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The Role of Mental Accounting in Household Spending and Investing Decisions

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Introduction

Traditional accounting refers to the way that businesses or corporations track and evaluate financial activities. In contrast, mental accounting refers to the way that people perform these same activities in their own lives. Defined by Thaler (1999) as "the set of cognitive operations used by individuals and households to organize, evaluate, and keep track of financial activities", mental accounting describes the way that people group expenses into categories, assign funds to these categories, determine budgets, and perform elements of cost-benefit analyses.

In this chapter, we focus on mental accounting within the context of consumer financial decision-making. Specifically, we examine how mental accounting influences budgeting, spending, and investment decisions.[1] As part of our review, this chapter highlights some of the notable work in this growing field. However, we do not cover aspects of these decisions beyond mental accounting (e.g., we do not discuss how goal-setting effects budgeting efficacy) nor do we examine elements of mental accounting that do not have relevance for these decisions.

The chapter proceeds as follows. First, we provide an overview of the categorization process that underlies mental accounting. We extend this discussion of categorization to describe methods for categorizing funds, such as grouping funds based on their sources and uses or grouping funds based on the timing in which income is received or lost. Next, we move to discuss an application of these concepts. We initially focus on the budgeting process, explicating potential benefits as well as potential costs of utilizing this approach. In addition to discussing specific spending decisions, we consider how mental accounting for assets and debt influences wealth perceptions as well as decisions to take on or avoid debt. We then turn to implications of the mental accounting process for investing, discussing the relevance of opening and closing accounts and choices about which assets to purchase. Finally, we conclude by laying out an agenda for future research in the area.

Mental Accounting as Categorization

The categorization of funds into different groups is one of the defining elements of mental accounting. People might, for example, group any expenses they incur on a trip to Florida into a vacation spending category or categorize any money received as a wedding gift as savings for their future home. Prior research has argued that this categorization of funds is

[1] See Soman and Ahn (2011) for a review of mental accounting research with particular attention to the relationship between mental accounting and framing effects. See also Frydman and Camerer (2016) for a review of the psychology and neuroscience behind financial decision-making.

driven by similar cognitive processes to those that underlie the categorization of objects and events more generally. Consequently, mental accounting can be understood through the cognitive principles of categorization (Henderson and Peterson 1992; Heath and Soll 1996). This approach highlights important reasons why individuals might engage in mental accounting, especially within the domain of consumer finance. Namely, categorizing funds helps facilitate processing information in ways necessary for evaluating spending opportunities. In the absence of such categorization, people would need to assess their full financial portfolio when faced with nearly any consumption decision, such as the affordability of a given purchase (e.g., "Is this something I can buy?") or the appropriate allocation of resources toward various goods (e.g., "How much can I spend?"). This evaluation would require integrating across present and future wealth as well as incorporating all debts and anticipated expenses.

By organizing information into groups based on commonalities, categorization can facilitate the quick recall and judgment of relevant information, thus reducing the cognitive effort required to evaluate the decision at hand (Henderson and Peterson 1992). For example, when deciding how much to spend on an upcoming trip, a person could consider how much money she has available to spend over the course of her lifetime and from there, how much would be available for the trip based on all anticipated current and future expenses and opportunity costs. Alternatively, incorporating principles of mental accounting, she can focus her decision on a given accounting period (e.g., a year) and consider how much she believes is reasonable to spend on travel given her income and expenses, how much she has already spent on vacation or travel and how much more she expects to spend on these costs in the given period. The latter calculation is manageable for most people whereas the former is not.

While categorizing funds can help ease the burdens associated with financial decision making, it also has implications for how people choose to spend and save their money and can lead to systematic errors. According to traditional economic theory, categorizing funds into various mental accounts should have no effect on subsequent behavior since the boundaries of mental accounts are only notionally set. Yet a wealth of evidence indicates that how funds are grouped and labeled influences individual preferences for spending. In other words, mental accounting violates the economic principle of fungibility—the notion that money is interchangeable (Shefrin and Thaler 1988; Thaler 1990, 1999; Abeler and Marklein 2017). Even in instances where the only categorization of funds is the method of payment used (cash or credit), differences in the marginal propensity to spend and consume across separate categories persist (Soman 2003). Below, we highlight several notable studies from the growing body of research documenting the many ways in which people categorize funds and how this categorization can in turn alter spending. We organize our discussion of these studies by focusing on two primary methods for categorizing funds: (1) categorizing the sources and uses of funds and (2) categorizing choices and outcomes involving funds.

