (White)	-0.15*	0.06	0.86	-0.14*	0.06	0.87
Gender of respondent (male)	0.09	0.06	1.09	0.11	0.06	1.11
Education (high school degree)						
no high school degree	0.41	0.36	1.50	0.40	0.39	1.49
some college	0.11	0.09	1.12	0.11	0.09	1.12
bachelor's degree	-0.15	0.10	0.86	-0.20	0.11	0.82
advanced	-0.11	0.12	0.90	-0.15	0.12	0.86
Parental education (high school degree)						
no high school degree	0.19	0.15	1.21	0.20	0.15	1.22
some college	-0.32***	0.08	0.73	-0.34	0.09	0.71
bachelor's degree	-0.39***	0.09	0.68	-0.39***	0.09	0.68
advanced degree	-0.29**	0.11	0.75	-0.27*	0.11	0.76
Risk tolerance	-0.12***	0.01	0.89	-0.13***	0.01	0.88
Income (under $25,000)						
$25,000-$49,999	-0.29*	0.13	0.75	-0.20	0.13	0.82
$50,000-$74,999	-0.61***	0.13	0.55	-0.49***	0.13	0.62
$75,000-$99,999	-0.93***	0.13	0.39	-0.82***	0.14	0.44
$100,000-$149,999	-0.98***	0.14	0.37	-0.83***	0.14	0.44
$150,000 or more	-1.32***	0.17	0.27	-1.14***	0.17	0.32
Objective financial knowledge	-0.01	0.02	0.99	-0.01	0.02	1.01
Subjective financial knowledge	-0.36***	0.03	0.70	-0.37***	0.03	0.69
Financial attitude	0.29***	0.02	1.33	0.26***	0.02	1.29
Model Fit Statistics	C-statistic	0.78		C-statistic	0.78	
	Pseudo R^2	0.18		Pseudo R^2	0.19	

Note. The 2018 NFCS was used with weights. Sample restricted to only those working full time.

* $p < .05$; ** $p < .01$; *** $p < .001$

Retirement Preparation on Overspending Regression Results

Retirement Account Ownership on Overspending Regression Results.

The full list of results are displayed in Table 4.36. After accounting for the missing data, the sample size for this analysis is 9,114. Spending more than income and AFS usage does not have a significant negative relationship with retirement account ownership in the model. Those who revolved credit card debt have 33 percent lower odds of owning a retirement account (OR =

0.67, $p < 0.001$), and those who did not have an emergency fund have 53 percent lower odds of owning a retirement account (OR = 0.47, $p < 0.001$), holding all other factors constant. The robustness checks for excluding non-credit card holders reveal a non-significant relationship between credit card revolving and retirement account ownership. The robustness check for weighting reveals a significant relationship between AFS usage and retirement account ownership, but no change in significance is found in the other predictor variables. The robustness check for multiple imputation reveals no change in significance for the predictor variables.

Compared to those under age 35, ages 35-44 (OR = 1.32, $p = 0.006$), ages 45-54 (OR = 1.59, $p < 0.001$), and ages 55-64 (OR = 2.06, $p < 0.001$) have significant positive relationships to retirement account ownership, holding all other factors constant. Compared to married respondents, those who are living with a partner or never married (OR = 0.72, $p < 0.001$), are separated or divorced (OR = 0.75, $p = 0.025$), and widowed (OR = 0.48, $p = 0.007$) have a negative association with the retirement account ownership, holding all other factors constant. Females, compared to males, have a positive relationship with retirement account ownership, holding all other factors constant (OR = 1.45, $p < 0.001$). Those with a bachelor's degree (OR = 1.85, $p < 0.001$, and those with an advanced degree (OR = 1.74, $p = 0.003$), compared to those with a high school degree, are positively associated with retirement account ownership, holding all other factors constant. Those whose parents have a bachelor's degree (OR = 0.62, $p < 0.001$, and an advanced degree (OR = 0.67, $p = 0.021$), compared to those with a high school degree, are negatively associated with retirement account ownership, holding all other factors constant. Risk tolerance is positively related to the retirement account ownership, holding all other factors constant (OR = 1.10, $p < 0.001$). Those who earn $25,000-$59,999 annually (OR = 1.94, $p <0.001$), $50,000-$74,999 annually (OR = 3.56, $p < 0.001$), $75,000-$99,999 annually (OR =

7.39, $p < 0.001$), $100,000-$149,999 annually (OR = 8.63, $p < 0.001$), and over $150,000 annually (OR = 11.36, $p < 0.001$), as compared those who earn under $25,000 annually, are positively associated with the retirement account ownership, holding all other factors constant. Objective financial knowledge (OR = 1.20, $p < 0.001$) and financial attitude (OR = 1.06, $p = 0.004$) have a positive association with retirement account ownership, holding all other factors constant. Race, and subjective financial knowledge are not significant factors in the model**.**

Table 4.36.

NFCS Binary Logistic Regression of Retirement Account Ownership

			n = 9,114
Variable	B	SE	*OR*
Intercept	-1.14***	0.3	0.32
Spends more than income	0.02	0.09	1.02
Revolves credit card debt	-0.40***	0.06	0.67
Uses AFS	-0.09	0.09	0.91
Absence of emergency fund	-0.75***	0.08	0.47
Control variables			
Age (under 35)			
35-44	0.28**	0.10	1.32
45-54	0.46***	0.11	1.59
55-64	0.72***	0.15	2.06
65 or older	0.42	0.30	1.53
Marital status (married)			
living with partner or never married	-0.32***	0.09	0.72
separated or divorced	-0.28*	0.13	0.75
widowed	-0.74**	0.27	0.48
Race of respondent (White)	-0.01	0.08	0.99
Gender of respondent (male)	0.38***	0.08	1.45
Education (high school degree)			
no high school degree	-0.69	0.37	0.50
some college	0.12	0.11	1.12
bachelor's degree	0.61***	0.15	1.85
advanced	0.55**	0.19	1.74

Parental education (high school degree)			
no high school degree	0.02	0.19	1.02
some college	-0.04	0.11	0.96
bachelor's degree	-0.48***	0.13	0.62
advanced degree	-0.39*	0.17	0.67
Risk tolerance	0.10***	0.02	1.10
Income (under $25,000)			
$25,000-$49,999	0.67***	0.12	1.94
$50,000-$74,999	1.27***	0.13	3.56
$75,000-$99,999	2.00***	0.17	7.39
$100,000-$149,999	2.15***	0.18	8.63
$150,000 or more	2.43***	0.27	11.36
Objective financial knowledge	0.18***	0.03	1.20
Subjective financial knowledge	0.01	0.03	1.01
Financial attitude	0.06**	0.02	1.06
Model Fit Statistics	C-statistic	0.83	
	Pseudo R^2	0.24	

Note. The 2018 NFCS was used with weights. Sample restricted to only those working full time.

* $p < .05$; ** $p < .01$; *** $p < .001$

Retirement Account Contribution on Overspending Regression Results.

The full list of results are displayed in Table 4.37. After accounting for the missing data, the sample size for this analysis is 6,351. The only positive relationship between the predictor variables and retirement account balance is the absence of an emergency fund; those who overspend, as measured by the absence of an emergency fund, are associated with 37 percent lower odds of retirement account contribution, holding all other factors constant (OR = 0.63, $p <$ 0.001). Spending more than income, credit card revolving, and AFS usage do not have a significant relationship with the retirement account contribution. The robustness checks for multiple imputation reveal no significant relationship between the absence of an emergency fund

and retirement account contribution; no other changes in significance are found with this robustness check for the predictor variables. The alternative, more conservative measurement of spending more than income, weighting, and the exclusion of non-credit card holders reveal no change in significance for the predictor variables.

Compared to those under age 35, ages 55-64 (OR = 0.71, $p = 0.022$) and those over age 65 (OR = 0.44, $p = 0.001$) have significant negative relationships to retirement account contribution, holding all other factors constant. Those who have an advanced degree, compared to a high school degree, have a negative association with retirement account contribution, holding all other factors constant (OR = 0.60, $p = 0.014$). Those who earn $25,000-$49,999 annually (OR = 1.82, $p = 0.011$), $50,000-$74,999 (OR = 2.58, $p = 0.001$), $75,000-$99,999 annually (OR = 3.01, $p < 0.001$), $100,000-$149,999 annually (OR = 4.60, $p < 0.001$), and over $150,000 annually (OR = 8.84, $p < 0.001$), compared to those who earn under $25,000 annually, are positively associated with the retirement account contribution, holding all other factors constant. Marital status, race, gender, parental education, objective financial knowledge, subjective financial knowledge, and financial attitude are not significant factors in the model.

Table 4.37.

NFCS Binary Logistic Regression of Active Contributions to a Retirement Account

	n = 6,351		
Variable	B	SE	*OR*
Intercept	0.95***	0.44	2.57
Spends more than income	-0.16	0.13	0.86
Revolves credit card debt	-0.11	0.13	1.00
Uses AFS	-0.46	0.11	0.89
Absence of emergency fund	-0.11***	0.11	0.63
Control variables			
Age (under 35)			
35-44	0.08	0.14	1.09

45-54	0.00	0.14	1.00
55-64	-0.35*	0.15	0.71
65 or older	-0.83**	0.24	0.44
Marital status (married)			
living with partner or never married	0.13	0.12	1.15
separated or divorced	0.01	0.16	1.01
widowed	-0.37	0.34	0.69
Race of respondent (White)	0.01	0.11	1.01
Gender of respondent (male)	0.03	0.10	1.03
Education (high school degree)			
no high school degree	-0.73	0.58	0.48
some college	-0.07	0.17	0.93
bachelor's degree	-0.17	0.18	0.84
advanced	-0.50*	0.21	0.60
Parental education (high school degree)			
no high school degree	-0.29	0.23	0.74
some college	0.26	0.16	1.30
bachelor's degree	0.07	0.15	1.07
advanced degree	0.20	0.19	1.23
Risk tolerance	0.03	0.02	1.03
Income			
$25,000-$49,999	0.60*	0.24	1.82
$50,000-$74,999	0.95***	0.25	2.58
$75,000-$99,999	1.10***	0.25	3.01
$100,000-$149,999	1.53***	0.27	4.60
$150,000 or more	2.18***	0.32	8.84
Objective financial knowledge	0.00	0.04	1.00
Subjective financial knowledge	0.07	0.05	1.08
Financial attitude	-0.06	0.03	0.94
Model Fit Statistics	C-statistic	0.69	
	Pseudo R^2	0.06	

Note. The 2018 NFCS was used with weights. Sample restricted to only those working full time.* $p < .05$; ** $p < .01$; *** $p < .001$

Perceived Retirement Preparation on Overspending Regression Results.

The full list of results are displayed in Table 4.38. After accounting for the missing data, the sample size for this analysis is 9,524. Spending more than income, credit card revolving, and the absence of an emergency fund does not have a significant negative relationship with perceived retirement preparation. Only those who utilized AFS have a significant negative relationship with perceived retirement preparation, holding all other factors equal ($\beta = -0.03$, $p = 0.003$). The robustness check of excluding non-credit card holders reveals a non-significant relationship between AFS usage and retirement account contribution, but no change in significance for the other predictor variables. The robustness checks for weighting and multiple imputation reveal no change in significance for the predictor variables.

Compared to those under age 35, ages 35-44 ($\beta = -0.06$, $p < 0.001$), ages 45-54 ($\beta = -0.08$, $p < 0.001$), and ages 55-64 ($\beta = -0.06$, $p < 0.001$), compared to those under age 35, have significant negative relationships with perceived retirement preparation, holding all other factors constant. Compared to males, females have a negative relationship with perceived retirement preparation, holding all other factors constant ($\beta = -0.02$, $p = 0.047$). Those who earn over $150,000 annually ($\beta = 0.05$, $p = 0.002$), compared to those who earn under $25,000 annually, are positively associated with perceived retirement preparation, holding all other factors constant. Objective financial knowledge ($\beta = -0.02$, $p = 0.034$) and financial attitude ($\beta = -0.63$, $p < 0.001$) are negatively associated with perceived retirement preparation, holding all other factors constant. Subjective financial knowledge is positively associated with perceived retirement preparation, holding all other factors constant ($\beta = 0.03$, $p = 0.002$). Marital status, race, education, parental education, and risk tolerance are not significant factors in the model.

Table 4.38.

