Risk Management For the Future: Age, Risk, and Choice Architecture

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This paper examines how aging interacts with the decision-making environment concerning savings, retirement and well-being. Across multiple experiments, older participants opt for more prudent financial and retirement choices only when cognitive resources are available, and sometimes a reversal of this pattern if they are not available.

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SESSION OVERVIEW

Consumers make important financial decisions throughout their lives. How much should I spend given my income? How much debt is too much? What is the best way to reduce debt? How much should I be saving? Am I saving enough for retirement? How often should I monitor and readjust my investment portfolio? How much risk is too much risk? While such decisions were once thought the exclusive province of finance and economics, they also deserve great attention from consumer researchers. This is vividly illustrated by growing concerns about consumer debt as well as savings and retirement deficits and the huge fortunes made and destroyed in the stock market. Financial decisions have important influences on consumers’ welfare as well as the economy as a whole. We feel strongly that consumer researchers have much to contribute to this area.

These papers seek to explore financial decision making in a variety of contexts using a variety of methods. Each paper tries to answer the following questions: What factors influence why consumers make poor financial choices? What underlying mechanisms are involved? What can be done to help consumers make wiser financial decisions? We believe that this session is uniquely poised to attract academicians, financial service providers and policy makers.

In our first paper, Michal Strahilevitz, Joseph Harvey, and Dan Ariely examine compulsive investor behavior using surveys of active investors. Results suggest significant correlations between trading frequency and many of the personality and emotional patterns associated with addictive behaviors. Specifically, trading frequency is found to be significantly correlated with impulsivity, intense positive and negative emotions, overconfidence, and a belief that most investors are addicted to trading. The paper also examines how both frequent stock trading and frequent monitoring of the market are related to overall physical and emotional health.

In the second paper, Grant Donnelly, Zoe Chance, and Mike Norton study consumer debt repayment in the realm of credit cards. They show that consumers who pay by the line item in their bill pay off significantly more in both items and amounts than consumers who pay solely by a set amount. Furthermore, consumers feel significantly better about financial situation when paying off line item amounts.

In our third paper, Zoe Lu and Chris Hsee show how our perceptions of time alter our savings patterns. Over several experiments, they show how different manipulations of time perception and decision duration can alter savings behavior. They suggest both causal mechanisms and how manipulating the savings period might increase personal saving.

In our fourth paper, On Amir and Orly Lobel show how age interacts with savings decisions, adding an important and heretofore unexamined aspect to the study of consumer financial well-being. They find that older consumers make better financial decisions when resources are plentiful, but that when older consumers are constrained, their financial decisions are worse than those of younger consumers. They offer guidelines for designing financial products that are sympathetic to the interaction effects of age and cognitive resources.

The Relationship Between Frequent Stock Trading and Emotionality, Self Confidence and Self Control

EXTENDED ABSTRACT

Frequent trading has been shown to have a strong negative effect on performance in the stock market (Odean and Barber 2000, Markiewicz and Weber 2013). Yet little has been done to investigate possible underlying causes for frequent stock trading. Our first study examines the relationship between trading frequency and a variety of psychological variables such as impulsivity, overconfidence and the tendency to experience intense positive and negative emotions, both related to trading and in one’s daily lives. In a second study, we will examine the relationships between frequent stock trading, frequent monitoring of one’s portfolio, use of mobile technology, self control, concern for achievement and several physical and emotional health measures including sleep quality, anxiety and a tendency toward unrelated addictions. The results illuminate potential causes and consequences of frequent stock trading and portfolio monitoring.

Study 1

Study 1 involves a survey of 149 active investors. Several significant findings suggest that frequent trading is not only related to overconfidence, but also to addiction, as opposed to a rational trading strategy.