Methods for Categorizing Funds

Sources and Uses of Funds

In assigning funds to different mental accounts, people may consider the inflow of resources (income, capital gains, etc.), the stock of resources available (retirement savings, housing wealth, etc.), and the outflow of expenditures (food, clothing, etc.) from the household (Thaler 1999). One common practice in mental accounting is to categorize funds based on the origin or source of those funds. Early studies considered common ways in which an individual's wealth might change (e.g., receiving a raise or anticipating a future inheritance check) and proposed three broad categories that might intuitively comprise that person's wealth over her lifetime: current income, current assets (e.g., savings or housing equity), and future income (Shefrin and Thaler 1988; Thaler 1990, 1994 1999). Though each of these three categories belong to the more global category of wealth, people exhibit differential marginal propensities to consume across the three groups, with the marginal propensity to consume typically highest out of current income and lowest out of future income (Shefrin and Thaler 1988; Courant et al. 1986). In other words, people are differentially tempted to spend (consume) a dollar of wealth depending on whether that dollar is from their current income, current assets, or future income. Receiving a raise today will lead to a greater increase in spending than will an increase in a future inheritance check of the same amount, even though standard economic theory suggest that people should treat wealth the same regardless of its source (i.e., the marginal propensity to consume out of different categories of wealth should be the same).

Funds may be categorized by their source within these three partitions of wealth as well. For instance, numerous studies suggest that people categorize changes in current income as either "regular income" or a more irregular "windfall" (Arkes et al. 1994; Shefrin and Thaler 1988; O'Curry 1999; Thaler 1999; O'Curry and Strahilevitz 2001; Milkman and Beshears 2009). Whether a change in income is coded as a windfall gain or simply regular income depends on a number of factors, including but not limited to the size of the gain relative to regular income receipts (Thaler 1990), the typicality or regularity of the income, or the degree to which a person anticipates the change in income (O'Curry and Strahilevitz 2001). For example, a work bonus is likely to be considered distinct from an individual's regular salary (Ishikawa and Ueda 1984), as are unpredictable tips and commissions (O'Curry 1999).

One of the most frequently cited examples of windfall income is the tax refund. Each year, more than three-quarters of taxpayers over-withhold taxes from their paychecks and, as a result, receive a lump-sum tax refund (Internal Revenue Service 2017). While the reasons for over-withholding vary, people often treat their annual tax refund as a windfall distinct from their regular earnings and exhibit a greater marginal propensity to consume out of their tax refund than out of other funds (Thaler 1994; Souleles 1999). Marketers

recognize that people treat a tax refund as a windfall gain, with some stores capitalizing on "tax refund season" by advertising opportunities to spend their newly found money (WSJ 2014). Research further shows that people are even more likely to spend this windfall when it is described as a bonus than as a rebate (Epley, Mak, and Idson, 2006). Income receipt that is not labeled differently but is received infrequently may also be categorized as its own mental account, separate from that of regular and frequent income. For example, bi-weekly paid workers receive two paychecks in most months. However, there are about two months a year when they receive three paychecks as a predictable consequence of the distribution of days in the calendar. These workers have been shown to spend more in the months following these "extra" third paychecks, treating them as a windfall (Zhang 2016). Although the type of windfall income varies by context, these studies indicate that people are consistently more likely to spend windfall income than regular income.