NFCS OLS Regression of Perceived Retirement Preparation

		n = 9,524	
Variable	B	SE B	β
Intercept	6.27***	0.16	-
Spends more than income	-0.04	0.05	-0.01
Revolves credit card debt	0.01	0.03	0.00
Uses AFS	-0.14**	0.05	-0.03***
Absence of emergency fund	0.02	0.04	0.01
Control variables			
Age (under 35)			
35-44	-0.26***	0.05	-0.06***
45-54	-0.37***	0.05	-0.08***
55-64	-0.34***	0.06	-0.06***
65 or older	-0.20	0.10	-0.02
Marital status (married)			
living with partner or never married	0.05	0.05	0.01
separated or divorced	0.01	0.06	0.00
widowed	0.07	0.16	0.00
Race of respondent (White)	-0.04	0.04	-0.01
Gender of respondent (male)	-0.08*	0.04	-0.02*
Education (high school degree)			
no high school degree	0.16	0.23	0.01
some college	0.02	0.06	0.01
bachelor's degree	0.07	0.07	0.02
advanced degree	0.02	0.08	0.00
Parental education (high school degree)			
no high school degree	0.09	0.10	0.01
some college	0.03	0.06	0.01
bachelor's degree or beyond	0.08	0.06	0.02
advanced degree	0.11	0.07	0.02
Risk tolerance	-0.01	0.01	-0.01
Income			
$25,000-$49,999	-0.02	0.09	-0.00
$50,000-$74,999	-0.07	0.09	-0.01
$75,000-$99,999	-0.08	0.09	-0.02
$100,000-$149,999	0.07	0.10	0.01

$150,000 or more	0.34**	0.11	0.05
Objective financial knowledge	-0.03*	0.01	-0.02
Subjective financial knowledge	0.05**	0.02	0.03
Financial attitude	-0.62***	0.01	-0.63
Model Fit Statistics	R^2 0.42		

*Note: Weighted analysis. Data from the 2018 NFCS. Sample restricted to only those working full-time. * p < .05; ** p < .01; *** p < .001.*

Interaction Effects Between Income and Overspending with Retirement Preparation

Results for the interaction effects of overspending and income with retirement account ownership are displayed in Table A.6. There is a significant interaction effect between spending more than income and income with retirement account ownership (B = 0.21, p = 0.0.14), as displayed in Figure 4.12. Figure 4.12 illustrates that retirement account ownership is more negatively impacted when respondents spend more than income for lower income respondents, compared to higher income respondents. There is also a significant interaction effect between AFS usage and income with retirement account ownership (B = -0.26, p < 0.001), as displayed in Figure 4.13. Figure 4.13 illustrates that retirement account ownership is more positively impacted for lower income respondents, compared to higher income respondents, when they use AFS. The interaction effect between overspending and income with retirement account contribution is not significant. The interaction effect results from overspending and income with perceived retirement preparation are displayed in Table A.7. There is a significant interaction effect between credit card revolving and income with perceived retirement preparation (B = -0.05, p = 0.048), as displayed in Figure 4.14. Figure 4.14 illustrates that perceived retirement preparation is higher for credit card revolvers compared to noncredit card revolvers across all

income categories. The other overspending measures do not have a significant interaction with income for perceived retirement preparation.

Figure 4.12.

Interaction Effect of Spending More Than Income and Income with Retirement Account Ownership

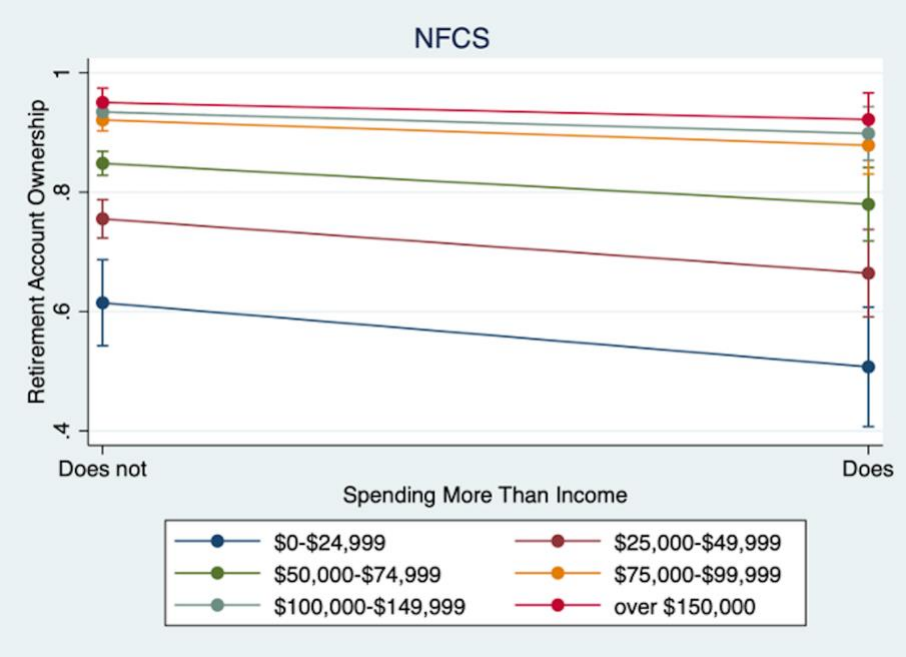


Figure 4.13.

Interaction Effect of AFS Usage and Income with Retirement Account Ownership

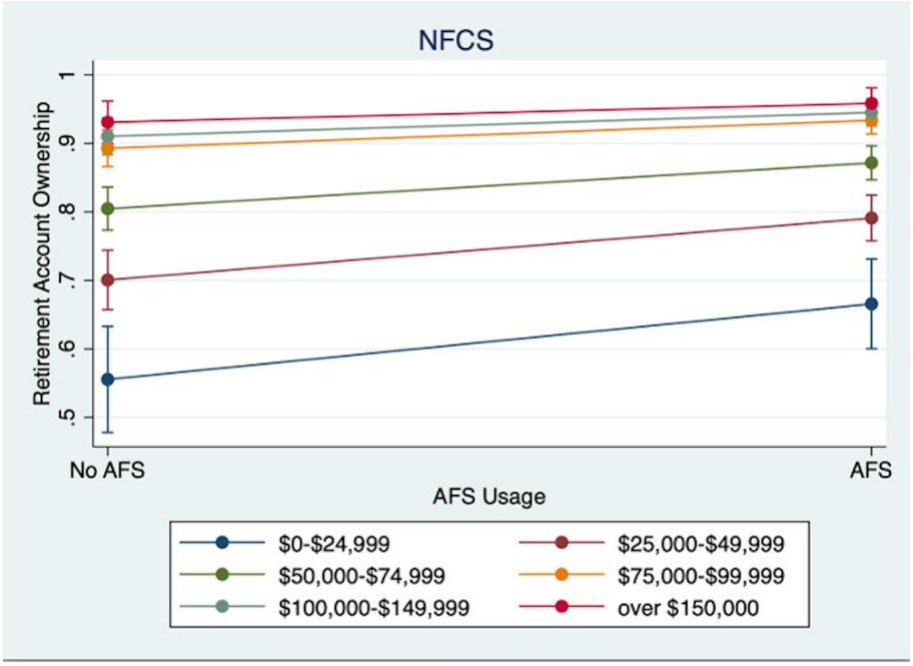
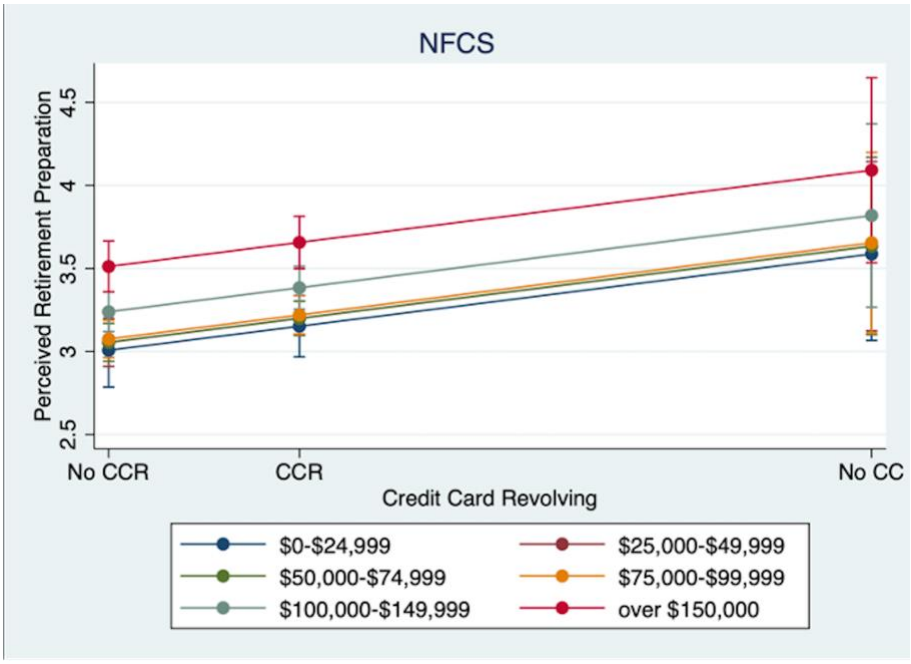


Figure 4.14.

Interaction Effect of Credit Card Revolving and Income with Perceived Retirement Preparation



Chapter 5 - Discussion

Overspending

One goal of the current study was to understand whether households were overspending and in what way. This section is divided between overspending results as informed by the BLCH and LHT. Within each of those sections, the four measures of overspending are discussed, including spending more than income, credit card revolving, usage of alternative financial services, and absence of an emergency fund.

Overspending as Informed by the BLCH

Out of all the overspending on short-term time preference analyses conducted, a significant positive relationship is found 100 percent of the time. As a reminder, H1 stated that overspending is positively associated with a short-term time preference. Therefore, it is concluded that H1 is supported by the results. The results suggest the BLCH is a suitable theoretical framework for analyzing the construct of overspending. However, robustness checks for weight, multiple imputation, the alternative short-term time preference, and the excluding non-credit card holders cause some shifts in significance. The robustness check results temper the conclusions drawn. The relationship between each overspending measurement and a short-term time preference are detailed in the sections below.

A few observations can be made regarding the relationship between the control variables and overspending. While not significant in each overspending analysis, in general, age, education, income, and objective financial knowledge are negatively associated with overspending, holding other factors constant. This suggests that as people aged, received education, earned more income, and expanded their objective financial knowledge, they are less likely to overspend. Poor health has a moderately strong relationship with overspending in the

SHED analysis, which could either be explained through an LHS lens of poor health representing a high-risk perception, or poor health being associated with high medical expenses that were linked to overspending. Due to varying results, no conclusions are drawn about the relationship between overspending and the control variables of race, marital status, gender, parental education, and subjective financial knowledge.

Spending More than Income

A short-term time preference is found to have a significant positive relationship with overspending, as measured by spending more than income in the SHED, SCF and NFCS analyses. Therefore, H1 is supported in this set of analyses. Additionally, the SHED and SCF data display a moderately strong relationship between a short-term time preference and spending more than income.

Credit Card Revolving

A short-term time preference is found to have a significant positive relationship with credit card revolving in the SHED, SCF, and NFCS analyses. Therefore, H1 is supported in this set of analyses. The SHED data displays a moderately strong relationship between a short-term time preference credit card revolving.

An interesting observation from the descriptive statistics of all three data sets is that more respondents, 36 to 52 percent of the samples, claim to revolve credit card debt, compared to the four to 20 percent that acknowledge they spend more than income. This suggests that individuals may not realize revolving credit card debt is a form of overspending. This discrepancy may point to a new cultural norm where revolving credit card debt is considered normal.

AFS Usage

A short-term time preference is found to have a significant positive relationship with AFS usage in the SHED, the SCF, and the NFCS. Therefore, H1 is supported. Furthermore, the SHED and SCF analyses display a moderately strong relationship between a short-term time preference and AFS usage.

Absence of Emergency Fund

The significant positive relationship found between a short-term time preference and the absence of an emergency fund in the SHED, SCF, and NFCS analyses further support H1. The SHED and SCF data display a moderately strong relationship between a short-term time preference and the absence of an emergency fund. An interesting observation from the descriptive statistics of all three data sets is that 42-46 percent of the respondents do not have an emergency fund. This amount is meaningfully higher than the four to 20 percent that consider themselves to spend more than income. The discrepancy between these two overspending measures may suggest that individuals do not realize that not having an emergency fund is a form of overspending. Or this discrepancy may point to a new cultural norm of operating without an emergency fund.

CFA Model of Overspending

The CFA model for overspending has acceptable model fit with the SHED data but falls short with the NFCS data. Overall, the current study assumes the construct of overspending is acceptable to move forward with the analyses as currently structured, although there is room for improved measurement of overspending in future research. Because overspending has not been heavily studied, the acceptable model fit for the overspending construct in the NFCS data adds to the body of knowledge.

Overspending as Informed by the LHT

Out of all the overspending on high-risk perception analyses conducted, a significant positive relationship is found in most but not all the analyses. Therefore, it is concluded that H2 is partially supported by the results. Because high-risk perception variables are strong predictors of overspending in terms of odds ratios, LHT is seen as a valuable alternative theoretical framework for analyzing the construct of overspending. Overlaying the LHT as an alternative theory provides more information about overspending than the BLCH alone. The lack of consistency in results across the three data sets, as well as the robustness check results, temper the conclusions drawn. Each overspending measurements' relationship with a short-term time preference is detailed the sections below.

Spending More Than Income

A short-term time preference is found to have a significant positive relationship with overspending, as measured by spending more than income, in the SHED, SCF, and NFCS analyses. Poor economic expectations is found to be significant and positively associated with spending more than income in the SHED and NFCS data, but not the SCF data. Retirement life expectancy, which is only measured in the SCF, is not found to have a significant relationship with spending more than income. Risky behavior, which is only measured in the NFCS, is only found to have a significant relationship with spending more than income when the sample is not weighted. Because not all LHS measurements display significant relationships with spending more than income, H2 is partially supported in this set of analyses. A short-term time preference had a moderately strong relationship with spending more than income in the SHED and SCF analyses.

Credit Card Revolving

A short-term time preference is found to have a significant positive relationship with credit card revolving in the SHED, SCF analyses, and the NFCS analyses. Poor economic expectations is found to be significant and positively associated with credit card revolving in the NFCS analysis, but not the SHED or SCF analyses. Risky behavior is also found to be positively related to credit card revolving in the NFCS analysis. Retirement life expectancy is found to be negatively associated with credit card revolving in the SCF analysis, which is in line with H2; a longer retirement life expectancy represented a low-risk perception, which is expected to be negatively related to overspending. Because most but not all LHS measurements display significant relationships with credit card revolving, H2 is partially supported in this set of analyses. The SHED data displays a moderately strong relationship between a short-term time preference and credit card revolving.