Overconfidence in One’s Skills and a Belief One is Luckier than Others

Although trading frequency is found to have no relationship with confidence in the future performance of US or global stock market, it is positively related to thinking one’s own portfolio will do well in the future as well as to a greater confidence in one’s overall investment skills. Trading frequency is also positively correlated with investors’ tendencies to believe that they are smarter and better informed than the average investor. Outside perceptions of oneself as an investor, more frequent trading is correlated with thinking that one is generally luckier than the average person. Frequent traders are also more likely to attribute their investment losses to bad luck, and their investment gains to their strong research and skill as investors.
More Frequent and Intense Positive and Negative Emotions

We also found that frequent trading is associated with higher propensity to experience intense emotions, both related and unrelated to the stock market. Frequent traders rate both buying and selling stocks as more stimulating and more exciting than infrequent traders do. However, as is the case with several addictive behaviors, frequent trading is also correlated with a greater tendency to experience negative emotions such as regret, worry and self-doubt about one’s decisions, both in regards to one’s investments and in one’s daily life.

Hedonic Dimensions to Frequent Trading

There also appears to be a thrill-seeking dimension to frequent stock trading, supporting the notion that frequent trading may be driven by a need for stimulation rather than a rational investment strategy. Specifically, frequent traders are more likely to see a fun day in the market as one where they realized gains by selling stocks. They are also more likely to see a dull day in the market as one where they did not sell or buy any stocks. In contrast, infrequent traders are more likely to agree that a fun day in the market is one where they see the value of their portfolio grow without any executions. Frequent traders also rate both buying and selling stocks as significantly more stimulating and more exciting than infrequent traders do.

Frequent Traders Are More Impulsive, Less Careful and More Likely to See Trading as an Addiction

There are also several personality characteristics that are correlated with trading frequency. Specifically, frequent traders rate themselves as significantly less careful, both as investors and in their daily activities (unrelated to investing). Compared to infrequent traders, frequent traders also repeatedly rate themselves as more impulsive when buying stocks, selling stocks and making decisions unrelated to investing. Frequent traders are also more likely to indicate that they themselves are addicted to trading, suggesting some self-awareness. However, trading frequency is also correlated with significantly higher estimates of the percentage of all American investors who are addicted to stock trading.

Study 2

In Study 2 (in progress), we will examine the relationships between frequent monitoring of one’s portfolio, use of mobile technology, and several physical and emotional health measures including anxiety, disordered sleeping, disordered eating, depression, and issues with anger and frustration. Because a connection has been found between intense emotions and several unhealthy compulsive behaviors (Kemp, Bui, Grier 2011), we consider identifying the connection between emotions and frequent trading to be particularly promising. The role of mobile technology is also of great interest, not only due to the huge growth in smart phones and tablet usage, but also based on previous work showing that access to gambling opportunities increases compulsive gambling behavior (Lester 1994). Based on prior findings connecting compulsive gambling with other addictions (Cowlishaw &Thomas 2011; Martin, Usdan, Cremeens, Vail-Smith 2014; Najavits, Meyer and Johnson 2010), we will also explore possible co-morbidities with addictions unrelated to the stock market.

Piecemeal Repayment: Paying Toward Specific Purchases Promotes Higher Repayments Toward Debt Balances

EXTENDED ABSTRACT

Consumers treat credit differently than other forms of payment. People spend more when using credit cards compared to cash or checks (e.g., Rick, Cryder & Loewenstein, 2008). Possibly, the reason credit cards increase spending is because they allow the consumer to separate the pleasure of buying from the “pain of paying” (i.e., the discomfort of spending money; see Prelece & Loewenstein, 1998), and make the true cost of each purchase more difficult to evaluate by compiling all consumption in a monthly bill (Raghur-hubir & Srivastava, 2008), reducing the total loss felt by a consumer (Thaler, 1985).

While this strategy has likely contributed to the accumulation of debt, recent research concerning debt repayment has suggested that aggregated debt balances are overwhelming and difficult to repay. For instance, when consumers are confronted with multiple debts they often prioritize the debt with the smallest balance first (even when this is not the most financially optimal strategy; see Amar et al., 2011). This tendency is aligned with the literature on sub-goals, suggesting that a short, proximal task will help fuel commitment toward subsequent larger tasks (Gal & McShane, 2012).

Given these conditions, this paper proposes that segregating losses by allowing consumers to make payments toward each individual purchase on a credit card bill could increase awareness of what the consumer is repaying. This awareness may increase the perceived impact the payment will make toward the debt balance, resulting in higher repayments.