Beyond affecting the marginal propensity to consume, categorizing funds by their source can also influence the types of goods that people are likely to purchase with the money. The amount of money in a specific account can alter spending decisions, even after controlling for overall wealth (Morewedge, Holtzman, & Epley, 2007). Windfall gains are more likely to be spent on luxury goods (e.g., eating an expensive meal) than on more essential goods (e.g., purchasing groceries) when given the choice (O'Curry 1999). Moreover, this preference for spending on luxury rather than essential goods can be amplified in contexts where there is heightened anticipation of acquiring the good (O'Curry and Strahilevitz 2001). However, funds that evoke emotional feelings, particularly negative ones, are more generally spent on essential goods rather than luxury goods (Levav and McGraw 2009). For example, a widow is more likely to spend life insurance funds from the death of her spouse on school supplies for her children than on upgrading her television set. In this case of "emotional accounting," spending money on virtuous expenditures allows people to reduce negative feelings associated with windfall gains. Recent research on mental money laundering suggests that people exploit flexibility in mental accounting to justify selfish use of funds. Specifically, people will seek out opportunities to dissociate earnings from undesirable sources when it allows them to rationalize less virtuous spending (Imas, Loewenstein, & Morewedge, 2017).

A second common practice in mental accounting is categorizing funds based on the intended use of the money, for example, based on the type of good it will be used to purchase[2]. Households, for instance, may set budgets for various expenses (e.g. a food budget or a gas budget) and treat funds between the accounts tagged for each purpose as distinct and imperfectly substitutable (Thaler 1985; Heath and Soll 1996; Hastings and Shapiro 2013). In some cases, this categorization arises naturally, based on the congruence between a labeled source of income and possible uses of that money (i.e., how typical a good is of goods generally purchased with those funds). That is, people spend money on purchases that align with the source of the funds used. One study finds that spending on

[2] See Markman and Brendl (2000) for analysis of the organization of mental accounts around active goals.

children's clothing is significantly more sensitive to funds designated for spending on children (in this case, child benefit payments from the Dutch government that help defray the costs of raising a child) than to other sources of income (Kooreman 1997). When child benefit payments increase, spending on children's clothing increases more than when other sources of income increase by the same amount. Similarly, Supplemental Nutrition Assistance Program (SNAP) beneficiaries who receive restricted-use funds for purchasing food exhibit a much higher marginal propensity to consume SNAP-eligible food out of their SNAP benefits than out of cash (Hastings and Shapiro 2017). Related findings from a lab study suggest that this behavior may stem from a greater discomfort in spending unrestricted funds rather than restricted-use funds on goods belonging to a restricted-use category (Andre et al. 2017). Reinholtz et al. (2015) observe similar behavior in a retail context; people who receive a retailer-specific gift card express a greater preference for products highly congruent with the purpose of the mental account (i.e., typical of that retailer; e.g., jeans from a Levi's store) than those that are less congruent (e.g., sweaters from a Levi's store) in comparison to people who received an unrestricted-use gift card. Even in the absence of an externally imposed designation, people are more likely to spend on goods whose category aligns with the source of the income (O'Curry 1999).

Sets of Choices and Outcomes

Another method by which people categorize funds is by grouping a set of choices or event outcomes together. These groupings can take many forms. Choice bracketing refers to the way people group together or "bracket" a set of individual choices (Read et al. 1999). Brackets can be defined broadly over large sets of choices or narrowly over very small sets of choices. For instance, an individual deciding whether or not to purchase a particular item may consider only the purchases she has made thus far in this trip to this store (narrow bracketing) or she may consider every purchase she has made that week in all stores (broad bracketing). Importantly, narrow bracketing facilitates the defining of separate mental accounts.

One of the most common ways in which choice bracketing behavior manifests is temporal bracketing: people bracket funds based on the timing of when those funds will subsequently be used. In particular, they can choose whether to temporally combine or separate different expenditures into the same or distinct mental accounts (Thaler and Johnson 1990; Linville and Fischer 1991). Consistent with temporal bracketing behavior, the temporal distance between outcomes can influence cognitive integration. Outcomes that are temporally separate are more likely to be segregated across different mental accounts; in contrast, outcomes that are temporally proximate are more likely to be integrated into the same mental account. The most immediate form of temporal bracketing is perhaps the setting of household budgets where people must determine the period (e.g., daily, monthly, annually, etc.) over which their mental accounts are evaluated and consequently should be spent (Read et al. 1999; Thaler 1999). These budgeting periods can