AFS Usage

A short-term time preference has a significant positive relationship with AFS usage in the SHED and the SCF analyses, but not the NFCS analysis. Poor economic expectations is found to be significant and positively associated with AFS usage in the SHED, SCF and NFCS analyses. Risky behavior is also found to be positively related to AFS usage in the NFCS analysis. Retirement life expectancy is not found to have a significant relationship with AFS usage in the SCF analysis. Because most but not all the high-risk perception measurements have significant relationships with AFS usage, H2 is partially supported in this set of analyses. Furthermore, high-risk perception measurements are found to be strong predictors of AFS usage, in terms of odds ratios. The SHED and SCF data display a moderately strong relationship between a short-term time preference and AFS usage. The SCF analysis also display a moderately strong

relationship between poor economic expectations and AFS usage. Risky behavior is also found to have a moderately strong relationship with AFS usage in the NFCS analyses. Because most of the high risk perception and overspending analyses are in line with expectations, but not all, H2 is partially supported in this set of analyses.

Absence of Emergency Fund

A short-term time preference is found to have a significant positive relationship with the absence of an emergency fund in the SHED and the SCF analyses, but not the NFCS analysis. Poor economic expectations is found to be significantly associated with emergency fund in the SHED, SCF and NFCS analyses, although in the opposite direction than was expected in the SCF analysis. Retirement life expectancy is found to have a slightly negative relationship with the absence of an emergency fund in the SCF analysis, which is in line with H2. Risky behavior is not found to have a significant relationship with the absence of an emergency fund in the NFCS analysis. Because many of the high risk perception and overspending analyses are in line with expectations, but not all, it is concluded that H2 is partially supported in this set of analyses. In terms of odds ratios, the high-risk perception measurements are strong predictors of the absence of emergency fund in the SHED and NFCS models.

CFA Model of Risk Perception

The CFA model results of the risk perception construct are inconclusive. The SHED CFA model does not run because there were only two indicator variables. The SCF CFA model does not converge. The NFCS CFA model is just-identified. Future research could be conducted to find a better measurement of high-risk perception construct.

Retirement Preparation

Out of all the overspending and retirement preparation analyses conducted, a significant negative relationship is found in many but not all of the analyses. All significant relationships have a negative association, which is in line with expectations. Therefore, it is concluded that H3 is partially supported by the results. Some overspending measurements that do not display a significant relationship with retirement preparation are potentially explained by robustness checks. In other cases, the significant relationship is lost upon running robustness checks. The lack of consistency in results between data sets, as well as the robustness check results, temper the conclusions drawn. Each retirement preparation measurements' relationship with overspending is detailed below.

A possible explanation for only about half of the overspending and retirement preparation analyses being significant is that overspending has become normalized in American culture. A few ideas are provided here to describe what normalized overspending behavior could look like. First, respondents may not realize they are spending more than their income. Second, credit cards could be considered necessary for some households to manage their cashflow, and thus does not significantly relate to retirement preparation behavior. Third, AFS usage could be seen by some as an acceptable financing resource to occasionally bridge cashflow gaps when needed and does not correspond to a shift in one's retirement preparation behavior. Fourth, an emergency fund may seem out of reach or not necessary for cash flow management by some but does not necessarily mean a household is not preparing for retirement. Fifth, overspending could be occurring simultaneously while preparing for retirement. A sixth possible reason for the lack of significant negative results between overspending and retirement preparation is because of automatic enrollment and automatic contribution increases by employers. Seventh, a significant

negative relationship between overspending and retirement preparation could be absent because the employer, rather than the respondent, is responsible for the respondent's retirement preparation behavior. In sum, the analyses may reveal a new normal where overspending does not necessarily reflect a respondent's retirement preparation behavior.

A few observations can be made about the relationship between the control variables and the retirement preparation measurements. Although a significant relationship is not present in each of the retirement preparation analyses, in general, risk tolerance and income are found to be positively associated with retirement preparation, holding other factors constant. Fair and poor health, compared to excellent health, are found to be negatively associated with retirement preparation, holding other factors constant. Due to varying results, no conclusions are drawn between retirement preparation and age, marital status, race, gender, education, parental education, or financial attitude.

Retirement Account Ownership

Overspending, as measured by spending more than income, is found to have a significant negative relationship with retirement account ownership in the SHED analysis, but not in the SCF or NFCS analyses. Credit card revolving is found to have a significant negative relationship with retirement account ownership in the SHED, SCF, and NFCS analyses. AFS usage is not found to have a significant relationship with retirement account ownership in the SHED, SCF, or NFCS analysis. The absence of emergency fund is found to have a significant negative relationship with retirement account ownership in both the SHED, SCF, and the NFCS analyses. Because some overspending measures, but not all, display a significant negative relationship with retirement account ownership, it is concluded that H3 was partially supported in this set of analyses.

Retirement Account Contribution

Overspending, as measured by spending more than income and AFS usage, is not found to have a significant relationship with retirement account contribution in the SCF or NFCS analyses. Credit card revolving is found to have a significant relationship with retirement account contribution in the SCF analysis, but not the NFCS analysis. The absence of emergency fund is found to have a significant negative relationship with retirement account contribution in the NFCS analysis, but not the SCF analysis. Because some, but not all, overspending measures display a significant negative relationship with retirement account contribution, it is concluded that H3 was partially supported in this set of analyses.

Retirement Account Balance

Overspending, as measured by spending more than income and AFS usage, is not found to have a significant relationship with retirement account balance in the SHED analysis and the SCF. Credit card revolving is found to have a significant negative relationship with retirement account balance in the SHED and SCF analyses. The absence of emergency fund is found to have a significant negative relationship with retirement account balance in both the SHED and SCF analyses. Because only some of the overspending measures display a significant negative relationship with retirement account balance, it is concluded that H3 was partially supported in this set of analyses.

Perceived Retirement Preparation

Overspending, as measured by spending more than income and credit card revolving, is found to have a significant negative relationship with perceived retirement preparation in the SHED and SCF analyses, but not the NFCS analysis. Overspending, as measured by AFS usage, is found to have a significant negative relationship with perceived retirement preparation in the

SCF and NFCS analyses, but not the SHED analysis. However, the robustness check for excluding non-credit card holders causes AFS usage to lose its significant relationship to perceived retirement preparation in the NFCS analysis. Overspending, as measured by the absence of emergency fund, is found to have a significant negative relationship with perceived retirement preparation in both the SHED and SCF analyses, but not the NFCS analysis. Because some, but not all, overspending measures display a significant negative relationship with perceived retirement preparation, it is concluded that H3 is partially supported.

CFA Model for Retirement Preparation

Only the CFA model for retirement preparation using the SCF data converges. The CFA model results reveal a moderately acceptable model fit in the SCF data, given that three of out of the four model fit statistics meet their benchmarks. This is an encouraging finding given the highly personalized nature of retirement preparation.

Interaction Effects of Income and Overspending

There are enough significant results from the interaction effects of overspending and income with retirement preparation to warrant acknowledgement and discussion, but they are not significant enough to cause concern over the validity of the primary analyses. The retirement account ownership income analyses reveal a significant interaction effect between income and two of the four overspending measures in the NFCS and SCF analysis, and none in the SHED analysis. Retirement account contribution analyses reveal a significant interaction effect between income and two out of the four overspending measures in the SCF analysis, but none in the NFCS analysis. The retirement account balance analyses reveal a significant interaction effect between income and one out of the overspending measures in the SHED analysis, but none in the SCF analysis. The perceived retirement preparation analyses reveal a significant interaction

effect between income and one out of the four overspending measures in the SHED, NFCS, and SCF analyses.

In total, the SCF sample has five significant interaction effects out of 16 total possible relationships between income and overspending measures with retirement preparation, whereas the NFCS sample has three out of 12 possible relationships, and the SHED sample has two out of 12 possible relationships. Out of the ten significant interaction effects, five are between income and credit card revolving, two are between income and AFS Usage, two are between income and the absence of an emergency fund, and only one is between income and spending more than income.

The SCF retirement preparation analyses warrant the most concern over the interaction between income and overspending not only because it had the most significant interaction effects in quantity, but also because some of the interaction effects margins plots display visually unparallel lines, meaning the interaction effect is somewhat strong. For example, in the SCF analysis, the relationship between retirement account ownership and the absence of emergency fund is more dependent on income for those in the mid to high income ranges, as seen in Figure 4.6. Also, in the SCF analysis, the relationship between retirement account contribution and credit card revolving as well as the absence of emergency fund is more dependent on income for those with mid to higher income, compared to low income, as seen in Figure 4.7 and Figure 4.8. The SHED and NFCS interaction effects margins plots display visually parallel lines, meaning the interaction effect is not strong.

One curious finding spurred by the significant interaction effect between income and AFS usage in the SCF and NFCS is the result of higher retirement account ownership for those who utilize AFS, compared to those who do not utilize AFS. This relationship is also dependent

on income level, where the relationship between retirement account ownership and AFS usage is more greatly impacted for those with lower income, as seen in Figure 4.5 and Figure 4.13. Likewise, perceived retirement preparation is found to increase, rather than decrease, among credit card revolvers compared to non-credit card revolvers in the NFCS and the SHED, as seen in Figure 4.3 and Figure 4.14. Lastly, the SHED sample reveals that retirement account assets balances are found to be higher across income levels for those who revolve credit card debt compared to those who do not, as seen in Figure 4.2. These results are opposite of what was expected because overspending was predicted to be negatively associated with retirement preparation. This unusual finding warrants future research.

Implications

Overspending

Borrowing using credit cards is incredibly easy for the average consumer, both for those who can afford it and those who cannot. One policy implication is to make it more challenging to qualify or transact using consumer credit (Gärling & Ranyard, 2020). For example, lenders could require setting credit limits with reference to a client's respective affordability level or limit the number of credit cards that may be issued to an individual (Gärling & Ranyard, 2020). Because credit limits and minimum payments have been found to unintentionally act as anchor points (Gärling & Ranyard, 2020; Tescher and Stone, 2022), tightening the minimum payment due formula could potentially help households get out of credit card debt faster than current standards (Tescher and Stone, 2022).

An industry implication to help promote the use of emergency funds is to implement the automatic enrollment of employees in savings accounts linked to their 401(k)s, which may potentially be matched by employers. This is now possible due to the recent passing of the

Secure Act 2.0 (Senate Finance Committee, 2022). Studies have shown that automatic enrollment increases participation rates (Beshears et al., 2010). Financial planners can also make clients aware of this new opportunity.

Client overspending behavior is an occasional obstacle financial planners face. Despite a financial planner's best efforts, it can seem like some clients at risk of running out of money fail to realize the consequences of overspending. One way to indirectly assist individuals who overspend is to focus on augmenting self-control levels, rather than focusing on cutting back overspending. This may be particularly impactful in youth. At the policy level, financial education programs could include activities modeled after the famous marshmallow experiment (Mischel & Ebbesen,1970) coupled with a debriefing on benefit of self-control in personal finances.

At the practitioner level, as a value-add to clients, financial practitioners could provide clients with young children or grandchildren educational games or activities that teach self-control in personal finances. One such example is the CASHFLOW® Board Game. Scholars suggest potential life hacks may help increase levels of self-control when it comes to overspending. Financial planners could coach their clients to limit themselves to owning only one credit card, rather than multiple credit cards, to simplify financial decisions where borrowers often make mistakes (Gärling & Ranyard, 2020). Alternatively, budgeting could be promoted as a tool to help prevent overspending. Simplistic budgeting techniques should be promoted over complex ones (Kim & Choi, 2018), such as minimizing the number of categories withing a budget (Kim, 2022). Budgeting using mental accounting could also be encouraged, as researchers have found it may help improve savings and consumption decisions (Sui et al., 2021; Xiao & O'Neill, 2018). Xiao and O'Neil (2018) also made the point that simply suggesting the

practice of budgeting is not enough, because households may not know how to do so. Households would benefit from financial practitioners teaching them budgeting techniques and being shown projections of the hypothetical impact of prioritizing savings in the budget. Gärling and Ranyard (2020) highlighted techniques originally tested by Karlsson (2003) as plausible modern solutions to help bolster self-control and thereby curbing overspending. Financial practitioners may find these techniques, listed in Table B.1, useful in coaching clients who struggle with overspending.

Another practitioner implication is to provide education on overspending. Clients may not realize that revolving credit card debt or the absence of an emergency fund is a form of overspending. They may also not realize the negative implications of AFS usage or spending more than income. Financial practitioners should educate clients and prospects regarding the financial dangers of normalizing overspending.

Because overspending may be a manifestation of a deeper psychological issue, it is important for financial practitioners to be self-aware of their own limitations in providing help. Dr. Sonya Lutter explained that if a negative financial behavior (i.e., overspending) is holding a client back socially, occupationally, or in some other area of life, it is an indication the behavioral issue is beyond the scope of a traditional financial planner and the client should be referred a licensed financial counselor or therapist to (Lutter, 2022) .

Lottery Ticket Purchases

Lottery tickets purchases are considered a financially self-harming behavior. Results support this assumption in that lottery ticket purchases have a positive association with overspending as measured by credit card revolving and AFS usage. Policy makers could consider

supporting legislative initiatives to impose higher taxes on lottery ticket consumption, just as policy makers once did with tobacco products to dissuade consumers from smoking cigarettes.