In our first study, subjects were presented with a hypothetical purchasing scenario where they made purchases on a credit card totaling $1,376.00. All participants were told they had $800 to spend on a variety of expenses for the month (including their credit card payment). They then allocated the $800 across these expenses. For the credit card bill, half of our participants were asked to make a payment toward the total debt balance, while the other half were able to make payments toward specific line items that composed their debt. Consumers who were able to repay toward specific purchases allocated more money toward debt repayment ($M = 561.64), than those who paid toward the aggregated balance ($M = $473.50), p < .001.

Our first study provides initial support for our hypothesis that individuals will repay more when able to make purchase-specific repayments. But would consumers prioritize repaying a debt that allowed piecemeal repayment over debts that allowed payment toward the total balance? In a second study, participants (N = 180) were presented with the same hypothetical purchasing task but were told that half of the purchases were made on a credit card that allowed payment toward the individual purchases (a total balance of $688.00), while half were made on a credit card that allowed payments toward the total balance ($688.00). Consumers paid significantly more toward the card that allowed repayment toward specific purchases ($M = $333.01), relative to the card that allowed repayment toward the total balance ($M = $230.43), p < .001.

In our third study we wanted to explore the underlying mechanisms of increased repayment. We programmed a debt repayment simulation where all participants (N = 236) were asked to evaluate a credit card statement that consisted of 10 items totaling a debt of $888.44. Participants were asked to imagine that the debt was their own and that they had $500 to put toward their debt repayment or keep for other expenses throughout the month. Participants were required to make a minimum payment of $37, but could make any payment up to $500. Participants were randomly assigned to one of two conditions: (a) in the whole balance condition, participants made a payment toward their total bill. In the piecemeal repayment condition, participants made repayment decisions toward specific purchases. Participants in these conditions were instructed to click a particular line item they wished to make a payment toward. Once the participant clicked on the line item a payment window appeared and
the participant selected their desired payment toward that line item. Participants could make a partial or full payment. In the instances where the line item was ‘paid off’ the item would disappear from the bill. There was a significant differences in the amount paid toward the credit card balance, $r (235) = 5.33, p = .001. Individuals in the whole balance condition paid significantly less ($M = 189.60) toward their debt than individuals in the piecemeal repayment condition ($M = 283.18). Participants were asked how much their payment method made them feel aware of what they were repaying and how much their payment made them feel that they made a significant impact toward their debt balance. The piecemeal repayment condition found higher reported awareness ($p < .001) and feelings of impact ($p < .01)

Next, we examined a mediation model, where awareness and impact were tested as a mediator of the link between payment condition and repayment decision. We found that (a) the piecemeal repayment condition significantly predicted higher awareness (i.e., path a; $B = .24; p < .001); (b) awareness significantly predicted greater feelings of impact (i.e., path b; $B = .39; p < .001); (c) impact significantly predicted higher repayment (i.e., path c; $B = 33.94; p < .001); and (d) the link from piecemeal repayment to higher repayment (i.e., path d; $B = 13.06; p < .001) was attenuated after awareness and impact were entered into the model (i.e., path d' $= .92$). The bootstrapping results indicate a significant indirect effect through awareness and impact, $b * c = 3.18, 95\% CI [1.90, 5.06].

Across three studies, we have demonstrated that allowing consumers to make payments toward specific purchases results in significantly higher repayment. Given that recent research evaluating the effectiveness of the CARD Act has found no substantial positive effect on repayments (Navarro-Martinez et al., 2011), allowing for piecemeal repayment could be a relatively low-cost intervention that could save consumers a substantial amount of money in interest over time.

Low-Asking Heightens Demand and High-Asking Lowers Demand

EXTENDED ABSTRACT

Imagine the following. A bakery is running a promotion on cookies which can last one month. He displays an advertisement in front of the store for the product. Consider three alternative scenarios of what the advertisement says.

Scenario 1: “Buy for the whole month and save!”

