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Income Source Effect of Expectations and Seriousness on Spending Behavior

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“Income Source Effect of Expectations and Seriousness on Spending Behavior”

An Honors Thesis Presented by Ethan Sweeney
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Connecticut College
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Abstract

Mental accounting bias is the practice of people categorizing money and making financial decisions based on those categories without being explicitly cognizant of these groupings. Income sourcing is a type of mental accounting bias when people spend money differently based on how they came into possession of that money. This study focused on measuring various forms of income sourcing and their impact on spending behavior. In particular, this study analyzed how people make spending decisions when they have earned money in either a frivolous or a serious manner, and alternatively how people make spending decisions when they have either an expected or unexpected financial windfall. There are several other studies that have researched income sourcing in relation to serious and frivolous financial windfalls. In these studies, research has shown that people tend to spend their money in similar respects to how they earned the money. My study of frivolous/serious income sourcing, as expected, confirmed prior studies' results. Importantly, my study found that this effect is present both when the income is expected and when it is unexpected. There are very few studies before this one that research the role of expectations in income sourcing. Contrary to expectations, this study found that expectations of income had no effect on how people chose to spend their money.

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I. Introduction

In *The Armchair Economist*, Steven E. Landsburg said that “Most of economics can be summarized in four words: ‘People respond to incentives.’ The rest is commentary” (1). The natural extension of this definition of economics is that people respond in predictable and rational ways to incentives. The theory of rational choice is one of the most fundamental ideas within economics. The theory that people react to incentives in ways that benefit them serves as the underpinnings of most economic theories. Theories of pricing, labor, and the stock market all rest upon the idea that people take all available information and make decisions beneficial to themselves based on that information. Commonly, these assumptions prove to be fairly accurate, and they help institutions as big as the central bank and as small as your local mom and pop shop make good decisions. However, in some circumstances rational choice fails to be a reliable assumption. To solve these blind spots in theory, economists have begun to take a closer look at when and how peoples’ choices differ from a theoretically rational approach. This field of economics has come to be known as behavioral economics.

Behavioral economics has burgeoned as a field of study in the past few decades, both gaining prominence and producing ample amounts of good research. Behavioral economics approaches economics more personally, putting meat on the bones of theory by studying the human element more closely. Findings in behavioral economics deviate strongly from research of the past, and its most significant development is its study of heuristics. People are biased, and often use mental shortcuts in order to make decisions. These shortcuts are often at odds with rational economic thought. This obviously affects the way we think about economics, and it is important that we continue to learn about bias because it impacts how economists understand decision making and responses to incentives.

This study focuses on mental accounting bias in particular. People often view their money as part of a context, categorizing it by income or by how it will be spent. Interestingly, people employ this type of categorization quite frequently and without realizing it. Mental accounting bias is extremely consequential because it violates the notion that money is fungible, meaning that people view money based on its context, a finding which deviates heavily from rational choice theory.

This paper will research income source effect, how the source of income impacts the context and treatment of that money. In this paper, I aim to recreate O'Curry's (1997) study that demonstrated that people often spent income obtained frivolously in ways they considered frivolous, and vice versa for money obtained seriously. I also plan to expand upon this initial research by introducing the role of expectations into the income, for which there has been very little research within mental accounting. The goal of this study is to gain better insight into how mental accounting works, and whether unforeseen income has an impact on peoples' categorization of money.

I will begin my study by researching the relevant literature, focusing in particular on developments in mental accounting, income source effect, and spending behavior. This research gave me a good basis for designing a comprehensive study that both incorporates the findings of past research and expands upon that research with the goal of providing new and interesting evidence. I surveyed a number of random participants and introduced them to different prompts that frames income in different ways, testing across the two axes frivolous/serious and expected/unexpected to determine if there are differences in spending behavior in respect to these frames of income. Prior studies, which I review in the next section, led me to hypothesize that

there will be pronounced differences across both axes, and that these frames do impact participants' perception of events and subsequent decision making.

II. Literature Review

i. Mental Accounting

Daniel Kahneman, who won a Nobel Prize for his application of psychology in economics and is sometimes referred to as the grandfather of behavioral economics, did a great amount of research that significantly developed theories of mental accounting. In “Choices, Values, and Frames”, Kahneman and Tversky (1984) conducted a famous experiment in which they frame the loss of a theater ticket in different ways. In each scenario, the theater ticket cost \$10. In the first scenario, the person loses \$10 on the way to the theater. In the second scenario, the person loses the theater ticket inside the theater after already having bought the ticket. The situations are functionally the same. In each situation, a person hoping to go see a movie loses \$10, or a ticket that is the value of \$10, and must make the decision of whether to purchase another ticket or not see it. Kahneman and Tversky found that people were much more likely to purchase a ticket if they had lost \$10 in cash on the way to the theater rather than if they had lost the theater ticket itself. Since this study, others like it have yielded fantastic and interesting new discoveries.

Richard Thaler, often credited as the father of behavioral economics, produced the important article “Mental Accounting Matters” (1999). This work offers a thorough explanation of what mental accounting is and the many ways that it can affect decision making and therefore why it is so important to the field of economics. Thaler offers this persuasive case by compiling and analyzing a great number of prior studies on mental accounting. Thaler identifies three main

components of mental accounting. The first is how perceptions of events and experiences can impact decision making, and how decisions are subsequently perceived. The second is the assignment of money to certain accounts. The third component of mental accounting is concerned with how often accounts are evaluated. The study I am researching pertains to the first two components of mental accounting: framing and categorization.

Thaler (1999) offers a number of findings that show the importance of these two aspects of mental accounting. Another study by Tversky and Kahneman (1981), outlined by Thaler, demonstrates the power of framing. In this paper they asked participants about two scenarios: In each scenario participants were hoping to purchase an item that could be found at two stores, one close and one far away. In both circumstances, the item was \$5 less expensive at the store that was further away. The difference between the scenarios is that in one scenario, the price of the good was only \$15, while in the other the price of the good was \$125. Tversky and Kahneman found that people were much more likely to drive to the further store to save money for the \$15 purchase rather than the \$125 purchase. A rational approach would note that the customer, if \$5 is considered sufficient value to drive to the other store, should wish to save \$5 in both situations. However, as Thaler notes, people tend to think that the difference between 10 and 20 is greater than the difference between 1000 and 1010. The bigger numbers tend to change peoples' perception of small differences. This study and others demonstrate that framing is important because perception changes peoples' decisions, when a rational approach would determine they should be the same.