Retirement Preparation

The subpar retirement preparation results called for policy implications. Such policy implications could expand or require automatic enrollment in employer sponsored retirement accounts. Initiatives to annually increase savings rates in employer-sponsored plans could also be expanded or required. To help improve perceived retirement preparation, employer sponsored plans could sponsor initiatives to expand or implement embedded financial calculators that appear either on monthly statements or within the personalized log-in portal of their account that estimate retirement dates and monthly retirement income amounts based upon the employee's date of birth, account balance, and savings rate.

An industry implication, suggested by David John, a Senior Strategic Policy Advisor at the AARP Public Policy Institute, is for employers to note on an employee's W2 if the he or she qualifies for the Saver's Credit, alerting them to the helpful money-saving opportunity (John, 2022). John (2022) acknowledged how many eligible taxpayers are missing out on the credit of up to $1,000, which is designed to help people prepare for retirement. Businesses could bring more awareness to the Saver's Credit by promoting this established, under-utilized retirement preparation tool. This policy implication would be helpful for lower-income households.

Academic Implications

This study demonstrates the merit of using multiple data sets to answer a research question. Using multiple data sets allows researchers to operationalize measures in slightly different ways, potentially capturing nuances. It also allows researchers to test for robustness or sensitivity of a construct or relationships by comparing data sets.

Future Research

As previously mentioned, a few of the credit card revolving and AFS usage interaction effects with income reveal relationships in the opposite direction than was expected, where credit card revolvers and AFS users report higher levels of retirement preparation at some income levels. These anomalies detected warrant further study. The unexpected negative relationship between poor economic expectations and the absence of emergency fund using SCF data could also be explored further. Future research could be conducted to find better measurements of overspending, high risk perception, and retirement preparation constructs using secondary data sets. The current study is of one of few studies that has applied the LHT to personal finances; future studies could continue the exploration of how this theory can help inform financial planning research. It would be helpful to better understand how financial literacy impacts overspending; future studies could break out the financial knowledge measure to isolate the question on compound interest and test its relationship with revolving credit card debt. Also, future research could be conducted to develop guidelines around which income groups are most critical to pay attention when it comes to overspending. Lastly, the current study provides evidence that overspending is negatively associated with retirement preparation. Further studies may continue building on these findings to better understand the nature and impact of overspending in hopes of improving retirement preparation for people.

Conclusion

While a short-term time preference predicts overspending consistently, including other risk perception predictors tells a more complete story of overspending than short-term time preference alone. Therefore, the LHT is a valuable theoretical framework overlay to inform the study of overspending and retirement preparation. The results suggest that the more risky

individuals perceived their environment to be, measured in terms of short-term time preferences, risky behavior, poor economic expectations, and retirement life expectancy, the more prevalent overspending occurs. The finding that low levels of self-control and high-risk perception are positively associated with overspending add to body of knowledge. Applying the LHT to the construct of overspending also adds to the body of knowledge.

Each data set offers slightly different measurements of the same construct which causes variation in the results. If the results for an analysis are in the line with the hypothesis in two out of the three data sets, it both points to a pattern while simultaneously revealing a lack of conviction in the results. The lack of consistency in the results across the three data sets both tempers conclusions drawn and confirms the value of using multiple data sets as a robustness check.

The results from the overspending and retirement preparation analyses are in line with previous studies, demonstrating a negative relationship between low levels of self-control, as measured by overspending, and retirement preparation (e.g., Kim et al., 2016; Kim and Hanna, 2017; Rha et al., 2006). The findings that overspending is negatively associated with retirement preparation adds to the body of knowledge. Operationalizing self-control as overspending also adds to the body of knowledge and was in line with expectations. Retirement preparation results are in line with previous research that suggest a general lack of preparation for retirement nationwide (e.g., Kenneth et al., 2021). Overall, stronger support is found for identifying the predictors of overspending than making a connection between overspending and retirement preparation. However, the evidence suggests that overspending does play a significant negative role in retirement preparation, which is valuable information given the importance of the

retirement preparation topic. Possible explanations for the lack of support for the relationship between overspending and retirement preparation were provided.

Logically, it seems obvious that overspending would be negatively related to retirement preparation. While the findings of the current study partially support that logic, it also provides valuable details about the constructs and the relationship between the two. Both the BLCH and LHT are found to be valuable theoretical frameworks for the study of the relationship between overspending and retirement preparation. A short-term time preference, poor economic expectations, and risky behavior are found to be strong predictors of overspending. Lastly, because the overspending measurements are only negatively related to retirement preparation in a little over half the analyses, it points to a new cultural norm where one's overspending behavior does not necessarily mean that he or she is not also preparing for retirement.

References

Retirement Income Institute. (2020). *2020 End of Year Report*. Retrieved March 31, 2023, from https://www.protectedincome.org/wp-content/uploads/2021/03/RII-2020-End-Of-Year-Report.pdf

Abdel-Ghany, M., & Foster, A. C. (1982). Impact of income and wife's education on family consumption expenditures. *Journal of Consumer Studies & Home Economics*, *6*(1), 21–28.

Achtziger, A. (2022). Overspending, debt, and poverty. *Current Opinion in Psychology*, *46*, 101342. https://doi.org/10.1016/j.copsyc.2022.101342

Achtziger, A., Hubert, M., Kenning, P., Raab, G., & Reisch, L. (2015). Debt out of control: The links between self-control, compulsive buying, and real debts. *Journal of Economic Psychology*, *49*, 141–149. https://doi.org/10.1016/j.joep.2015.04.003

Adams, G. A., & Rau, B. L. (2011). Putting off tomorrow to do what you want today: Planning for retirement. *American Psychologist*, *66*(3), 180–192. https://doi.org/10.1037/a0022131

Ainslie, G. (1975). Specious reward: A behavioral theory of impulsiveness and impulse control. *Psychological Bulletin*, *82*(4), 463–496. https://doi.org/10.1037/h0076860

Alonso-García, J., Bateman, H., Bonekamp, J., & Stevens, R. (2021). Spending from regulated retirement drawdowns : The role of implied endorsement. *The Scandinavian Journal of Economics.*, *123*(3), 810–847.

Ando, A., & Modigliani, F. (1963). The " life cycle " hypothesis of saving : Aggregate implications and tests. *The American Economic Review*, *53*(1), 55–84.

Antonides, G., Manon de Groot, I., & Fred van Raaij, W. (2011). Mental budgeting and the management of household finance. *Journal of Economic Psychology*, *32*(4), 546–555. https://doi.org/10.1016/j.joep.2011.04.001

Asebedo, S. D., Wilmarth, M. J., Seay, M. C., Archuleta, K., Brase, G. L., & MacDonald, M. (2019). Personality and saving behavior among older adults. *Journal of Consumer Affairs*, *53*(2), 488–519. https://doi.org/10.1111/joca.12199

Babiarz, P., & Robb, C. A. (2014). Financial literacy and emergency saving. *Journal of Family and Economic Issues*, *35*(1), 40–50. https://doi.org/10.1007/s10834-013-9369-9

Bae, M. K., Chang, Y. R., Hanna, S. D., Lindamood, S., & Martin, A. (1993). Overspending: Three approaches. *Proceedings of the Association for Financial Counseling and Planning Education, November*, 17–19.

Ballinger, T. P., Hudson, E., Karkoviata, L., & Wilcox, N. T. (2011). Saving behavior and cognitive abilities. *Experimental Economics*, *14*(3), 349–374. https://doi.org/10.1007/s10683-010-9271-3

Banker, S., Dunfield, D., Huang, A., & Prelec, D. (2021a). Neural mechanisms of credit card spending. *Scientific Reports*, *11*(1), 1–11. https://doi.org/10.1038/s41598-021-83488-3

Banker, S., Dunfield, D., Huang, A., & Prelec, D. (2021b). Neural mechanisms of credit card spending. *Scientific Reports*, *11*(1). https://doi.org/10.1038/s41598-021-83488-3

Benartzi, S., & Thaler, R. H. (2007). Heuristics and biases in retirement savings behavior. *Journal of Economic Perspectives*, *21*(3), 81–104. https://doi.org/10.1257/jep.21.3.81

Benartzi, S., & Thaler, R. H. (2013). Behavioral economics and the retirement savings crisis. *Science*, *339*(6124), 1152–1153. https://doi.org/10.1126/science.1231320

Bennett, J. N. (2021). A dollar's worth: Inflation is real. In *PAGE ONE Economics* (Issue October). https://doi.org/10.5860/choice.51-1007

Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2010). The impact of employer matching on savings plan participation under automatic enrollment. In David Wise (Ed.), *Research Findings in the Economics of Aging* (pp. 311–327). University of Chicago Press.

Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2019). Active choice, implicit defaults, and the incentive to choose. *Organizational Behavior and Human Decision Processes*, *January*. https://doi.org/10.1016/j.obhdp.2019.02.001

Beverly, S. G., McBride, A. M., & Schreiner, M. (2003). A framework of asset-accumulation stages and strategies. *Journal of Family and Economic Issues*, *24*(2), 143–156. https://doi.org/10.1023/A:1023662823816

Biljanovska, N., & Palligkinis, S. (2018). Control thyself: Self-control failure and household wealth. *Journal of Banking and Finance*, *92*, 280–294. https://doi.org/10.1016/j.jbankfin.2016.10.010

Binswanger, J., & Schunk, D. (2012). What is an adequate standard of living during retirement? *Journal of Pension Economics and Finance*, *11*(2), 203–222. https://doi.org/10.1017/S1474747211000618

Birkenmaier, J., & Fu, Q. J. (2021). Is bank staff interaction associated with customer saving behavior in banks? *Journal of Consumer Affairs*, *55*(1), 332–350. https://doi.org/10.1111/joca.12348

Blanchett, D. (2014). Exploring the retirement consumption puzzle. *Journal of Financial Planning*, *27*(5), 34–42.

Blanchett, D., Finke, M., & Pfau, W. (2017). Planning for a more expensive retirement. *Journal of Financial Planning*, *30*(3), 42–51.

Blundell, R., Browning, M., & Meghir, C. (1994). Consumer demand and the life-cycle allocation of household expenditures. *The Review of Economic Studies*, *61*(1), 57–80. https://doi.org/10.2307/2297877

Bond, T., & Doonan, D. (2020). *The growing burden of retirement: Rising costs and more risk increase uncertainty* (Issue September).

Borsch-Supan, A., & Lusardi, A. (2003). Measuring life-cycle saving. In *Saving: A Cross-National Perspective*.

Braendle, C., Heyland, A., & Flatt, T. (2011). Integrating mechanistic and evolutionary analysis of life history variation. In T. Flatt & A. Heyland (Eds.), *Mechanisms of Life History Evolution: The Genetics and Physiology of Life History Traits and Trade-Offs* (pp. 3–10). Oxford University Press.

Browning, C., Huston, S., & Finke, M. S. (2016). Cognitive ability and post-retirement asset decumulation. *Journal of Family and Economic Issues*, *37*, 242–253. https://doi.org/10.1007/s10834-015-9453-4

Brüggen, E. C., Hogreve, J., Holmlund, M., Kabadayi, S., & Löfgren, M. (2017). Financial well-being: A conceptualization and research agenda. *Journal of Business Research*, *79*, 228–237. https://doi.org/10.1016/j.jbusres.2017.03.013

Bureau of Labor Statistics, U. S. D. of L. (2023). *Consumer Price Index – January 2023*. News Release. https://www.bls.gov/news.release/pdf/cpi.pdf

Canilang, S., Duchan, C., Kreiss, K., Larrimore, J., Merry, E., Troland, E., & Zabek, M. (2020). Report on the Economic Well-Being of U.S. Households in 2019, Featuring Supplemental Data from April 2020.

Chan, M. C. H., Chung, E. K. H., & Yeung, D. Y. (2021). Attitudes toward retirement drive the effects of retirement preparation on psychological and physical well-being of Hong Kong Chinese retirees over time. *International Journal of Aging and Human Development*, *93*(1), 584–600. https://doi.org/10.1177/0091415020926843

Chen, A., Munnell, A., & Sanzenbacher, G. (2018). How much income do retirees actually aave? Evaluating the Evidence from Five National Datasets. In *SSRN Electronic Journal* (CRR WP 2018-14; Issue November). https://doi.org/10.2139/ssrn.3290751

Chen, Z., & Livermore, M. (2020). The negative association between alternative financial services usage and financial well-being: Variations by income. *Social Work Research*, *44*(3), 183–195. https://doi.org/10.1093/swr/svaa009

Choe, Y., & Kan, C. (2021). Budget depreciation: When budgeting early increases spending. *Journal of Consumer Research*, *47*(6), 937–958. https://doi.org/10.1093/jcr/ucaa049

Chou, K. L., Yu, K. M., Chan, W. S., Wu, A. M., Zhu, A. Y. F., & Lou, V. W. Q. (2015). Perceived retirement savings adequacy in Hong Kong: An interdisciplinary financial

planning model. *Ageing and Society*, *35*(8), 1565–1586. https://doi.org/10.1017/S0144686X14000373

Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. In *Psychological Assessment* (Vol. 7, pp. 309–319).

Coley, R. L., Sims, J., & Votruba-Drzal, E. (2016). Family expenditures supporting children across income and urbanicity strata. *Children and Youth Services Review*, *70*, 129–142. https://doi.org/10.1016/j.childyouth.2016.09.017

Copeland, C. (2020). Retirement confidence survey: Attitudes toward retirement by women of different marital statuses (Issue 507).