have a direct influence on financial decisions and judgments. As Ulkumen et al. (2008) show, the period over which consumers evaluate their household budgets can affect their estimates of how much they expect to spend and therefore how much of their resources they need to budget in the future. The authors find that people significantly underestimate their actual spending when budgeting for the following month; in contrast, budgets planned over the upcoming year are much closer to actual recorded expenses. While the frequency with which a mental account is evaluated is generally endogenously chosen, temporal bracketing can sometimes be exogenously imposed by others with meaningful effects. For instance, temporal decoupling of expenditures (e.g., the payment of a tax and the later use of tax revenue) can potentially affect attitudes towards the eventual use of those funds (Sussman and Olivola 2011).

In some cases, key elements of prospect theory (Kahneman and Tversky 1979) have implications for mental accounting and can affect the way people form or evaluate groups of outcomes. People may evaluate events in relation to a reference point, with changes coded as either a gain or loss relative to that point. For example, a homeowner deciding whether or not to sell her home might consider whether the nominal current market value of her house exceeds its original purchase price (i.e., whether selling her house would result in a capital gain), and be less likely to sell if it does not (Genesove and Mayer, 2001). In other words, the homeowner would be creating a mental account for her home and grouping money paid in the initial purchase (the reference point) with money received in the final sale. An implication of prospect theory is that spending decisions can be driven not just by the market price of a potential purchase but also by how good of a "deal" that purchase would be. Under this model of behavior, people evaluate a purchase by its "transaction utility": the perceived value from the relative difference between the amount to be paid (the market price) for a given product and the reference price for that product (Thaler 1985). For instance, a person may be willing to pay $5 for a bottle of water at a movie theater but only $2 for the same bottle of water at the grocery store, even though the bottle of water being consumed in each scenario is the same. While paying $5 for a bottle of water at the movie theater may be expected, paying that same price at the store would seem like a bad deal when compared to the typical reference price of a bottle of water at the store.

In addition to evaluating events relative to a reference point, people experience diminishing sensitivity to any gains or losses and exhibit loss aversion (losses loom larger than gains) under this framework. For example, the difference in added value to the homeowner between selling her home for $50,000 and $100,000 seems bigger than the difference between selling her home for $800,000 and $850,000 (diminishing sensitivity to gains), and selling her home at a $50,000 loss hurts more than selling her home at a $50,000 gain yields happiness (loss aversion).

Importantly, prospect theory has implications for how people prefer to group gains and losses (Thaler 1980, 1985, 1999). Because people experience diminishing sensitivity to gains and losses, they will prefer to segregate gains and integrate losses. For example, if

someone wins two small lottery prizes, she may prefer to receive each win separately (segregating gains) whereas if someone incurs two small parking tickets, she may choose to incur both tickets on the same day (integrating losses). The process of naturally segregating and integrating events with these preferences in mind is known as hedonic editing. However, these specific patterns are constrained by whether the two incidents are perceived as belonging to the same category. Recent research shows that when two events are perceived to be in different categories (e.g., performance on a test in school vs. the outcome of a social interaction), people cannot book them to the same account and evaluate the two events separately (Evers, Imas, & Loewenstein, 2017). Given any positive time discounting, this leads to people preferring gains from different categories close together in time, and to spread apart losses from different categories.

When considering mixed outcomes (i.e., both gains and losses), people should prefer to integrate small losses with larger gains and segregate smaller gains from larger losses (see Jarnebrant, Toubia & Johnson, 2009). However, this rule does not explain reactions in all cases and treatment of mixed outcomes can be complex. For example, Wu and Markle (2008) find that people treat gambles with both positive and negative potential outcomes differently than gambles that involve only gains or losses, placing different weights on probability differences. Additionally, people tend to care about the composition of a given, realized outcome. People place more weight on losses after receiving a net gain but more weight on gains after receiving a net loss, rather than focusing only on the net outcome (Sussman, 2017).

Important research remains to be done to build a full account of how mental accounting categories are formed. However, these studies offer a helpful framework for understanding some of the cognitive underpinnings of elements that influence grouping items into mental accounts. In what follows, we cover some of the existing research on the implications of mental accounting for consumer behavior, focusing on two important personal financial management practices: budgeting and investing.