Hirschman (1979) provides a paper that likewise shows the impactfulness of categorization. Hirschman interviewed 4,000 participants between two department stores in two different cities to research the impact of credit cards on consumer behavior. She found that

people with a credit card were likely to spend more money, and that the more credit cards a person has they were likely to spend more money. It appears that consumers viewed these credit cards as different accounts that they could draw from, and this act of categorization influenced them to spend more money than they ordinarily would. People with credit cards were able to excuse their expenses because spending small amounts across accounts felt like less than withdrawing a large amount of money from any one account. Hirschman demonstrates in this study that consumer behavior can be significantly impacted by mental accounting.

In “Probability and Mode of Acquisition Effects on Choices Between Hedonic and Utilitarian Options” (2001), another study about modes of acquisition, O’Curry and Strahilevitz studies peoples’ preference for different ways to purchase items based on which items they were purchasing. This research has implications for categorization. In the study, O’Curry and Strahilevitz offered two scenarios, one in which a person is buying a frivolous good, perhaps something entertainment related like a TV or a ticket to a game, or a serious good, something more practical such as the electricity bill. In this study, frivolous and serious are referred to as hedonistic and utilitarian. The researchers then asked whether participants would rather win the good through winning a raffle, or to purchase the good itself. The paper suggests that consumers would rather win the frivolous goods, but would rather pay for the serious goods. Camerer (1988) has noted that rationally gifts should be things that people would purchase for themselves, such as serious goods, as this would save them more money than the gift of a frivolous item, but people hardly want to receive a card that tells them their electric bill has been paid for the month. The authors note that part of this difference may be that windfalls are not analyzed by potential value the same way a standard purchase may be, but by the anticipation utility that may be gained from winning that prize. Of course, it is much more exciting to anticipate winning a

hedonistic good that a person may not ordinarily purchase for themselves than to imagine a utilitarian good which may have been bought anyway (Lowenstein, 1987). This, too, offers a glimpse at mental accounting and the habit of categorization. Of course, consumers could just as easily win a utilitarian prize and use the money they saved on a purchase of their choosing, but this is not how consumers interpret their position. People, while not rational, care about how they purchase or acquire various types of goods.

ii. Income Source Effect

In “Mental Accounting Matters” (1999), Thaler points to a phenomenon called income accounting, which is pertinent both to framing and to categorization. Income accounting asserts that people interpret different types of income very differently, and make vastly different decisions based on this context. Thaler notes one study in particular named Income Source Effects (O’Curry, 1997). This study seems to be mainly concerned with the first two components of mental accounting: context and categorization. First, participants were asked to rank both various spending options and income sources on a scale from frivolous to serious. Winning the office football pool was frivolous, while an income tax refund was serious. As for expenses, eating at a restaurant was frivolous and paying the bills was considered serious. Subsequently, participants were given scenarios that involved them receiving different kinds of windfalls and were asked to provide how they would spend their money. O’Curry found that participants were more likely to match the income source with the type of expense along the serious-frivolous scale, so that an income tax refund might be used to pay the bills rather than go out to eat. Unfortunately, O’Curry’s study is unpublished, and therefore unavailable, so the only account of this study is Thaler’s. Fortunately, Thaler provides other studies with similar results. Henderson and Peterson (1992), for example, found that people were more likely to purchase a vacation

with \$2000 that they received as a gift, rather than if they had received that same \$2000 as a work bonus.

More studies have aimed to recreate O'Curry's (1997) initial study. Muehlbacher and Kirchler (2019), in their study "Individual Differences in Mental Accounting", sought to find out whether there were significant differences in mental accounting corresponding to people with differences in personality traits. As a part of this longer study, Muehlbacher and Kirchler recreated O'Curry's original study, while expanding it to research whether dollar amounts affected the income source effect. The study included 114 people, and borrowed the scenarios given as examples by Thaler. Participants were given one of two scenarios. The first scenario narrates them winning money at a casino, and the second scenario narrates them collecting money from a tax return. These scenarios were also tested with different dollar amounts, so each scenario depicted the participant either receiving €25 or €250. Following these scenarios, participants were asked to rank several spending choices (buying a present for oneself, birthday and Christmas presents, clothing, eating at restaurants, paying the bills, and saving the money) by which option they were most likely to put their money towards.

Following these scenarios and responses, participants were asked to rank both income sources and the expenditure options on two seven point likert scales, one ranging from boring (1) to exciting (7) and the other ranging from serious (1) to amusing (7). These two scales were combined to create scores for each category on a frivolous (1) to serious (7) scale. Muehlbacher and Kirchler used these rankings to determine which options were considered significantly serious (paying the bills, savings) or frivolous (clothing, present for oneself, birthday/Christmas presents). Eating at restaurants was not found to be significantly serious or frivolous, and was therefore excluded from the study. Muehlbacher and Kirchler analyzed the results and found that

there was a strong correlation between income source and expenditure matching in frivolousness/seriousness, just as had been demonstrated in O'Curry's original study. Furthermore, the researchers found that the amount of money spent made no difference in the responses.

Income source effects are important because there are many examples of ways that people use income sourcing, and these examples have real world implications. One example of this can be found in Kooreman's (2000) paper "The Labeling Effect of a Child Benefit System". In this paper, Kooreman researched Dutch child benefit services and attempted to find how it affected spending. Kooreman finds that people have a much greater demand for children's clothing when the money comes from the child benefit programs rather than other income sources. Purchases of children's clothing is sensitive to how much a family receives in benefits specifically designated for children, but much less likely to change their consumption based on other changes in income. This again suggests that people are engaged in income sourcing, and matching expenditures with their income source. People feel as though they must spend child benefits on something that directly benefits their child, and therefore end up purchasing a much greater amount of clothing than seems to actually be demanded.

While there are several studies on income source effect that study the impact of categorization and the difference between frivolous and serious income sources and expenses, there has been relatively little research related to expectations. This differs heavily from other areas of economics, where expectations have been studied extensively and play an important role in economic theory.

iii. Expectations

Expectations have long had a significant role inside of economics. Expectations are a driver of human activity and incentives and can have widespread macroeconomic impacts. Inflation is probably the most common example of an economic event that can stem from expectations. If consumers believe that prices are likely to increase in the future, they will purchase greater quantities in the short run in an attempt to get ahead of future price hikes. This only fuels demand and increases inflation further. Things can quickly turn into an inflationary spiral. The Federal Reserve keeps a close watch on inflation, and observes what people expect inflation levels to be the following year. Expectations play a big role in the economy, going so far as to influence monetary policy. Expectations then, are a big deal in economics.