Scenario 2: “Buy for the whole month and save! To decide how many to buy for the month, think about how many you would likely eat in one week.”

Scenario 3: “Buy for the whole month and save! To decide how many to buy for the month, think about how many you will likely eat in one year.”

Notice that in all the scenarios the advertisement includes a “suggesting statement” - “Buy for the whole month and save.” In Scenarios 2 and 3, the advertisement contains an additional “asking statement” – asking prospective buyers to think about their consumption quantity for either one week or for one year. The question we try to address in this research is: In which scenario will potential buyers buy the most, and in which scenario will they buy the least?

Our theory capitalizes on two psychological phenomena: low-inter-person duration-sensitivity and high intra-person duration-consistency. Low-inter-person duration-sensitivity suggests that if one person is asked to estimate her consumption quantity in a short duration and another person is asked to estimate her consumption quantity in a long duration, their estimates will be relatively close. For example, if one consumer is asked to estimate her cookie consumption quantity in one week and another to estimate her cookie consumption quantity in one month, the first person may say 10 for one week and the second person may say 20 for one month. The ratio of 10 to 20 (=2) is smaller than the ratio of one month to one week (=4).

On the other hand, high intra-person duration consistency indicates that if the same person is first asked to estimate her consumption quantity in a short duration and then her consumption quantity in a long duration, her estimates will be roughly consistent with the difference in time. For example, if the same person is first asked to estimate her cookie consumption quantity in one week and then her cookie consumption quantity in one month, she may say 10 for one week and 40 for one month. The ratio of 40 to 10 is consistent with the ratio of month to week (=4). (This is just a stylized example; in reality, we do not expect the two ratios to be exactly identical.)

Put together, low inter-person duration sensitivity and high intra-person duration consistency suggest that if one person is directly asked to estimate her consumption quantity in a short duration (e.g., one month), and another person is first asked to estimate her consumption quantity in a short duration (e.g., one week) and then her consumption quantity in the long duration (e.g., one month), the second person will estimate a higher consumption quantity for the long duration than the first person. So long as one’s purchase quantity roughly matches one’s estimated consumption quantity, the second person will also buy more for the long duration than the first person.

Hypothesis 1: (low-asking). Consumers will buy more units of a product for a given duration ($T_{purchase}$) if they are first asked to think about how many units of the product they will likely consume in a shorter duration ($T_{rel_1}$) than if they are not so asked.

Just as we propose low-asking will increase purchase quantity, we propose that high-asking will decrease purchase quantity. For example, if one person is directly asked to estimate her consumption quantity in a short duration (e.g., one month) and another is first asked to estimate her consumption quantity in a long duration (i.e., one year) and then her consumption quantity in the short duration (e.g., one month), the second person will arrive at a lower estimate for the short duration than the first person.

Hypothesis 2: (high-asking). Consumers will buy fewer units of a product for a given duration ($T_{purchase}$) if they are first asked to think about how many units of the product they will likely consume in a longer duration ($T_{rel_2}$) than if they are not so asked.

Our theory not only predicts that the counter-anchoring effect can occur, but also predicts when it disappears. The key moderator, we propose, is whether the prospective buyer has a specific purchase duration, $T_{purchase}$, in mind. If the prospective buyer does have a specific idea, the asking procedure will exert a “pushing” (contrasting) force and create the counter-anchoring effect. Otherwise, the asking procedure will exert a “pulling” (assimilating) force and generate the conventional anchoring effect.
Hypothesis 3: (moderator). If a consumer has a specific idea about the purchase duration (T_purchase), an asking procedure about a different duration (T_asking) will create the counter-anchoring effect, as posited in Hypothesis 1 and Hypothesis 2. If a consumer does not have a specific idea about the purchase duration (T_purchase), an asking procedure about a different duration (T_asking) will create the traditional anchoring effect.

We have conducted five experiments to test our theory. Together, Study 1 and Study 2 demonstrated that the presence of an asking statement could either increase or decrease purchase quantity depending on the length of T_asking relative to the length of T_purchase. Study 3 produced both the conventional anchoring effect and the counter-anchoring effect, and within the counter-anchoring effect, it demonstrated both the low-asking effect and the high-asking effect. Study 4 suggested that a long T_purchase alone was unable to significantly boost purchase quantity, but a long T_purchase coupled with a short T_asking was. Study 5, a field experiment, replicated the low-asking effect in a national chain store in the U.S.