Budgeting

Financial decisions involve tradeoffs between different bundles of goods and between consumption today versus in a future period. The processes by which individuals make these tradeoffs have meaningful implications for the overall well-being of households. In this section, we focus on household budgeting both as the foundation for making many of these decisions and as one important process for which mental accounting provides especially useful insights. We provide a brief overview of the literature on mental budgeting below before discussing both the potential benefits and potential pitfalls that arise from segregating funds.

Implications for Financial Planning Practice

A budget is a financial plan by which individuals, companies, or institutions allocate present and future funds to various uses such as expenses, savings, investments, and debt repayment. More generally, budgeting is the process used to segregate and track the allocation and use of funds against different accounts with implicit or explicit spending limits or "budgets" (Galperti 2016). In the case of individuals or households, mental accounting guides this process. Budgets can play an important role in the management of a household's financial life, both for the short-term (e.g., prioritizing spending across different categories) and for longer-term financial planning (e.g., determining how much money to set aside for the future). Outside of the household, consumer budgets can shape demand for various products and services.

Informal financial advice often encourages households to budget, and a number of financial products are designed to facilitate the budgeting process. Furthermore, Heath and Soll (1996) propose a cognitive framework in which new purchases will only impact a budget if they are first noticed (i.e., booked) and then assigned to a meaningful account (i.e., posted). Booking relies on attention and memory while posting relies on evaluations of similarity and categorization. However, relatively little is known about how households actually budget. How do people form and maintain budgets, what might influence the budgeting process, and what are effects of budgeting on household financial well-being? Surveys on household budgeting behavior that do exist primarily aim to capture engagement: whether or not individuals have a budget. For example, roughly 46% of survey respondents for the University of Michigan's 2001 Surveys of Consumers report using a spending plan or budget (Hilgert and Hogarth 2003). More recently, the 2015 National Financial Capability Study (NFCS), a nationally representative survey administered by the Financial Industry Regulatory Authority (FINRA), estimated that just over half of individuals (56%) report having a household budget (Lin et al. 2016).[3,4]

Beyond the propensity to budget, a small number of surveys also ask respondents what financial planning horizon is of greatest importance and whether individuals are able to fit their budget or make ends meet. Rather than parsing different short term horizons for budgeting (e.g., daily vs. weekly vs. monthly), these surveys often focus on less granular differences, for example whether people keep budgets over the period of a few months versus a few years. For longer-term financial planning, a survey of TIAA participants by Ameriks et al. (2013) finds that roughly 39% of respondents agree or strongly agree that they have spent a significant amount of time developing a financial plan and 27% of

[3] Similarly, the 2014 Canadian Financial Capability Survey (CFCS) administered by Statistics Canada estimates that almost half of Canadians (46%) have a budget (FCAC 2015).

[4] A number of industry surveys also capture engagement. Using a random sample of adults across the United States, a 2013 Gallup poll found that roughly one-third of households use a detailed written or computerized household budget each month to track their income and expenditures. Similarly, the 2013 Household Financial Planning Survey and Index by the Consumer Federation of America (CFA 2013) reports that around 57% of surveyed households have a budget, even if informally, and 32% of surveyed households have a budget that is written down.

respondents have gathered and reviewed their household's financial information in detail to formulate a specific plan for their household's long-term future.

While survey evidence suggests that roughly half of individuals have a budget or financial plan of some form, emerging studies underscore the numerous ways in which households might budget, especially when financially constrained. For instance, one strategy that people can undertake to cope with a financial shortfall is to stretch their financial resources ("efficiency planning") to make the most of what they have. A person might place an order with a friend to split delivery costs or run several errands at once rather than take multiple trips. An alternative strategy is to identify and sacrifice less important goals ("priority planning"), recognizing the trade-offs inherent when allocating resources to different goals (Fernbach et al. 2015). Priority planning can extend beyond goals to sources of funds and expenses more generally as well. A related study provides suggestive evidence that financially constrained households, much like companies, may cope with financial shocks to their budget by establishing a "pecking order" of sources of funds to turn towards when constrained (Lusardi et al. 2011). For example, households may try to borrow from friends and family before turning towards using their credit cards when strapped for cash. Similarly, households may establish a pecking order of expenses, choosing which bills to prioritize over others.