Copeland, C., & Greenwald, L. (2021). 2021 Retirement confidence survey: A closer look at Black and Hispanic households. *EBRI Issue Brief*, *530*.

Croy, G., Gerrans, P., & Speelman, C. (2010). The role and relevance of domain knowledge, perceptions of planning importance, and risk tolerance in predicting savings intentions. *Journal of Economic Psychology*, *31*(6), 860–871. https://doi.org/10.1016/j.joep.2010.06.002

Cynamon, B. Z., & Fazzari, S. M. (2008). Household debt in the consumer age: Source of growth--Risk of collapse. *Capitalism and Society*, *3*(2). https://doi.org/10.2202/1932-0213.1037

Daly, M., & Wilson, M. (2005). Carpe diem: Adaptation and devaluing the future. *Quarterly Review of Biology*, *80*(1), 55–60. https://doi.org/10.1086/431025

Del Giudice, M., Gangestad, S. W., & Kaplan, H. S. (2015). Life history theory and evolutionary psychology. In D. M. Buss (Ed.), *The Handbook of Evolutionary Psychology* (pp. 88–114). John Wiley & Sons. https://doi.org/10.1002/9780470939376.ch2

Dickman, S. J., & Meyer, D. E. (1988). Impulsivity and speed-accuracy tradeoffs in information processing. *Journal of Personality and Social Psychology*, *54*, 274–290.

Duckworth, A. L., & Seligman, M. E. P. (2005). Self-discipline outdoes IQ in predicting academic performance of adolescents. *Psychological Science*, *16*(12), 939–944. https://doi.org/10.1111/j.1467-9280.2005.01641.x

Fan, J. X. (2000). Linking consumer debt and consumer expenditures: Do borrowers spend money differently? *Family and Consumer Sciences Research Journal*, *28*(3), 358–401. https://doi.org/10.1177/1077727X00283004

Fan, L., Stebbins, R., & Kim, K. T. (2022). Skint: retirement? Financial hardship and retirement planning behaviors. *Journal of Family and Economic Issues*, *43*, 354–367. https://doi.org/10.1007/s10834-021-09779-z

Ferdous, N., Pinjari, A. R., Bhat, C. R., & Pendyala, R. M. (2010). A comprehensive analysis of household transportation expenditures relative to other goods and services: An application to United States consumer expenditure data. *Transportation*, *37*(3), 363–390. https://doi.org/10.1007/s11116-010-9264-2

Fernandez, J., & Tranfaglia, A. (2020). Gender disparities in financial well-being from the Survey of Household Economics and Decisionmaking (Issue October).

Fernández-Villaverde, J., & Krueger, D. (2007). Consumption over the life cycle: Facts from Consumer Expenditure Survey data. *Review of Economics and Statistics*, *89*(3), 552–565. https://doi.org/10.1162/rest.89.3.552

Farrell, Diana, Fiona Greig, and Chenxi Yu. 2019. "Weathering volatility 2.0: A monthly stress test to guide savings." *JPMorgan Chase Institute.* https://institute.jpmorganchase.com/institute/research/household-income-spending/report-weathering-volatility-2.0.

Fisher, P. J., & Montalto, C. P. (2010). Effect of saving motives and horizon on saving behaviors. *Journal of Economic Psychology*, *31*(1), 92–105. https://doi.org/10.1016/j.joep.2009.11.002

Foster, A. C. (2015). Consumer expenditures vary by age. *Bureau of Labor Statistics: Beyond the Numbers*, *4*(14), 1–12.

Frigerio, M., Ottaviani, C., & Vandone, D. (2020). A meta-analytic investigation of consumer over-indebtedness: The role of impulsivity. *International Journal of Consumer Studies*, *44*(4), 328–342. https://doi.org/10.1111/ijcs.12570

Fujita, K., & Carnevale, J. J. (2012). Transcending temptation through abstraction: The role of construal level in self-control. *Current Directions in Psychological Science*, *21*(4), 248–252. https://doi.org/10.1177/0963721412449169

Gabriel, D. C., James, J. C., David, L., Brigitte, C. M., & Andrew, M. (2009). Optimal defaults and active decisions. *Quarterly Journal of Economics*, *124*(4), 1639–1674. https://doi.org/10.1162/qjec.2009.124.4.1639

Gal, D., & Liu, W. (2011). Grapes of wrath: The angry effects of self-control. *Journal of Consumer Research*, *38*(3), 445–458. https://doi.org/10.1086/659377

Gärling, T., & Ranyard, R. (2020). The psychological perspective on the antecedents and consequences of consumer borrowing. In *Psychological Perspectives on Financial Decision Making* (pp. 267–290). Springer International Publishing. https://doi.org/10.1007/978-3-030-45500-2_12

Gathergood, J. (2012). Self-control, financial literacy and consumer over-indebtedness. *Journal of Economic Psychology*, *33*(3), 590–602. https://doi.org/10.1016/j.joep.2011.11.006

Gjertson, L. (2016). Emergency saving and household hardship. *Journal of Family and Economic Issues*, *37*(1), 1–17. https://doi.org/10.1007/s10834-014-9434-z

Gong, C., & Kelly, S. (2010). Overspending or saving in property, do different measures of saving matter in Australia? *University of Canberra NATSEM Online Conference Paper No. CP224*.

Greenwald, L. (2017). Many workers lack retirement confidence and feel stressed about retirement preparations. *Pension Benefits*, *26*(5), 1–2.

Greenwald, L., Copeland, C., & VanDerhei, J. (2017). The 2017 Retirement confidence survey: Many workers lack retirement confidence and feel stressed about retirement preparations. *EBRI Issue Brief*, *431*, 1–29.

Håkansson, A. (2014). What is overconsumption? - A step towards a common understanding. *International Journal of Consumer Studies*, *38*(6), 692–700. https://doi.org/10.1111/ijcs.12142

Han, B., Hirshleifer, D., & Walden, J. (2018). Visibility bias in the transmission of consumption norms and undersaving. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2798638

Han, J., Ko, D., & Choe, H. (2019). Classifying retirement preparation planners and doers: A multi-country study. *Sustainability (Switzerland)*, *11*(10), 1–17. https://doi.org/10.3390/su11102815

Harris, C., & Laibson, D. (2001). Dynamic choices of hyperbolic consumers. *Econometrica*, *69*(4), 935–957. https://doi.org/10.1111/1468-0262.00225

Hassan, M. K., & Lawrence, S. B. (2007). Retirement savings of the hip generation: A study of retirement preparation among individuals in their fifties. *Southern Economic Review*, *83*, 115–129.

Haws, K. L., Bearden, W. O., & Nenkov, G. Y. (2012). Consumer spending self-control effectiveness and outcome elaboration prompts. *Journal of the Academy of Marketing Science*, *40*(5), 695–710. https://doi.org/10.1007/s11747-011-0249-2

Heckman, S. J., & Hanna, S. D. (2015). Individual and institutional factors related to low-income household saving behavior. *Journal of Financial Counseling and Planning*, *26*(2), 187–199. https://doi.org/10.1891/1052-3073.26.2.187

Heckman, S. J., Letkiewicz, J. C., & Kim, K. T. (2022). A fracturing social contract? How preceptions of the value of higher education are changing. *Journal of Family and Economic Issues*, 1–19.

Hershey, D. A., Henkens, K., Van Dalen, H. P., & Harry, van D. (2010). Aging and financial planning for retirement. *Internal Journal of Aging & Human Development*, *70*(1), 1–38.

Hershey, D. A., Jacobs-Lawson, J. M., McArdle, J. J., & Hamagami, F. (2007). Psychological foundations of financial planning for retirement. *Journal of Adult Development*, *14*(1–2), 26–36. https://doi.org/10.1007/s10804-007-9028-1

Hira, T. K., Rock, W. L., & Loibl, C. (2009). Determinants of retirement planning behaviour and differences by age. *International Journal of Consumer Studies*, *33*(3), 293–301. https://doi.org/10.1111/j.1470-6431.2009.00742.x

Hofmann, W., & Fisher, R. R. (2012). How guilt and pride shape subsequent self-control. *Social Psychological and Personality Science*, *3*(6), 682–690. https://doi.org/10.1177/1948550611435136

Hur, J. D., Koo, M., & Hofmann, W. (2015). When temptations come alive: How anthropomorphism undermines self-control. *Journal of Consumer Research*, *42*(2), 340–358. https://doi.org/10.1093/jcr/ucv017

Hurtado, M. D., & Topa, G. (2019). Quality of life and health: Influence of preparation for retirement behaviors through the serial mediation of losses and gains. *International Journal of Environmental Research and Public Health*, *16*(9). https://doi.org/10.3390/ijerph16091539

Huston, S. J. (2010). Measuring financial literacy. *Journal of Consumer Affairs*, *44*(2), 296–316. https://doi.org/10.1111/j.1745-6606.2010.01170.x

Huston, S. J., Finke, M. S., & Smith, H. L. (2012). A financial sophistication proxy for the Survey of Consumer Finances. *SSRN Electronic Journal*, *January*. https://doi.org/10.2139/ssrn.1918208

Jacobs, L., Llanes, E., Moore, K., Thompson, J. P. ;, & Henriques Volz, A. (2020). *Wealth distribution and retirement preparation among early savers* (No. 20–4). https://doi.org/https://doi.org/10.29412/res.wp.2020.04 This

Jayathirtha, C., & Fox, J. J. (1996). Home ownership and the decision to overspend. *Journal of Financial Counseling and Planning*, *7*, 97–106.

John, D. (2022). The little understood Saver's Credit: A conversation with David John, Senior Strategic Policy Advisor, AARP Public Policy Institute. *EBRI's Financial Wellbeing Research Center*.

Joo, S. H., & Pauwels, V. W. (2002). Factors affecting workers' retirement confidence: A gender perspective. *Journal of Financial Counseling and Planning*, *13*(2), 1–10.

Karlsson, N. (2003). Consumer self-control strategies: An empirical study of their structure and determinants. *Journal of Consumer Policy*, *26*, 23–41.

Karmarkar, U. R., Shiv, B., & Knutson, B. (2015). Cost conscious? The neural and behavioral impact of price primacy on decision making. *Journal of Marketing Research*, *52*(4), 467–481. https://doi.org/10.1509/jmr.13.0488

Kaur, P., Jawaid, A., Nathaniel, A., Thomas, B., Zulfazid, M., & Kong, R. (2020). Overspending on online game app purchasing among university students in Sarawak, Malaysia. *Ilkogretim Online - Elementary Education Online*, *19*(3), 2510–2519. https://doi.org/10.17051/ilkonline.2020.03.735410

Kenneth, B., Canilang, S., Jones, K., Larrimore, J., Lloro, A., Merry, E., Tranfaglia, A., Troland, E., & Zabek, M. (2021). Economic well-being of U.S. households in 2020 (Issue May).

Kenny, D. (2020). Measuring model fit. *https://davidakenny.net/cm/fit.htm*

Kim, G. J., & Hanna, S. (2017). Do self-control measures affect saving behavior? *Journal of Personal Finance*, *16*(2), 7–20.

Kim, J., & Chatterjee, S. (2013). Childhood financial socialization and young adults' financial management. *Journal of Financial Counseling and Planning*, *24*(1), 61–79.

Kim, K. T., & Hanna, S. D. (2015). Do U.S. households perceive their retirement preparedness realistically? *Financial Services Review*, *24*(2), 139–155.

Kim, K. T., Lee, J. M., & Hong, J. E. (2016). The role of self-control on retirement preparedness of US households. *International Journal of Human Ecology*, *17*(2), 31–42. https://doi.org/10.6115/ijhe.2016.17.2.31

Kim, M. J. (2022). Two sides of the same coin: The simultaneous effects of spending and saving needs on budget estimation. *Journal of Financial Services Marketing*, *0123456789*. https://doi.org/10.1057/s41264-021-00132-x

Kim, Y., & Choi, S. M. (2018). The effects of breadth of product categories on budgeting. *Advances in Consumer Research*, *46*, 440–443.

Kimiyagahlam, F., Safari, M., & Mansori, S. (2019). Influential behavioral factors on retirement planning behavior: The case of Malaysia. *Journal of Financial Counseling and Planning*, *30*(2), 244–261. https://doi.org/10.1891/1052-3073.30.2.244

Kliamenakis, A., & Sobol, K. (2021). When waiting pays off: The impact of delayed goal failure on self-perception and self-regulation. *Psychology and Marketing*, *38*(5), 709–720. https://doi.org/10.1002/mar.21459

Knutson, B., Rick, S., Wimmer, G. E., Prelec, D., & Loewenstein, G. (2007). Neural predictors of purchases. *Neuron*, *53*(1), 147–156. https://doi.org/10.1016/j.neuron.2006.11.010

Kokkoris, M. D., Hoelzl, E., & Alós-Ferrer, C. (2019). True to which self? Lay rationalism and decision satisfaction in self-control conflicts. *Journal of Personality and Social Psychology*, *117*(2), 417–447. https://doi.org/10.1037/pspp0000242

Koposko, J. L., Kiso, H., Hershey, D. A., & Gerrans, P. (2016). Perceptions of retirement savings relative to peers. *Work, Aging and Retirement*, *2*(1), 65–72. https://doi.org/10.1093/workar/wav019

Krijnen, J., Zeelenberg, Marcel; Breugelmans, S., & van der Schors, A. (2022). Intention and action in retirement preparation. *Behavioural Public Policy*, *6*(2), 191–212. https://doi.org/10.1017/bpp.2018.39

Laibson, D. I., Repetto, A., & Tobacman, J. (1998). Self-control and saving for retirement. *Brookings Papers on Economic Activity*, *1998*(1), 91–196. https://doi.org/10.2307/2534671

Lakshmi Malroutu, Y., & Xiao, J. J. (1995). Perceived adequacy of retirement income. *Journal of Financial Counseling and Planning*, *6*(718), 17–24.