Expectations can have big impacts on a more personal level as well. While expectations can create inflation, it is only because of the force of many people making individual decisions guided by their expectations. People act on their expectations, purchasing more upfront in order to get ahead of higher prices. One example often given in early economic classes is the prospect of an increase in income. When someone is expecting to see a rise in income, they will raise their level of expenditure sooner rather than later, knowing that they can sustain these expenses in the near future. While people do adjust their behavior based on what they expect to happen, studies about unexpected events are equally interesting.

In one paper, Cullen, Friedberg, and Wolfram (2005) research consumers' reactions to both anticipated and unanticipated increases in energy costs. This study was mainly composed of people with liquidity constraints, with consumers that have interest or dividend income and may be considered financially savvy making up only 25% of the sample. The authors find that people practice consumption smoothing, meaning that anticipated increases in cost cause very little

variation in consumption. Consumers, even those with low incomes are able to anticipate and compensate for increases in energy prices, so that their lives are not largely affected.

Unanticipated increases in price, however, demonstrate a much larger effect. The authors found that this can cause consumption levels to swing by 40 cents for every dollar of unanticipated increase in energy prices. This paper suggests that while anticipated costs cause very little variation in behavior, unanticipated negative income shocks can create extreme reactions.

Druedahl and Martinello (2022) find similarly extreme results for large unanticipated financial windfalls. The authors research the long-run impact of a large positive income shock by studying sudden deaths of parents that leave behind a large inheritance for their children. For the purposes of the study, they excluded inheritances that were not likely to make a long-term financial impact on the lives of the children. In this research, Druedahl and Martinello find that inheritances obtained in this sudden way were not likely to last. Children, after receiving the inheritance, eventually reverted to their initially projected retirement savings, with the inheritance not having any long term effects on long-run economic welfare. This truth is even more so the case for liquid assets, which the authors have found are typically gone within six years. This study suggests rather large implications for large, unexpected positive income shocks, with inheritors' consumption compensating for this increase until they have reverted back to an initially projected level of savings. This study leaves interesting implications for the nature of unexpected windfalls, which is further explored in this study.

To summarize the research that I have just reviewed, many studies have shown the importance of categorization on decision making (Thaler, 1999; Kahneman and Tversky, 1984; O'Curry and Strahilevitz, 2001; Hirschman, 1979) and the equally influential research that has been done on perspective (Thaler, 1999; Tversky and Kahneman, 1981). Of particular interest for

my study is income sourcing, which has elements of both framing and categorization. O'Curry (1997) has had a significant influence on the creation and design of my study. Her original study, which tested the effect that serious and frivolous income had on spending, serves as the basis for my research, which takes and expands upon this question. Muehlbacher and Kirchler provide the framework for many of the design choices of this study, influencing the prompts and the expenditure options that participants were given to choose from. In addition, some of the data analysis was influenced by the procedures followed by Muehlbacher and Kirchler (2019). Druedahl and Martinello's (2022) study on unexpected large income shocks also influenced my study. Their study convinced me of the potential impact that unexpected income can have on spending behavior. In Muehlbacher and Kirchler's (2019) study, researchers fail to separate expectations from seriousness, giving participants a prompt where they earn a tax return or a prompt where they earn gambling winnings. A tax return is both serious income, but also expected income. Gambling winnings are frivolous income as well as unexpected. Muehlbacher and Kirchler (2019) has interesting results, but fails to properly isolate frivolous and serious variables from expected and unexpected variables. My study isolates these variables to find the impact that each has on spending.

III. Methodology

i. Participants

This study used a Qualtrics survey to gather information from 820 respondents, of which 17 were discarded and 803 responses analyzed. Of these participants, 395 were male, 386 were female, 18 non-binary, and four elected not to say. All participants were over the age of 18 and

resided within the United States. The mean age for participants was 38.7 years old. Participants of this study were remunerated with compensation of \$1.50 in consideration of their time.

ii. Materials and Procedures

First, participants were asked to read and sign a consent form by clicking a button agreeing to the terms specified. The consent form included information about their rights, who I am and my contact information, and the general nature of the study and their participation. The consent form included information on who to contact if they had any questions or concerns about the study or their participation in the study.

After reading a short introduction to the study, participants were introduced to one of four prompts. This study draws from O'Curry (1999), and borrows from the recreation of her study by Muehlbacher and Kirchler (2019). The study introduces scenarios based upon the binary frivolous/serious categorizations used in both studies, and introduces another axis: expected/unexpected. These elements are combined to create four different scenarios that participants were prompted with, which can be found in Table 1. The participants were randomly assigned a scenario, and were largely evenly distributed across scenarios. While unable to incorporate the exact prompts that O'Curry (1999) and Muehlbacher and Kirchler (2019) used, one prompt implemented the reception of a tax return, one of the prompts ranked as serious in O'Curry's initial study. The other prompt utilized the receipt of a birthday card that contained money in it, which serves as the frivolous prompt. To simulate expectation, the scenario tells each participant that they are expecting a certain sum of money. Depending on the scenario, a participant will either receive the amount of money they expected, or receive more money than they expected. In both the expected and unexpected scenarios, the money the participants received was the same, so responses were not affected by the amount of money they got.

Following these questions, participants were asked to choose how they would spend the money and were given a choice between six expenditure options, which were taken directly from Muehlbacher and Kirchler (2019) and can be found in Table 2. Following this single choice question, participants were asked to rank the options in order from most likely to least likely to spend the money on. After these steps, participants were asked to answer a few comprehension questions to make sure that respondents were paying attention to the survey prompts. This was followed by a series of demographic questions so that I could establish whether there were differences in responses between demographic groups. The demographic categories asked about were age, gender, race, household income level, education level, employment status, and political affiliation. The scenarios and following questions are designed to gather information both on how income sourcing by serious/frivolous affects spending decisions, and also how expectations impact categorization and spending decisions.