A potential application of the low-asking effect is in savings. Asking individuals to estimate their annual need will potentially increase their estimate of the need for the rest of life, hence affecting their saving behavior. Meanwhile, a potential application of the high-asking effect is to nudge individuals to waste less.

**Risk Management for the Future: Age, Risk, and Choice Architecture**

**EXTENDED ABSTRACT**

How can regulation in an era of personal responsibility aid people to make the optimal decisions about their future risks, savings, and retirement? The current work aims to shed light on preferences for risk and retirement savings as a function of both age and the processes underlying the preference dynamics. Above and beyond rational reasons for varying preferences across different ages, such as differences in the life length of an investment, predicted career cycles or the proximity to retirement, there may be psychological differences among age groups. In order to disentangle these different effects, we designed a set of studies that presented various retirement-related decisions involving risk to people of various age groups. In order to shed light on the underlying psychological mechanisms, we manipulated the degree of available cognitive resources to try and mimic different decision conditions and states.

In the two sets of experiments involving large sample of a fairly representative population demographic and standard investment, savings, and insurance decisions, we observed age differences in judgment and decision-making pertaining to future savings and risk. In particular, we find that when deferring a tax rebate, younger and older people seem to be more patient than mid-age people when depleted of executive control resources, but no such effect in the control condition. With respect to savings, we find older participants more likely to opt-in to a Save-More-Tomorrow (SMT) program than younger ones, but not when they are depleted. We also find younger people to opt for an annuity over a lump-sum payoff, but this tendency is decreased when depleted. Furthermore, we find a general increased aversion to risk in an investment as people age, a general increase in risk taking as people are depleted of executive control resources, and a significant interaction, whereby, when depleted, older participants tend to take even more risk than their younger counterparts. This also manifests in selection of health insurance.

Overall, when cognitive resources are available, our findings show that older participants opt for more prudent savings choices. Although older people on average seem to choose the more rational options among available alternatives, in the sense of planning and saving, this pattern may not hold in situations that do not allow the luxury of executive control override, such as when tired, sick, distracted, or even after making a series of arduous other choices. In some instances, we also find the depletion of cognitive resources has an increased influence over older participants compared to younger participant. It is possible that older people not only rely more on executive control when making such decisions, but are also more susceptible the effects of depletion.

The findings that younger people are more likely to exemplify risk-taking behaviors while older people are more risk averse supports previous studies in the field, although the study of the interactions between age and risk tolerance has proven a challenge in the social sciences (Halek and Eisenhauer, 2001). The literature indicates that older investors tend to have different attitudes toward risk than younger age groups, and yet, many of the findings have been non-conclusive and even contradictory. At the turn of the century, it was widely believed to be true among financial planners that the older a person was the more risk averse (and less risk tolerant) they became. (Grable and Lyttton, 1999; Gilliam et. al, 2010; Palsson, 1996; Bakshi and Chen, 1994). However, other studies have concluded that, after accounting for other variables, age either has little to no bearing on a person’s risk tolerance (Hanna et. al, 2001), or that older generations may be even somewhat more risk tolerant than younger ones. (Wang and Hanna, 1997; Hanna et al, 2001). Our findings can help explain why previous research has mixed results when it comes to the effect of age on a person’s financial risk tolerance.

At a theoretical level our findings suggest that much of the difference in financial choices between older and younger decision-makers lies in the ability of the decision-makers to override their intuitive and automatic responses (System 1) to such decisions. In other words, making more prudent financial choices appears to be a learned skill that relies on executive resources (System 2) for its execution. At a policy level, as the regulatory field is moving from command-and-control rules to the provision of menu options and choice architecture, our findings provide potential guidelines for better designing retirement and savings plans, such as the implementation of SMT-style programs and the encouragement of annuity over lump sum retirement benefits.

**REFERENCES**