Larrimore, J. (2016). Holiday spending and financing decisions in the 2015 Survey of Household Economics and Decisionmaking. *FEDS Notes*, *2016*(1866). https://doi.org/10.17016/2380-7172.1866

Lee, Y. D., Hassan, M. K., & Lawrence, S. (2018). Retirement preparation of men and women in their positive savings periods. *Journal of Economic Studies*, *45*(3), 543–564. https://doi.org/10.1108/JES-12-2016-0266

Levin, L. (1998). Are assets fungible?: Testing the behavioral theory of life-cycle savings. *Journal of Economic Behavior and Organization*, *36*(1), 59–83. https://doi.org/10.1016/s0167-2681(98)00070-5

Lim, H. N., & Lee, J. M. (2021). Retirement income sources and subjective financial well-being: A comparison of retirees and non-retirees. *Journal of Financial Counseling and Planning*, *32*(3), 517–534. https://doi.org/10.1891/JFCP-19-00101

Limerick, L., & Peltier, J. W. (2014). The effects of self-control failures on risky credit card usage. *Marketing Management Journal*, *24*(2), 149–161.

Lin, J., Bumcrot, C., Ulicny, T., Mottola, G., Walsh, G., Ganem, R., Kieffer, C., & Lusardi, A. (2019). The state of U.S. financial capability: The 2018 National Financial Capability Study (Issue June).

Lindamood, S., Hanna, S. D., & Bi, L. (2007). Using the Survey of Consumer Finances: Some methodological considerations and issues. *Journal of Consumer Affairs*, *41*(2), 195–222. https://doi.org/10.1111/j.1745-6606.2007.00075.x

Liu, L., & Feng, T. (2012). The neural predictors of choice preference in intertemporal choice. *Brain Research*, *1436*, 92–100. https://doi.org/10.1016/j.brainres.2011.12.018

Lloyd, N. (2018). Myths and realities of retirement. *Benefits Quarterly*, *34*(4), 58–62.

Lucas, R., & Donnellan, M. B. (2013). Secondary data analysis. In T. Little (Ed). The Oxford Handbook of Quantitative Methods. *New York: Oxford University Press*, 665–677. https://doi.org/10.1017/CBO9781107415324.004

Middlewood, B. L., Chin, A., Johnson, H., & Knoll, M. A. Z. (2018). Exploring the relationships between impatience, savings automation, and financial welfare. *Financial Planning Review*, *November*, 1–11. https://doi.org/10.1002/cfp2.1020

Ming, Y., Li, C., & Chen, J. (2021). Acquisition mode and credit card overspending behavior: An empirical analysis of the credit card industry. *Journal of Consumer Affairs*, *55*(1), 232–253. https://doi.org/10.1111/joca.12341

Mischel, W. & Ebbesen, E.B. (1970). Attention in delay of gratification. Journal of Personality and Social Psychology, 16(2), 329–337.

Mishra, S., Templeton, A. J., & Meadows, T. J. S. (2017). Living, fast and slow: Is life history orientation associated with risk-related personality traits, risk attitudes, criminal outcomes, and gambling? *Personality and Individual Differences*, *117*, 242–248. https://doi.org/10.1016/j.paid.2017.06.009

Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H. L., Houts, R., Poulton, R., Roberts, B. W., Ross, S., Sears, M. R., Thomson, W. M., & Caspi, A. (2011). A gradient of childhood self-control predicts health, wealth, and public safety. *Proceedings of the National Academy of Sciences of the United States of America*, *108*(7), 2693–2698. https://doi.org/10.1073/pnas.1010076108

Moore, R. (2019). Households Have Set Own Savings Thresholds for Retirement Preparedness. *PLANADVISER.*

Morgan, L. A., & Eckert, J. K. (2004). Retirement financial preparation. *Journal of Aging & Social Policy*, *16*(2), 19–34.

Müller, A., Laskowski, N. M., Wegmann, E., Steins-Loeber, S., & Brand, M. (2021). Problematic online buying-shopping: Is it time to considering the concept of an online subtype of compulsive buying-shopping disorder or a specific internet-use disorder? *Current Addiction Reports*, *8*(4), 494–499. https://doi.org/10.1007/s40429-021-00395-3

Muratore, A. M., & Earl, J. K. (2010). Predicting retirement preparation through the design of a new measure. *Australian Psychologist*, *45*(2), 98–111. https://doi.org/10.1080/00050060903524471

Newmeyer, C., Warmath, D., O'Connor, G. E., & Wong, N. (2020). Is savings automation helpful to liquid savings? It depends on whether you have a savings habit. *Journal of Public Policy and Marketing*, *40*(2), 285–297. https://doi.org/10.1177/0743915620950216

Ng, T.-H., Tay, W.-Y., Tan, N.-L., & Lim, Y.-S. (2011). Influence of investment experience and demographic factors on retirement planning intention. *International Journal of Business and Management*, *6*(2), 196–203. https://doi.org/10.5539/ijbm.v6n2p196

Nolan, A., & Doorley, K. (2019). Financial literacy and preparation for retirement. In *Intereconomics* (No. 12187; IZA Discussion Papers). https://doi.org/10.1007/s10272-016-0588-9

Noone, J. H., Stephens, C., & Alpass, F. (2010). The Process of Retirement Planning Scale (PRePS): Development and validation. *Psychological Assessment*, *22*(3), 520–531. https://doi.org/10.1037/a0019512

Oakley, D., & Kenneally, K. (2019). Retirement insecurity 2019: Households' view of the retirement crisis (Issue March).

O'Connor, G. E., Newmeyer, C. E., Wong, N. Y. C., Bayuk, J. B., Cook, L. A., Komarova, Y., Loibl, C., Lin Ong, L., & Warmath, D. (2019). Conceptualizing the multiple dimensions of consumer financial vulnerability. *Journal of Business Research*, *100*(November 2017), 421–430. https://doi.org/10.1016/j.jbusres.2018.12.033

Olafsson, A., & Pagel, M. (2020). The retirement-consumption puzzle: New evidence from personal finances. In *NBBER Working Paper Series* (No. 22405).

O'Neill, B., & Gillen, M. (2020). 2019 Personal finance year in review. *Journal of Financial Planning*, 38–45.

O'Neill, B., Xiao, J. J., & Ensle, K. (2017). Positive health and financial practices: Does budgeting make a difference? *Journal of Family & Consumer Sciences*, *109*(2), 27–36. https://doi.org/10.14307/jfcs109.2.27

Ottaviani, C., & Vandone, D. (2011). Impulsivity and household indebtedness: Evidence from real life. *Journal of Economic Psychology*, *32*(5), 754–761. https://doi.org/10.1016/j.joep.2011.05.002

Ozgen, O., & Esiyok, E. (2020). Consumer ethics, materialism and material satisfaction: A study on Turkish adolescent consumers. *International Journal of Consumer Studies*, *44*(1), 14–24. https://doi.org/10.1111/ijcs.12541

Pahlevan Sharif, S., She, L., Yeoh, K. K., & Naghavi, N. (2022). Heavy social networking and online compulsive buying: The mediating role of financial social comparison and materialism. *Journal of Marketing Theory and Practice*, *30*(2), 213–225. https://doi.org/10.1080/10696679.2021.1909425

Patrick, V. M., Chun, H. E. H., & Macinnis, D. J. (2009). Affective forecasting and self-control: Why anticipating pride wins over anticipating shame in a self-regulation context. *Journal of Consumer Psychology*, *19*(3), 537–545. https://doi.org/10.1016/j.jcps.2009.05.006

Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor strucutre of the Barratt Impulsiveness Scale. *Journal of Clinical Psychology*, *51*(6), 768–774.

Peetz, J., & Buehler, R. (2009). Is there a budget fallacy? The role of savings goals in the prediction of personal spending. *Personality and Social Psychology Bulletin*, *35*(12), 1579–1591. https://doi.org/10.1177/0146167209345160

Peetz, J., Davydenko, M., & Wohl, M. J. A. (2021). The cost of self-forgiveness: Incremental theorists spent more money after forgiving the self for past overspending. *Personality and Individual Differences*, *179*(March), 110902. https://doi.org/10.1016/j.paid.2021.110902

Petkoska, J., & Earl, J. K. (2009). Understanding the influence of demographic and psychological variables on retirement planning. *Psychology and Aging*, *24*(1), 245–251. https://doi.org/10.1037/a0014096

Pfau, W. D. (2018). An overview of retirement income planning. *Journal of Financial Counseling and Planning*, *29*(1), 114–120. https://doi.org/10.1891/1052-3073.29.1.114

Pilch, I., & Górnik-Durose, M. E. (2017). Grandiose and vulnerable narcissism, Materialism, money attitudes, and consumption preferences. *Journal of Psychology*, *151*(2), 185–206. https://doi.org/10.1080/00223980.2016.1252707

Qi, J., Chatterjee, S., & Liu, Y. (2022). Retirement preparedness of Generation X compared to other cohorts in the United States. *International Journal of Financial Studies*, *10*(2), 45. https://doi.org/10.3390/ijfs10020045

Ramanathan, S., & Williams, P. (2007). Immediate and delayed emotional consequences of indulgence: The moderating influence of personality type on mixed emotions. *Journal of Consumer Research*, *34*(2), 212–223. https://doi.org/10.1086/519149

Ray, J. J., & Najman, J. M. (1986). The generalizability of deferment of gratification. *Journal of Social Psychology*, *126*(1), 117–119. https://doi.org/10.1080/00224545.1986.9713578

Reyers, M. (2018). Perceptions of retirement adequacy: Evidence from South Africa. *Journal of Financial Counseling and Planning*, *29*(2), 343–356. https://doi.org/10.1891/1052-3073.29.2.343

Rha, J. Y., Montalto, C. P., & Hanna, S. D. (2006). The effect of self-control mechanisms on household saving behavior. *Journal of Financial Counseling and Planning*, *17*(2), 3–16.

Rhee, N., & Boivie, I. (2016). The continuing retirement savings crisis. In *National Institute on Retirement Security* (Issue March). https://doi.org/10.2139/ssrn.2785723

Richins, M. L., & Dawson, S. (1992). A consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of Consumer Research*, *19*(3), 303. https://doi.org/10.1086/209304

Rick, S. (2018). Tightwads and spendthrifts: An interdisciplinary review. *Financial Planning Review*, *1*(1–2), e1010. https://doi.org/10.1002/cfp2.1010

Roberts, J. A., & Clement, A. (2007). Materialism and satisfaction with over-all quality of life and eight life domains. *Social Indicators Research*, *82*(1), 79–92. https://doi.org/10.1007/s11205-006-9015-0

Rook, D. W., & Fisher, R. J. (1995). Normative influences on impulsive buying behavior. *Academy of Management Review*, *22*(3), 305–313.

Rostamkalaei, A., Nitani, M., & Riding, A. (2022). Self-employment, financial knowledge, and retirement planning. *Journal of Small Business Management*, *60*(1), 63–92. https://doi.org/10.1080/00472778.2019.1695497

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*(1), 1–28. https://doi.org/10.1037/h0092976

Scholz, J. K., Seshadri, A., & Khitatrakun, S. (2006). Are Households saving "optimally" for retirement? *Journal of Political Economy*, *114*(4), 607–643. https://doi.org/10.1086/506335

Schor, J. (1998). Keeping up with the Trumps: How the middle class identifies with the rich. *Washington Monthly*, *30*(7–8), 34+.

Segel-Karpas, D., & Werner, P. (2014). Perceived financial retirement preparedness and its correlates: A national study in Israel. *International Journal of Aging and Human Development*, *79*(4), 279–301. https://doi.org/10.1177/0091415015574177

Senate Finance Committee. (2022). Secure 2.0 Act of 2022. https://www.finance.senate.gov/imo/media/doc/Secure percent202.0_Section percent20by percent20Section percent20Summary percent2012-19-22 percent20FINAL.pdf

Sensenig, D. (2021). *Comprehensive indicators of spending attributes of the middle class: Impact on credit card use and retirement savings*.

Shefrin, H., & Thaler, R. (1988). The behavioral life-cycle hypothesis. *Economic Inquiry*, *26*(4), 609–643.

Shin, S. H., & Hanna, S. D. (2017). Accounting for complex sample designs in analyses of the Survey of Consumer Finances. *Journal of Consumer Affairs*, *51*(2), 433–447. https://doi.org/10.1111/joca.12106

Siahpush, M., Farazi, P. A., Maloney, S. I., Dinkel, D., Nguyen, M. N., & Singh, G. K. (2018). Socioeconomic status and cigarette expenditure among US households: Results from 2010 to 2015 Consumer Expenditure Survey. *BMJ Open*, *8*(6), 1–8. https://doi.org/10.1136/bmjopen-2017-020571

Sng, O., Neuberg, S. L., Varnum, M. E. W., & Kenrick, D. T. (2017). The crowded life is a slow life: Population density and LHS. *Journal of Personality and Social Psychology*, *112*(5), 736–754. https://doi.org/10.1037/pspi0000086

Sonya Lutter. (2022, August 25). *Psychology of Financial Planning Webinar*. CFP Board. https://www.cfp.net/events/2022/08/the-psychology-of-financial-planning-webinar

Sotiropoulos, V., & d'Astous, A. (2013). Attitudinal, self-efficacy, and social norms determinants of young consumers' Propensity to overspend on credit cards. *Journal of Consumer Policy*, *36*(2), 179–196. https://doi.org/10.1007/s10603-013-9223-3

Stango, V., & Zinman, J. (2020). We are all behavioral, more or less: A taxonomy of consumer decision making. In *NBER Working Paper Series* (No. 28138).