Table 1

	Frivolous	Serious
Expected	<p>Consider the following hypothetical scenario. Please read it carefully because comprehension questions will check for your understanding.</p> <p>Each year your Uncle sends you a birthday card that contains \$200. With your birthday right around the corner, you look forward to the \$200 you expect to receive from the card.</p> <p>When you open up the envelope this year you are happy to see the familiar \$200 that your Uncle always gives you.</p> <p>You now think about how you will use the expected cash.</p>	<p>Consider the following hypothetical scenario. Please read it carefully because comprehension questions will check for your understanding.</p> <p>Each year you make the same salary and have come to expect paying the same amount in taxes and receiving the same tax return. As tax season draws closer you look forward to the \$200 you can expect to receive from filing.</p> <p>When you go to file your taxes this year you are happy to see that your expected return is the familiar \$200.</p> <p>You now think about how you'll use the expected cash.</p>

	(212 Respondents)	(191 Respondents)
Unexpected	<p>Consider the following hypothetical scenario. Please read it carefully because comprehension questions will check for your understanding.</p> <p>Each year your Uncle sends you a birthday card that contains \$50. With your birthday right around the corner, you look forward to the \$50 you expect to receive from the card.</p> <p>When you open the envelope this year, you are shocked to find a sum of money much greater than what you usually expect. This year your Uncle has given you \$200.</p> <p>You now think about how you will use the unexpected cash.</p> <p>(210 Respondents)</p>	<p>Consider the following hypothetical scenario. Please read it carefully because comprehension questions will check for your understanding.</p> <p>Each year you make the same salary and have come to expect paying the same amount in taxes and receiving the same tax return. As tax season draws closer you look forward to the \$50 you can expect to receive from filing.</p> <p>When you go to file your taxes, this year, you are shocked to find that the expected return is far more than you had anticipated. This year you will be getting a return of \$200.</p> <p>You now think about how you will use the unexpected cash.</p> <p>(190 Respondents)</p>

Table 2

Ordinal rank	Spending Option	Frivolous Score
1	Present for Oneself	5.93
2	Clothing	5.61
3	Birthday/Christmas Present	5.36
4	Eating Out	4.10
5	Saving	2.61
6	Paying the Bills	1.96

IV. Results

In total, 803 full responses were collected from participants; the full breakdown of responses can be found in Figure A.

Figure A

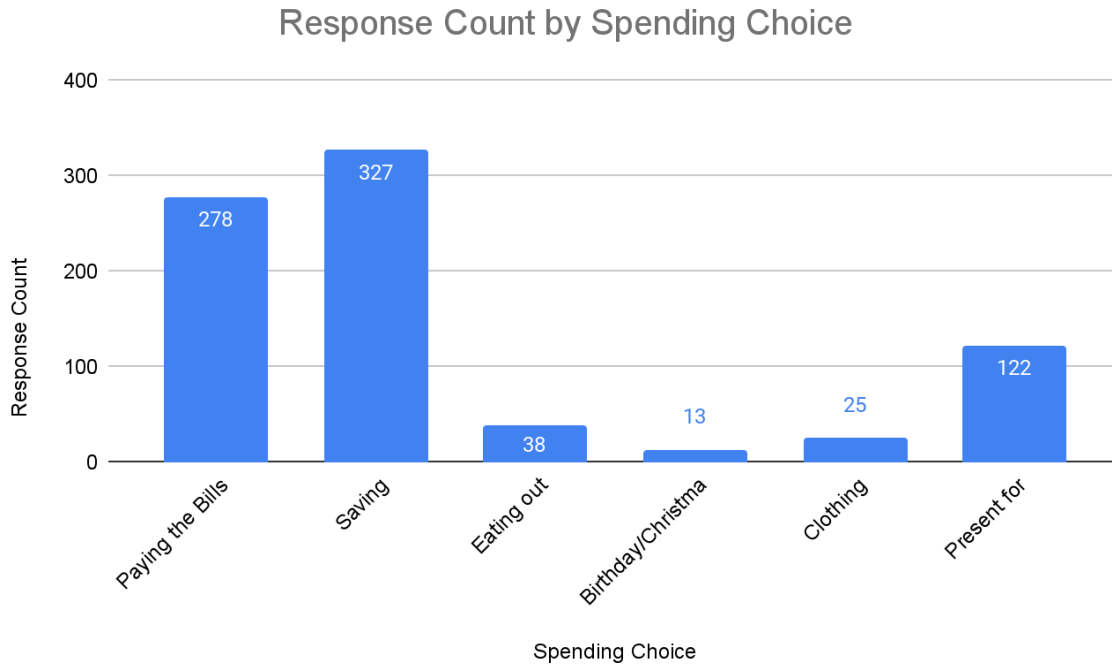


Figure A shows the responses that participants gave when asked to provide a single choice of what they would spend their money on in response to the prompt they were given. Using the scores provided by Muehlbacher and Kirchler (2019), participants' responses were organized into ordinal rank by numbers 1-6, with present for oneself ranked 1 and paying the bills ranked 6. Figure A shows the frequency that each rank was chosen. In addition, as done in Muehlbacher and Kirchler (2019), the responses were also organized categorically into binary serious or frivolous categories. The serious category contained both saving and paying the bills expenditure options, while the frivolous category contained present for oneself, clothing, Birthday/Christmas present, and eating out¹. This data was analyzed in two ways. First, I analyzed the data using the ordinal expenditure choices. The distribution of these choices can be found in Figure A. I also tested for differences in expenditures using a binary dependent variable, with responses divided

¹ Rather than exclude responses that chose eating out, as Muehlbacher and Kirchler (2019) did in their study, this data was included, however its presence did not impact the overall results of my analysis.

between serious expenditures and frivolous expenditures. The results proved to be consistent across both approaches, although the difference between responses was more pronounced when tested by binary distribution.

i. The Role of Serious/Frivolous Income Categorization on Spending

Below, the response distribution of those who received the serious income prompt is shown in Figure B. Figure C shows the distribution of responses to the frivolous income prompt. I used a chi-square test on the ordinal distribution of responses to find differences between those who responded to the serious income prompt and those who responded to the frivolous income prompt.

Figure B

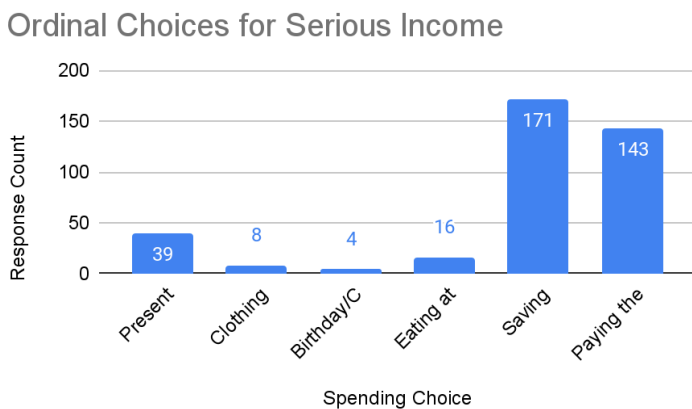
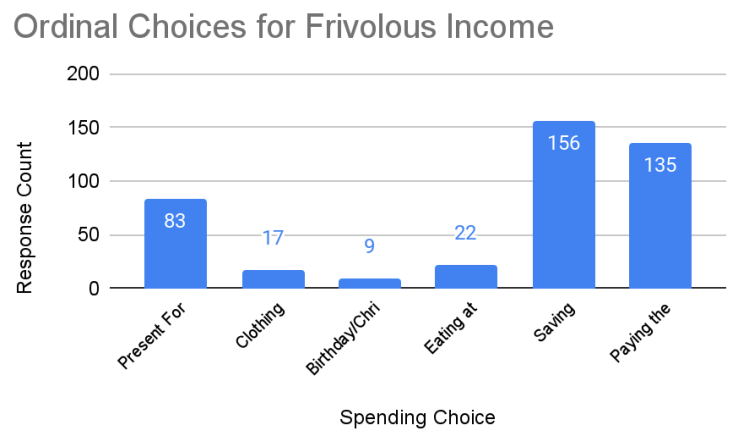


Figure C



The chi-square test found that there was a significant difference between those who received the serious income prompt and the frivolous income prompt ($X^2(5, N = 803) = 20.8586, p = 0.001$). I then performed a chi-square test to find differences across the binary distribution of responses between respondents that received the serious income prompt and those who received the

frivolous income prompt. The distribution of these responses can be found in Figure D and Figure E.

Figure D

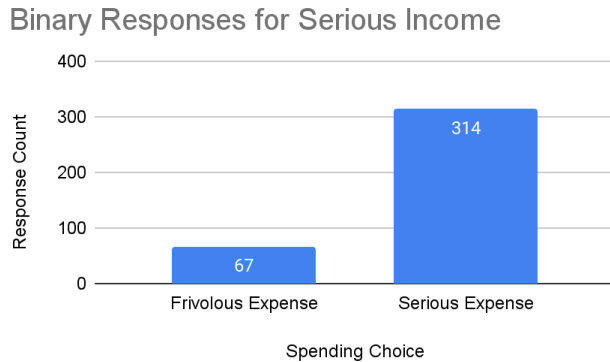
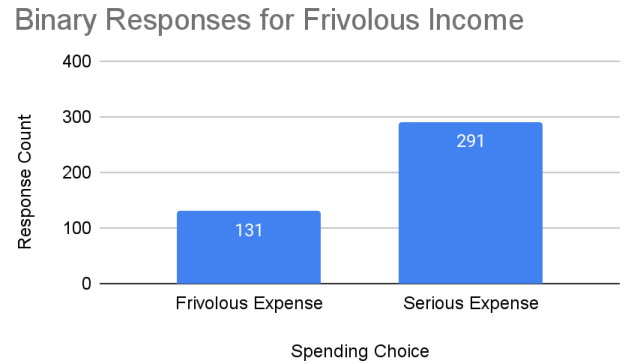


Figure E



This analysis suggests that responses did differ depending whether participants received serious or frivolous income ($X^2(1, N = 803) = 19.5187, p = < 0.0005$). This conclusion was supported by both approaches that I took to analyzing the data. The findings of this analysis support prior research, which has found that receiving serious income made participants more likely to spend the money in a serious way, while frivolous income prompted more frivolous spending choices.

I then expanded upon prior research to ensure that this effect was independent of income expectations. I performed a chi-square test to find differences between the binary distribution of responses from those who received the serious income prompt and those who received the frivolous income prompt. In this analysis, the data is only from those who received the amount of income they expected to receive. Figure F shows the binary distribution of responses from the serious expected income prompt, while Figure G shows the binary distribution of responses from the Frivolous expected income prompt.

Figure F

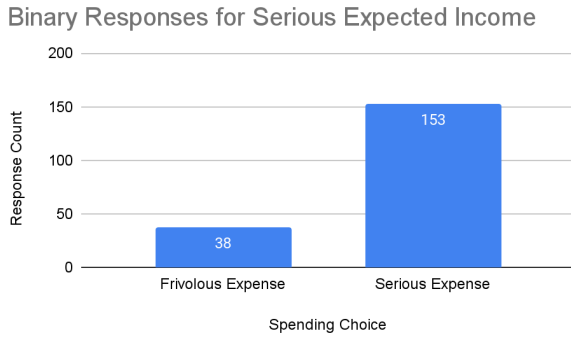
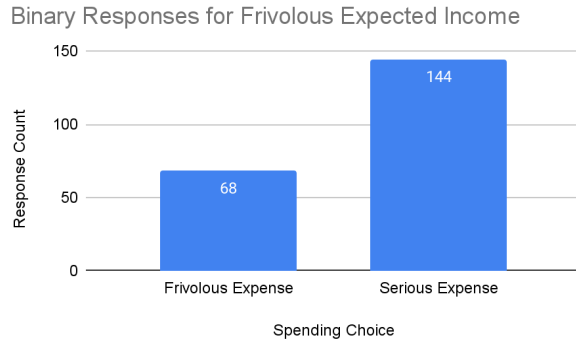


Figure G



The chi-square test I performed for the data above found that the income source effect of frivolous/serious income is significant when income is expected ($X^2(1, N = 403) = 7.6899, P = 0.006$). I repeated this same analysis for those who had received only the unexpected income prompt. Figure H shows the distribution of responses for the serious unexpected income prompt, while Figure I shows the distribution of responses for the frivolous unexpected income prompt.