Stavins, J. (2020). Credit card debt and consumer payment choice: What can we learn from credit bureau data? *Journal of Financial Services Research*, *58*(1), 59–90. https://doi.org/10.1007/s10693-019-00330-8

Stawski, R. S., Hershey, D. A., & Jacobs-Lawson, J. M. (2007). Goal clarity and financial planning activities as determinants of retirement savings contributions. *International Journal of Aging and Human Development*, *64*(1), 13–32. https://doi.org/10.2190/13GK-5H72-H324-16P2

Stearns, S. C. (2000). Life history evolution: Successes, limitations, and prospects. *Naturwissenschaften*, *87*(11), 476–486. https://doi.org/10.1007/s001140050763

Steinhart, Y., & Jiang, Y. (2019). Securing the future: Threat to self-image spurs financial saving intentions. *Journal of Personality and Social Psychology*, *117*(4), 741–757. https://doi.org/10.1037/pspa0000159

Strömbäck, C., Lind, T., Skagerlund, K., Västfjäll, D., & Tinghög, G. (2017). Does self-control predict financial behavior and financial well-being? *Journal of Behavioral and Experimental Finance*, *14*, 30–38. https://doi.org/10.1016/j.jbef.2017.04.002

Sturr, T., Lynn, C., & Lawon, D. (2021). Financial self-efficacy and retirement preparation. *Journal of Financial Planning*, *June*, 86–98. https://doi.org/10.1002/9781119203124.oth1

Sui, L., Sun, L., & Geyfman, V. (2021). An assessment of the effects of mental accounting on overspending behaviour: An empirical study. *International Journal of Consumer Studies*, *45*(2), 221–234. https://doi.org/10.1111/ijcs.12613

Tamborini, C. R., & Purcell, P. (2016). Women's household preparation for retirement at young and mid-adulthood: Differences by children and marital status. *Journal of Family and Economic Issues*, *37*(2), 226–241. https://doi.org/10.1007/s10834-015-9449-0

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, *72*(2), 173–212. https://doi.org/10.4324/9781315175775

Taylor, T., Halen, N., & Huang, D. (2018). The decumulation paradox: Why are retirees not spending more? In *Investments & Wealth Monitor* (Issue August).

Tescher, J., & Corey Stone. (2022). Revolving debt's challenge to financial health and one way to help consumers pay it off. *The Brookings Institution.*

https://www.brookings.edu/research/revolving-debts-challenge-to-financial-health-and-one-way-to-help-consumers-pay-it-off/

Thaler, R. H., & Benartzi, S. (2004). Save more tomorrow: Using behavioral economics to increase employee saving. *Journal of Political Economy*, *112*(1). https://doi.org/10.1086/380085

Topa, G., Moriano, J. A., Depolo, M., Alcover, C. M., & Morales, J. F. (2009). Antecedents and consequences of retirement planning and decision-making: A meta-analysis and model. *Journal of Vocational Behavior*, *75*(1), 38–55. https://doi.org/10.1016/j.jvb.2009.03.002

Tumataroa, S., & O'Hare, D. (2019). Improving self-control through financial counseling: A randomized controlled trial. *Journal of Financial Counseling and Planning*, *30*(2), 304–312. https://doi.org/10.1891/1052-3073.30.2.304

Van Dalen, H. P., Henkens, K., & Hershey, D. A. (2010). Perceptions and expectations of pension savings adequacy: A comparative study of Dutch and American workers. *Ageing and Society*, *30*(5), 731–754. https://doi.org/10.1017/S0144686X09990651

Vasudeva, S. (2021). Predictors of retirement saving behavior. *The IUP Journal of Applied Finance*, *27*(4), 54–73.

Vohs, K. D., & Faber, R. J. (2007). Spent resources: Self-regulatory resource availability affects impulse buying. *Journal of Consumer Research*, *33*(4), 537–547. https://doi.org/10.1086/510228

Vosgerau, J., Scopelliti, I., & Huh, Y. E. (2020). Exerting self-control ≠ sacrificing pleasure. *Journal of Consumer Psychology*, *30*(1), 181–200. https://doi.org/10.1002/jcpy.1142

Walsh, Martin. J., & Beach, W. W. (2021). National compensation survey: Employee benefits in the United States. In *National Compensation Survey - Benefits* (Issue September).

Wang, L., Lu, W., & Malhotra, N. K. (2011). Demographics, attitude, personality and credit card features correlate with credit card debt: A view from China. *Journal of Economic Psychology*, *32*(1), 179–193. https://doi.org/10.1016/j.joep.2010.11.006

Watson, J. J. (2003). The relationship of materialism to spending tendencies, saving, and debt. *Journal of Economic Psychology*, *24*(6), 723–739. https://doi.org/10.1016/j.joep.2003.06.001

Xiao, J. J., & O'Neill, B. (2018). Mental accounting and behavioural hierarchy: Understanding consumer budgeting behaviour. *International Journal of Consumer Studies*, *42*(4), 448–459. https://doi.org/10.1111/ijcs.12445

Xu, Y., Norton, S., & Rahman, Q. (2018). Early life conditions, reproductive and sexuality-related life history outcomes among human males: A systematic review and meta-analysis. *Evolution and Human Behavior*, *39*(1), 40–51. https://doi.org/10.1016/j.evolhumbehav.2017.08.005

Yao, R., & Cheng, G. (2017). Millennials' retirement saving behavior: Account ownership and balance. *Family and Consumer Sciences Research Journal*, *46*(2), 110–128. https://doi.org/10.1111/fcsr.12241

Yao, R., Hanna, S. D., & Montalto, C. P. (2003). The capital accumulation ratio as an indicator of retirement adequacy. *Journal of Financial Counseling and Planning*, *14*(2), 1–11.

Yeh, T. M. (2022). An empirical study on how financial literacy contributes to preparation for retirement. *Journal of Pension Economics and Finance*, *21*(2), 237–259. https://doi.org/10.1017/S1474747220000281

Yuh, Y., & Hanna, S. D. (2010). Which households think they save? *Journal of Consumer Affairs*, *44*(1), 70–97. https://doi.org/10.1111/j.1745-6606.2010.01158.x

Zan, H., & Hanna, S. (2008). *Racial/ethnic discrepancies in household overspending*.

Appendix A - Interaction Effects

Appendix A Table A.1.

SHED Ordinal Regression of Retirement Account Asset Balance with Interaction Effects of Income x Overspending

		n = 4,207	
Variable	B	SE	*CI*
Overspending predictor variables			
Spends more than income	-0.01	0.34	[-0.68,0.66]
Revolves credit card debt	0.03	0.13	[-0.22,0.29]
Uses AFS	-1.31	0.81	[-2.87,0.26]
Absence of emergency fund	-1.17***	0.28	[-1.72,-0.61]
Control variables			
Age (under 35)			
35-44	1.74**	0.13	[1.49,1.99]
45-54	2.64***	0.14	[2.37,2.92]
55-64	3.21***	0.15	[2.92,3.50]
65 or older	3.40***	0.18	[3.05,3.74]
Marital status (married)			
living with partner or never married	-0.21*	0.11	[-0.42,-0.00]
separated or divorced	-0.31*	0.14	[-0.58,-0.04]
widowed	-0.46	0.26	[-0.97,0.06]
Race of respondent (White)			
Black	-0.83***	0.15	[-1.12,-0.54]
Hispanic	-0.41**	0.14	[-0.69,-0.13]
Asian or other	0.07	0.16	[-0.24,0.38]
Gender of respondent (male)	-0.20*	0.08	[-0.36,-0.04]
Education (high school degree)			
no high school degree	-0.12	0.46	[-1.00,0.78]
some college	0.02	0.13	[-0.24,0.28]
bachelor's degree	0.42	0.14	[0.14,0.70]
Parental education (high school degree)			
no high school degree	-0.33	0.17	[-0.66,0.01]
some college	-0.04	0.12	[-0.26,0.19]

bachelor's degree or beyond	-0.01	0.12	[-0.25,0.23]
advanced degree	-0.04	0.12	[-0.27,0.21]
Risk tolerance	0.14***	0.02	[0.10,0.17]
Income (under $25,000)			
$25,000-$49,999	0.64	0.36	[-0.07,1.35]
$50,000-$74,999	1.43***	0.37	[0.70,2.16]
$75,000-$99,999	1.90***	0.39	[1.13,2.67]
$100,000-$149,999	2.43***	0.41	[1.63,3.23]
$150,000 or more	3.14***	0.43	[2.29,3.99]
Spends more than income*Income	-0.04	0.08	[-0.20,0.12]
Revolves credit card debt*Income	-0.08**	0.03	[-0.14,-0.02]
Uses AFS*Income	0.27	0.23	[-0.18,0.71]
Absence of emergency fund*Income	0.06	0.06	[-0.06,0.18]
Objective financial knowledge	0.19***	0.05	[0.10,0.29]
Health (excellent)			
fair	-0.15	0.08	[-0.31,0.02]
poor	-0.24	0.48	[-1.18,0.70]
Model Fit Statistics	Pseudo R^2	0.34	

Note. Data from the 2019 SHED was used with wegihts. Sample restricted to only those working as a paid employee. * $p < .05$; ** $p < .01$; *** $p < .001$

Appendix A Table A.2.

SHED Binary Regression of Perceived Retirement Preparation with Interaction Effects of Income x Overspending

	SHED, *n* = 4,317			
Variable	B	SE	OR	CI
Intercept	-0.77*	0.32	0.46	[-1.39,-0.14]
Spends more than income	-0.97**	0.35	0.38	[-1.66,-0.28]
Revolves credit card debt	-0.04	0.12	0.96	[-0.26,-0.18]
Uses AFS	1.05*	0.49	2.86	[0.08,2.02]
Absence of emergency fund	-0.88**	0.25	0.41	[-1.37,-0.38]
Control variables				
Age (under 35)				
35-44	0.12	0.12	1.13	[-0.12,0.36]
45-54	0.08	0.13	1.08	[-0.17,0.33]

55-64	0.36**	0.13	1.43	[0.11,0.61]
65 or older	0.31	0.21	1.36	[-0.11,0.74]
Marital status (married)				
living with partner or never married	-0.23*	0.11	0.79	[-0.44,-0.02]
separated or divorced	-0.31	0.14	0.73	[-0.58,-0.04]
widowed	0.14	0.46	1.15	[-0.77,1.04]
Race of respondent (White)				
Black	-0.10	0.15	0.90	[-0.39,0.19]
Hispanic	-0.58***	0.15	0.56	[-0.87,-0.30]
Asian or other	-0.02	0.18	0.98	[-0.36,0.33]
Gender of respondent (male)	-0.03	0.09	0.97	[-0.20,0.14]
Education (high school degree)				
no high school degree	-0.65	0.39	0.52	[-1.41,0.12]
some college	-0.01	0.13	0.99	[-0.26,0.24]
bachelor's degree	0.31*	0.13	1.36	[0.04,0.57]
Parental education (high school degree)				
no high school degree	-0.03	0.20	0.97	[-0.42,0.36]
some college	-0.09	0.12	0.91	[-0.32,0.13]
bachelor's degree or beyond	0.04	0.12	1.04	[-0.19,0.28]
advanced degree	0.03	0.13	1.03	[-0.22,0.29]
Risk tolerance	0.11***	0.02	1.12	[0.08,0.15]
Income				
$25,000-$49,999	0.97***	0.21	2.64	[0.55,1.39]
$50,000-$74,999	1.27***	0.22	1.14	[0.84,1.71]
$75,000-$99,999	1.43***	0.25	4.18	[0.94,1.92]
$100,000-$149,999	1.52***	0.26	4.57	[1.01,2.02]
$150,000 or more	1.80***	0.28	6.05	[1.24,2.36]
Spends more than income*Income	0.11	0.09	1.12	[-0.07,0.28]
Revolves credit card debt*Income	-0.06*	0.03	0.94	[-0.12,-0.01]
Uses AFS*Income	-0.27	0.14	0.76	[-0.55,0.01]
Absence of emergency fund*Income	-0.04	0.06	0.96	[-0.16,0.08]
Objective financial knowledge	0.01	0.05	1.01	[-0.08,0.11]
Health (excellent)				
fair	-0.49***	0.09	0.61	[-0.67,0.32]
poor	-1.04*	0.42	0.35	[-1.86,-0.21]
Model Fit Statistics	C-statistic		0.81	
	Pseudo R^2		0.23	

Note. Data from the 2019 SHED was used with weights. Sample restricted to only those working as a paid employee. * $p < .05$; ** $p < .01$; *** $p < .001$

Appendix A Table A.3.

SCF Binary Logistic Regression of Retirement Account Ownership with Interaction Effects of Income x Overspending

			n = 3,361	
Variable	B	SE	OR	CI
Intercept	-7.41***	1.12	0.08	[-9.60,-5.21]
Spends more than income	-4.83	4.36	0.01	[-13.39,3.72]
Revolves credit card debt	-1.34	0.93	0.26	[-3.17,0.49]
Uses AFS	8.17*	3.67	3533.34	[0.98,15.35]
Absence of emergency fund	-3.68*	1.44	0.03	[-6.50,-0.86]
Control variables				
Age	0.01**	0.00	1.01	[0.01,0.02]
Marital status (married)				
living with partner or never married	0.11	0.10	1.12	[-0.08,0.30]
separated or divorced	-0.00	0.11	1.00	[-0.22,0.21]
widowed	-0.21	0.22	0.81	[-0.65,0.23]
Race of respondent (White)				
Black	-0.05	0.09	0.95	[-0.22,0.12]
Hispanic	-0.46***	0.13	0.60	[-0.70,-0.21]
Asian or other	0.12	0.18	1.13	[-0.23,0.47]
Gender of respondent (male)	0.12	0.10	1.19	[-0.06,0.33]
Education (high school degree)				
no high school degree	-0.74***	0.20	0.48	[-1.13,-0.35]
some college	0.12	0.09	1.13	[-0.06,0.31]
bachelor's degree	0.62***	0.13	1.86	[0.38,0.87]
advanced	0.90***	0.13	2.46	[0.65,1.16]
Parental education (high school degree)				
no high school degree	-0.36**	0.12	0.70	[-0.60,-0.12]
some college	-0.08	0.11	0.92	[-0.29,0.13]
bachelor's degree or beyond	0.04	0.10	1.04	[-0.16,0.24]
Risk tolerance	0.02	0.02	1.03	[-0.01,0.06]
Income (log)	0.44***	0.11	1.55	[0.24,0.65]

Spends more than income*Income	0.45	0.41	1.57	[-0.35,1.25]
Revolves credit card debt*Income	0.10	0.09	1.11	[-0.07,0.26]
Uses AFS*Income	-0.74*	0.33	0.48	[-1.39,-0.08]
Absence of emergency fund*Income	0.30*	0.13	1.35	[0.05,0.55]
Objective financial knowledge	0.17***	0.05	1.19	[0.08,0.26]
Subjective financial knowledge	-0.01	0.02		[-0.05,0.02]
Health (excellent)				
fair	-0.15	0.10	0.86	[-0.34,0.04]
poor	-1.22***	0.34	0.30	[-1.87,-0.56]
Model Fit Statistics	Log likelihood		-1,765	
	Pseudo R^2		0.20	

Note. Data from the 2019 SCF was used with weights. Sample restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Appendix A Table A.4.

SCF Binary Logistic Regression of Retirement Account Contributions with Interaction Effects of Income x Overspending

	SCF, n = 3,361			
Variable	B	SE	*OR*	*CI*
Intercept	-3.53***	0.87	0.03	[-5.23,-1.83]
Spends more than income	-0.43	3.11	0.65	[-6.51,5.66]
Revolves credit card debt	-2.18**	0.77	0.11	[-3.95,-0.66]
Uses AFS	1.24	3.84	3.46	[-6.28,8.76]
Absence of emergency fund	-4.11***	1.09	0.02	[-6.26,-1.97]
Control variables				
Age	-0.01*	0.00	0.99	[-0.01,-0.00]
Marital status (married)				
living with partner or never married	0.22**	0.09	1.25	[0.06,0.37]
Separated, divorced, or widowed	0.04	0.11	1.04	[-0.18,0.25]
Race of respondent (White)				
Black	-0.09	0.09	0.91	[-0.26,0.07]
Hispanic	-0.35**	0.12	0.70	[-0.59,-0.12]
Asian or other	0.30*	0.13	1.35	[0.05,0.55]
Gender of respondent (male)	0.22*	0.09	1.25	[0.04,0.40]
Education (high school degree)				
no high school degree	-0.71***	0.19	0.49	[-1.08,-0.34]

some college	-0.11	0.09	0.90	[-0.28,0.06]
bachelor's degree	0.25*	0.10	1.28	[0.06,0.43]
advanced	0.16	0.13	1.31	[-0.09,0.41]
Parental education (high school degree)				
no high school degree	-0.31**	0.10	0.73	[-0.52,-0.11]
some college	0.10	0.10	1.11	[-0.10,0.30]
bachelor's degree or beyond	-0.03	0.08	0.97	[-0.19,0.14]
Risk tolerance	0.01	0.02	1.01	[-0.02,0.04]
Income (log)	0.32***	0.07	1.38	[0.18,0.45]
Spends more than income*Income	0.04	0.29	1.04	[-0.52,0.61]
Revolves credit card debt*Income	-0.18*	0.07	0.84	[0.04,0.31]
Uses AFS*Income	-0.12	0.35	0.89	[-0.80,0.56]
Absence of emergency fund*Income	0.35***	0.10	1.42	[0.16,0.54]
Objective financial knowledge	0.11*	0.04	1.12	[0.02,0.19]
Subjective financial knowledge	-0.01	0.01	0.99	[-0.04,0.02]
Health (excellent)				
fair	-0.11	0.09	0.90	[-0.29,0.08]
poor	-0.60	0.31	0.55	[-1.22,0.01]
Model Fit Statistics	Log likelihood	-2,083		
	Pseudo R^2	0.11		

Note. Data from the 2019 SCF was used with weights. Sample restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Appendix A Table A.5.

SCF OLS Regression of Perceived Retirement Preparation with Interaction Effects of Income x Overspending

		n = 3,361	
Variable	B	SE B	β
Intercept	-0.15	0.34	-
Spends more than income	1.64	1.16	0.21
Revolves credit card debt	0.84*	0.35	0.30
Uses AFS	0.40	2.02	0.05
Absence of emergency fund	0.39	0.42	0.14
Control variables			
Age	-0.00	0.00	0.00

Marital status (married)			
living with partner or never married	0.07	0.04	0.03
Separated, divorced, or widowed	0.03	0.05	0.01
Race of respondent (White)			
Black	0.22***	0.06	0.06
Hispanic	0.03	0.08	0.01
Asian or other	-0.22**	0.07	-0.04
Gender of respondent (male)	-0.12**	0.04	-0.04
Education (high school degree)			
no high school degree	0.05	0.12	0.01
some college	-0.02	0.06	-0.01
bachelor's degree	0.13	0.07	0.05
advanced	0.09	0.07	0.03
Parental education (high school degree)			
no high school degree	-0.11	0.07	-0.03
some college	-0.02	0.06	-0.01
bachelor's degree or beyond	-0.00	0.05	0.00
Risk tolerance	0.06***	0.01	0.12
Income (log)	0.26***	0.02	0.36
Spends more than income*Income	-0.20	0.11	
Revolves credit card debt*Income	-0.09**	0.03	
Uses AFS*Income	-0.07	0.18	
Absence of emergency fund*Income	-0.05	0.04	
Objective financial knowledge	-0.01	0.03	-0.01
Subjective financial knowledge	0.07***	0.01	0.11
Health (excellent)			
fair	-0.25***	0.05	-0.09
poor	-0.74***	0.19	-0.07
Model Fit Statistics	R^2		0.16
	Adjusted R^2		0.16

Note. Data from the 2019 SCF was used with weights. Sample restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Appendix A Table A.6.

NFCS Binary Logistic Regression of Retirement Account Ownership with Interaction Effects of Income x Overspending

				n = 9,114
Variable	B	SE	OR	CI
Intercept	-1.29***	0.32	0.28	[-1.94,-0.66]
Spends more than income	-0.51*	0.24	0.60	[-0.98,-0.05]
Revolves credit card debt	-0.47***	0.14	0.63	[-0.73,-0.20]
Uses AFS	0.57**	0.19	1.77	[0.19,0.95]
Absence of emergency fund	-0.59**	0.20	0.55	[-0.99,-0.20]
Control variables				
Age (under 35)				
35-44	0.29**	0.10	1.34	[0.09,0.49]
45-54	0.46***	0.11	1.58	[0.24,0.67]
55-64	0.71***	0.15	2.03	[0.43,1.00]
65 or older	0.43	0.30	1.54	[-0.17,1.02]
Marital status (married)				
living with partner or never married	-0.31**	0.09	0.73	[-0.49,-0.13]
separated or divorced	-0.28*	0.13	0.76	[-0.53,-0.03]
widowed	-0.71*	0.27	0.49	[-1.25,-0.17]
Race of respondent (White)	-0.02	0.08	0.98	[-0.18,0.15]
Gender of respondent (male)	0.38***	0.08	1.46	[0.22,0.55]
Education (high school degree)				
no high school degree	-0.67	0.37	0.51	[-1.38,0.05]
some college	0.12	0.11	1.13	[-0.10,0.35]
bachelor's degree	0.62***	0.15	1.86	[0.34,0.91]
advanced	0.55**	0.19	1.73	[0.18,0.92]
Parental education (high school degree)				
no high school degree	0.00	0.19	1.00	[-0.37,0.38]
some college	-0.04	0.11	0.96	[-0.27,0.18]
bachelor's degree or beyond	-0.49***	0.13	0.61	[-0.75,-0.22]
advanced degree	-0.39*	0.17	0.68	[-0.72,-0.05]
Risk tolerance	0.10***	0.02	1.11	[0.07,0.13]
Income				
$25,000-$49,999	0.77***	0.14	2.16	[0.49,1.04]
$50,000-$74,999	1.43***	0.19	4.18	[1.07,1.80]

$75,000-$99,999	2.23***	0.24	9.30	[1.75,2.71]
$100,000-$149,999	2.45***	0.28	11.59	[1.90,3.00]
$150,000 or more	2.76***	0.36	15.80	[2.05,3.46]
Spends more than income*Income	0.21*	0.08	1.23	[0.04,0.37]
Revolves credit card debt*Income	0.03	0.05	1.03	[-0.07,0.13.]
Uses AFS*Income	-0.26***	0.07	0.77	[-0.39,-0.13]
Absence of emergency fund*Income	-0.06	0.07	0.94	[-0.19,0.08]
Objective financial knowledge	0.17***	0.03	1.19	[0.11,0.23]
Subjective financial knowledge	0.01	0.03	1.01	[-0.05,0.08]
Financial attitude	0.07**	0.02	1.07	[0.02,0.11]
Model Fit Statistics	C-statistic	0.83		
	Pseudo R^2	0.24		

Note. Data from the 2018 NFCS was used with weights. Sample restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Appendix A Table A.7.

NFCS OLS Regression of Perceived Retirement Preparation with Interaction Effects of Income x Overspending

		n = 9,524	
Variable	B	SE B	β
Intercept	6.14***	0.18	-
Spends more than income	0.08	0.13	0.02
Revolves credit card debt	0.15	0.08	0.05
Uses AFS	-0.03	0.12	-0.01
Absence of emergency fund	-0.08	0.11	-0.02
Control variables			
Age (under 35)			
35-44	-0.27***	0.05	-0.06***
45-54	-0.38***	0.05	-0.08***
55-64	-0.35***	0.06	-0.07***
65 or older	-0.20*	0.10	-0.02*
Marital status (married)			
living with parnter or never married	0.07	0.05	0.01
separated or divorced	0.02	0.06	0.00
widowed	0.08	0.16	0.00
Race of respondent (White)	-0.04	0.04	-0.01

Gender of respondent (male)	-0.08*	0.04	-0.02*
Education (high school degree)			
no high school degree	0.13	0.23	0.01
some college	0.03	0.06	0.01
bachelor's degree	0.08	0.07	0.02
advanced	0.02	0.08	0.00
Parental education (high school degree)			
no high school degree	0.10	0.10	0.01
some college	0.03	0.06	0.01
bachelor's degree or beyond	0.08	0.06	0.02
advanced degree	0.11	0.07	0.02
Risk tolerance	-0.01	0.01	-0.01
Income (under $25,000)			
$25,000-$49,999	0.05	0.09	0.01
$50,000-$74,999	0.05	0.10	0.01
$75,000-$99,999	0.07	0.11	0.01
$100,000-$149,999	0.23	0.12	0.05
$150,000 or more	0.51***	0.13	0.08
Spends more than income*Income	-0.03	0.04	-0.03
Revolves credit card debt*Income	-0.05*	0.02	-0.05*
Uses AFS*Income	-0.04	0.03	-0.03
Absence of emergency fund*Income	0.03	0.03	0.03
Objective financial knowledge	-0.03*	0.01	-0.02*
Subjective financial knowledge	0.06**	0.02	0.04**
Financial attitude	-0.62***	0.01	-0.63***
Model Fit Statistics	R^2	0.42	

Note. Data from the 2018 NFCS was used with weights. Sample restricted to only those working full-time. * $p < .05$; ** $p < .01$; *** $p < .001$

Appendix B - Self-Control Techniques

Appendix B Table B.1.

Self-Control Techniques By Gärling and Ranyard (2020) and Karlsson (2003)

Desire-reducing techniques

Avoidance: Avoid places in which impulse buying is tempting

Distraction: Try to think of something else if tempted to buy

Substitution: Give myself a smaller but immediate reward to resist a larger desire

Strengthening-willpower techniques

Precommitment: Leave checkbook and credit cards at home, and only bring a small amount of money when going shopping

Economic cost assessment: Assure that I buy things that are worth the price and not cheaper somewhere else

Time binding: Think of the positive aspects with deferring to buy

Bundling of costs: Think of how much it is going to cost a year for things I purchase often

Regret and guilt: Anticipate if I will feel regret or guilt

Deliberate: Think twice before I buy

Budgeting: Budget and book expenses

Source: Gärling and Ranyard (2020) and Karlsson (2003).