Figure H

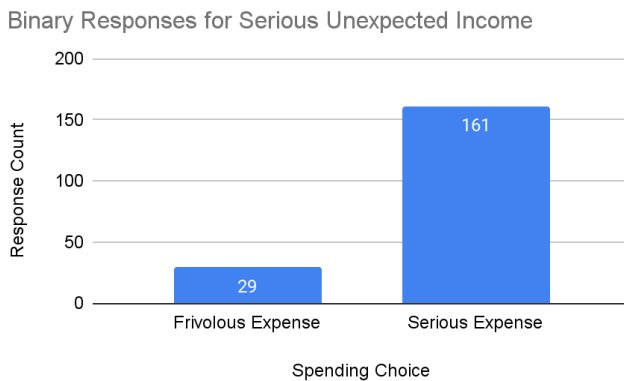
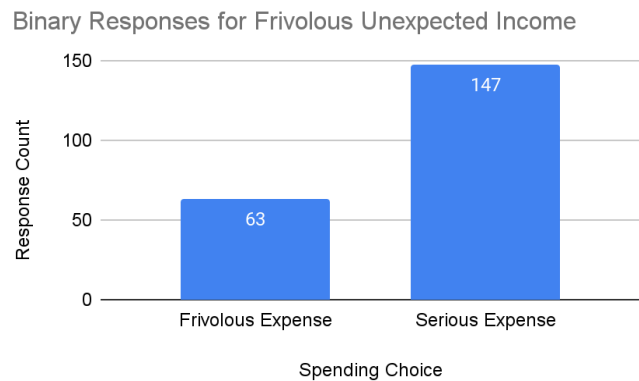


Figure I



The chi-square test results found that the income source effect for serious/frivolous income is significant even when income is unexpected ($X^2(1, N = 400) = 20.8586, p = 0.001$). My analysis shows what prior research has not: That frivolousness of income impacts the frivolousness of spending regardless of the role of expectations of income.

ii. The Role of Expectations of Income on Spending

Participants' responses were also analyzed by whether participants had received the amount of income they expected to receive in the prompt, or if the income received was more than they had expected. First, I run a chi-square test on the ordered distribution of responses according to whether participants received the expected income prompt or the unexpected income prompt. Figure J shows the response distribution from the expected income prompt and Figure K shows the response distribution from the unexpected income prompt.

Figure J

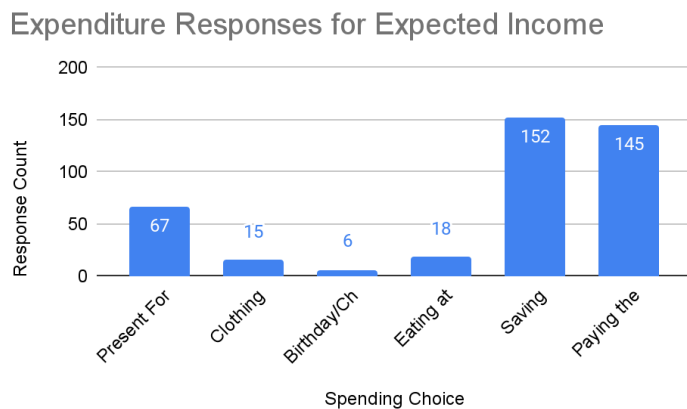
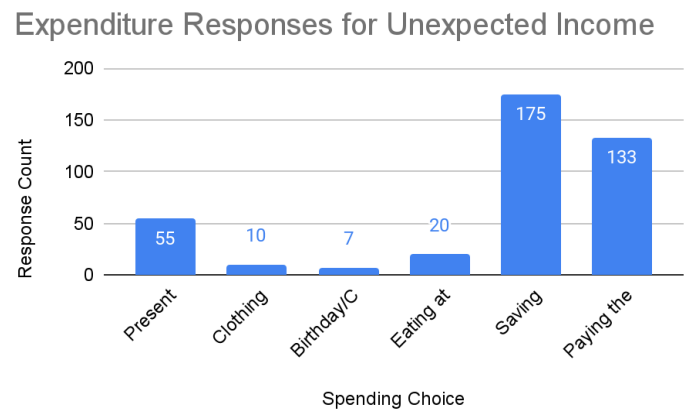


Figure K



The results of the chi-square test I ran on the ordinal responses to find if there were differences in responses due to expectations found that there is no difference ($X^2(5, N = 803) =$

4.4871, $P = 0.480$). I also ran a chi-square test to find the difference in binary distributions of responses between those who received the income they expected and those who received more than they expected. This analysis was done to find whether respondents chose more frivolous/serious expenditure choices in response to differences in expectations of income. The binary distribution of responses from the expected income prompt can be found in Figure L and the binary distribution of responses from the unexpected income prompt can be found in Figure M.

Figure M

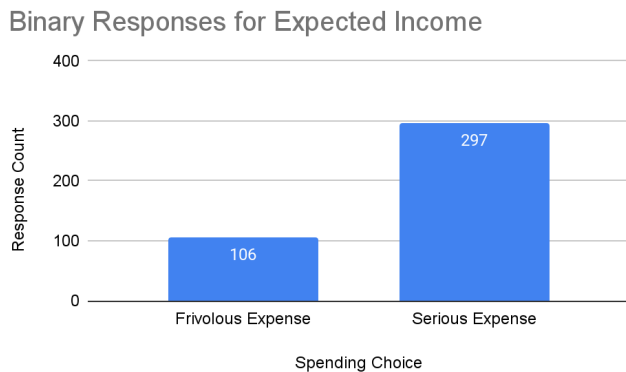
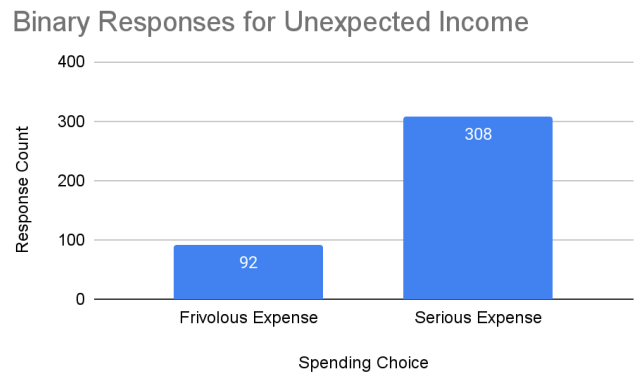


Figure N



The chi-square test results for binary responses between expected and unexpected incomes shows no significant difference between responses ($X^2(1, N = 803) = 1.1787, P = 0.288$). Both approaches found similar results. The data here suggests that expectations of income do not play a significant role on how that income is spent.

While expectations failed to make a difference for whether someone chose serious or frivolous expenses, I also tested whether expectations changed whether people spent or saved their money. I created new binary categorical variables called spending and saving, with spending including present for oneself, clothing, birthday/Christmas present, eating out, and paying the bills and saving including only the saving expenditure option. The response

distribution of saving or spending for those who received the amount of money they expected can be found in Figure K. Figure L shows the response distribution of spending or saving of those who received more money than they had expected. I used a chi-square test to determine whether there were significant differences in spending and saving for those who had received either the expected amount of money or more money than they had expected.

Figure O

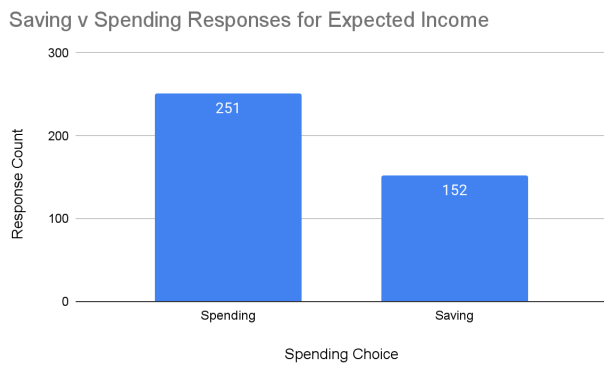
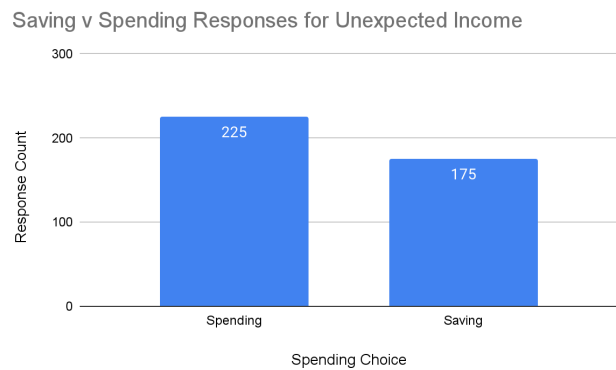


Figure P



The chi-square test results show that the difference between saving levels whether participants were given the expected prompt or the unexpected prompt is not statistically significant ($X^2(1, N = 803) = 3.0267, p = 0.085$). This further suggests that expectations of income have minimal effect on spending choices.

iii. The Role of Demographics on Expenditure Choices

Participants also gave responses about demographic variables, such as their age, race, gender, employment status, political affiliation, and income. I used chi-square tests to identify if there were any differences across binary serious/frivolous expenditure choices between demographic groups. I turned age into a binary statistic, divided between those age 35 and below, and those with ages over 35. These two groups had a roughly equal number of respondents. Not

all respondents identified as male or female. I used a chi-square test to find whether binary responses among males were unique from other respondents. I performed the same test for females. I also used a chi-square test to find if white respondents had different binary responses than non-white respondents. I also tested to see whether employment status had a significant effect on respondents' choices. I used a chi-square test to see the difference between those with full-time jobs and all other responses. I then tested whether there was a significant difference between those who had completed college and those who had not. I also researched whether income had an impact on responses. To find this, I tested whether there was a difference between those who earned household income under \$35k and other respondents. I also used a chi-square test to see if there was a difference between those who earned household income under \$45k and other respondents. Lastly, I tested whether there were any unique responses given by those who identified as conservative and those who identified as leftist. The demographic variables as well as the response variable I used in each chi-square test I performed were binary distributions. The number of observations for each test was 803 and the degrees of freedom was 1. The results can be found in Table 3 below.

Table 3

Binary Responses	Chi-Square Statistic	P-Value
Age (Binary)	2.4672	0.120
Male	0.0524	0.870
Female	0.0524	0.806
White	0.0524	0.329
Employment	2.0614	0.160
College Graduate	0.7378	0.410

Income Under \$35k	0.4273	0.741
Income under \$45k	0.4273	0.533
Conservative	0.0049	1.000
Leftist	0.3999	0.563

According to the results of the chi-square tests done for various demographic variables, no demographic has unique responses compared to the rest of the respondents. The data here suggests that demographic characteristics have no impact on consumption behavior for individuals.

iv. Linear Regression Results

In Muehlbacher and Kirchler (2019), participants were asked to rank their responses. Muehlbacher and Kirchler removed all responses that were “eating out” as its serious score did not make it significantly serious or frivolous, but rather in the middle. Muehlbacher then changed saving and paying the bills to a single binary “serious” responses variable, and similarly changed present for oneself, clothing, and birthday/christmas present to a single binary variable representing “frivolous” expenditure choices. These ranked responses were condensed into a single score that determined how frivolous or serious the expenditure choices were. The researchers created a linear regression to determine whether the response scores differed depending on whether participants had been given the serious income prompt or the frivolous income prompt.

Similarly, in this study, the ranked choice option of each expenditure choice was given by participants. It is worth noting that the ranked choices differed markedly from the responses for a

single expenditure choice, with the single choice and first choice in the ranked responses only being the same 30.76% of the time. The data was organized into binary variables representing serious and frivolous. Serious included saving and paying the bills, while frivolous included present for oneself, clothing, birthday/Christmas present, and eating out. Serious responses were given a score of 2, while frivolous responses were given the response of 1. These responses were divided by their rank, so that first rank was divided by 1, the second rank by two, and so on, in order to weight their significance. The sum of these numbers were taken and categorized into a single score of how serious or frivolous each participants' ranked choices were. I then created a linear regression to determine whether the participants' responses differed whether they received the serious or frivolous income prompt, and whether they received the expected or unexpected income prompt. I also regressed participants' choices against their demographic details, including age, race, gender, income, education, employment, and political affiliation. The demographic variables were organized the same way as in the previous section. The results of the regression can be found in Table 4.

Table 4

Rank Score	Coefficient	SE	T	P-Value	[95% conf. interval]	
Serious/Frivolous	.1308603	.0241885	5.41	< 0.0005	.083379	.1783417
Expectations	-.0047965	.0242681	-0.20	0.843	-.052434	.0428411
Age (Binary)	.0275095	.0248144	1.11	0.268	-.0212004	.0762195
Male	-.0762365	.0765362	-1.00	0.320	-.2264749	.074002
Female	-.0929173	.076225	-1.22	0.223	-.2425449	.0567102
White	.0525327	.0291891	1.80	0.072	-.0047646	.10983
Employed Full Time	.0200565	.0267467	0.75	0.454	-.0324466	.0725596

College Graduate	-.0001759	.0260738	-0.01	0.995	-.0513581	.0510063
Household Income Under \$30k	-.0042623	.04431	-0.10	0.923	-.0912415	.0827169
Household Income Under \$45k	.009777	.0366104	0.27	0.789	-.0620881	.0816422
Conservative	.0098965	.0372591	0.27	0.791	-.0632421	.0830351
Leftist	.0085467	.0313226	0.27	0.785	-.0529387	.0700321

Despite the differences between rank choice responses and the single choice responses, the results bear a remarkable resemblance. This regression, similar to the other analysis I have done, suggests a strong difference in responses between those who received the serious income prompt and those who received the frivolous income prompt. However, there appears to be no significant difference in responses for other categories. Those who received the amount of money they expected to receive did not appear to have different answers compared to those who received more money than was anticipated. As for demographics, it appears that responses remain consistent across all demographic categories, with no demographic showing a significant difference in responses from its counterpart.

V. Discussion

The conclusion of my analysis is very clear. In all the ways that I analyzed the data, whether it be ordinally, binary categorically, or using rank choice to perform a linear regression, the results bore the same suggestion. Income source effect is a phenomenon that, like prior studies have demonstrated, has a real effect on spending choices. In particular, income source effect tends to influence people that received money in frivolous ways to spend that money in frivolous, or hedonistic, ways and similarly influences people who have received money in serious ways to spend that money on more serious, or utilitarian goods. Furthermore, the data I

collected suggests that expectations have no effect on how people choose to spend their money. There also does not appear to be any difference in spending habits between demographic groups. The demographics tested in this study include age, gender, race, income, education, employment status, and political affiliation. For example, this data suggests that males would spend their money the same way females choose to spend their money.

The concept of income source effect is not a new one, as the literature review outlined previously. Work done by O'Curry (1997), Muehlbacher and Kirchler (2019), Henderson and Peterson (1992), and Kooreman (2000) all suggest that income source effect has a significant impact on peoples' decision making. This study helps buttress the case for income source effect, and shows that people tend to align their spending with the type of income they receive. My study builds on past research in that it separates frivolous/serious variables from expectations. In most of the studies on income source effect one prompt is frivolous and unexpected income, while the other is serious and expected income. These studies fail to test these variables independent of each other. My study explicitly tests this and finds that income source effect for frivolous/serious income exists irrespective of expectations of income.

Furthermore, while categorization for frivolous/serious income did have an impact, I found that expectations of income did not have a significant impact on how that income was spent. In O'Curry and Strahilevitz (2001), the authors reference O'Curry (1997), which is not publicly available, claiming that the study found that unpredictable gains are more likely to be spent on hedonic, or frivolous, goods. The results from my study sharply contradict that conclusion. Little other research on expectations has been done within mental accounting. This study, in part, was designed to test whether people had difficulty accounting for unexpected income and choosing where to spend it. This does not appear to be the case. People are good at

integrating new information (unexpected income) into their already established habits. It appears that peoples' marginal propensity to consume serves as a baseline for consumers to quickly sort new information (new income). Other stimuli affect the rate of spending and purchasing behavior, but categorization cannot be caught by surprise.

The research that I have conducted here has real world applications. As I've described, this research supports findings by prior studies. My research supports that categorization of income is a potent variable on spending decisions. This might suggest that people will be happy to spend \$5 they find on the sidewalk on frivolous goods. Income source effect may serve as a good explanation of why shopping malls are featured so prominently within casinos. After a gambling win, it appears that people may be much more willing to spend money on gifts or memorabilia they may not care to purchase otherwise. This could also lend some insight into the potential effectiveness of advertising, or ad revenue, for the increasingly popular mobile gambling apps. My findings on expectations suggest less dramatic implications, but nonetheless give us insight into real world problems. The gig economy is getting increasingly larger, and as it does it will change the shape of the economy. Gig workers are more likely to experience unexpected growth in income from their work. My research suggests that this particular aspect of the gig economy won't have a drastic impact on the economy.

This study was carefully created in order to isolate the impact of frivolous/serious income and the impact of expected/unexpected income, however it is not a perfect study. As mentioned earlier, the responses for the rank choice question and responses for the single response question differ substantially. This calls into question the integrity of the data collected, however I am forced to assume that the responses can be relied upon to make observations. The best way to counteract this issue is to replicate studies, and this study alone can only reveal so much.

Furthermore, it is very difficult to elicit a response for expectations in a survey format. While I can describe the situation in a prompt, the impact of real expectations may not be realized. However, since there was a significant difference in responses between those who received serious income prompts and those who received frivolous income prompts, which was tested the same way, it appears that the format of the test produced reliable responses. My findings on expectations also conflict with findings from O'Curry (1997). This suggests that there needs to be more research done on the role that expectations of income have on spending behavior. This can be done through replication of the study, and through testing these questions with different methods, which have the potential to find new and interesting results.

There is a lot of potential for more research within mental accounting and related to income source effect. While Muehlbacher and Kirchler (2019) have tested whether differing income amounts affect categorization of serious/frivolous income, this has not been tested for expectations of income. As Kooreman (2000) shows, income source effect is not dominated only by frivolous/serious categories of income, but by categorization more broadly. More studies may be done that relate to categorization of income and its effect on decision making. What decisions do families make differently if they have a vacation fund? Fiscal stimulus has become more common as a tool that the government can use to prevent a recession. Is fiscal stimulus considered frivolous or serious income? Would labeling the stimulus give the government influence over what it is spent on? Would labeling other government relief programs, such as subsidies, also be impacted by labeling? Kooreman (2000) suggests that labeling government assistance programs does impact consumer behavior, but these questions should be given more attention given the scope of government spending and the large potential impact it can have. In addition, this research does not judge the impact of permanent changes in income, but rather

one-time income events. It is perfectly plausible that people will react differently to categorization or expectations in regard to permanent changes, or may differ substantially from how people treat one-time income events. A study asking these questions may yield interesting results. Furthermore, very little research has been done on the categorization of loss. While we are beginning to understand better how people categorize their income and how this impacts decision making, the same is not true for losses of money. I encourage new and bold research that addresses the infinite unknowns surrounding mental accounting that still remain.

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