Although there is little systematic survey evidence on household budgeting, much of what we do know about household budgeting is tied to our understanding of mental accounting behavior and how individuals segregate funds. Principles of mental accounting can operate through informal or implicit budgets and thus likely influence how people choose to spend money even in cases where they do not keep a formal or explicit budget. For example, in one seminal study of framing effects by Tversky and Kahneman (1981), a group of participants was told to imagine that they were about to purchase a calculator that cost either $15 or $125. The calculator was on sale for either $10 or $120 in a store 20 minutes away. Participants were asked whether they would travel to the other store to buy the calculator at the discounted price. Participants were much more likely to travel to save money on the $15 than $120 item (68% vs. 29%). Mental accounting led to this pattern, even in the absence of explicit budgeting. Participants in all cases were asked their willingness to travel 20 minutes to save $5. However, rather than considering the dollar cost in absolute terms, which would have led to similar responses across conditions, they considered the dollar cost as a percent of the total cost of the item.

Assets versus Debts

Beyond choosing which items to purchase or forego, mental accounting has implications for how people view their household balance sheets and financial wealth more generally by influencing how people bracket these funds. Much like that of a business, a household balance sheet provides an overview of a household's finances, and more specifically its assets and liabilities. Perceptions of this balance sheet can influence how much people feel

they can afford to spend and how they choose to finance purchases. Thus, while understanding the balance sheet is not a traditional component of budgeting, it provides groundwork for how much money is available overall, with clear relevance for budgeting decisions.

Under standard economic theory, people borrow to move consumption forward from the future to the present, and their willingness to borrow depends entirely on the relative value of consumption today versus consumption in the future and the cost of moving consumption from the future to the present (interest rate). However, a number of studies provide empirical evidence of debt aversion and suggest that such behavior can stem from a psychological aversion to debt, rather than from financial trade-offs. To explain debt-averse behavior, Prelec and Loewenstein (1998) proposed a "double-entry" mental accounting model where people engage in two important behaviors. First, people associate or "couple" the consumption and payment of a good (to varying degrees), making two mental entries: 1) the overall utility derived from consumption after subtracting the disutility of associated payments, and 2) the overall disutility of payments after subtracting the utility of associated consumption. For example, driving a car will bring to mind all the payments required to pay for the car while paying for a car will bring to mind all the future enjoyment that will be experienced while driving the car. Second, people engage in "prospective accounting" where consumption that has already been paid for can be enjoyed as if it were free, and the pain of payment prior to consumption is mitigated by thoughts of the future pleasure of that consumption. Under this model, paying in advance (pre-payment) de-couples the immediate "pain of paying" from the pleasure of consumption so that the car owner can enjoy driving the car as if it were free and any pain of pre-payment is buffered by thoughts of the future enjoyment of driving.[5] In other words, the double-entry mental accounting model predicts a preference for paying for consumption in advance, i.e. a debt aversion.

Hirst et al. (1994) likewise address debt aversion in their study on the role of temporal contiguity in mentally accounting. Drawing on prior research on individual preferences for integrating gains and losses (Linville and Fischer 1991; Thaler 1980, 1985) and research indicating that outcomes that occur contemporaneously are more likely to be integrated in the same mental account (Thaler and Johnson 1990), they provide evidence suggesting that people will prefer to borrow for goods where the repayment of the associated debt corresponds with the timeline of consumption benefits for that good. Because debt can vary significantly in the timing of future payments, such a preference can lead to a reluctance to borrow or debt aversion. For instance, students may be resistant to taking out a loan for school in light of the fact that loan repayment typically extends far past the period during which students are in school.

[5] There is a large body of research exploring the pain of paying experienced when spending money and its role in influencing individual decision-making. In addition to Prelec and Loewenstein (1998), see, for example, Zellermayer (1996); Knutson et al. (2007); Rick et al. (2007); Thomas et al. (2011); Shah et al. (2016); Kan et al. (2017); and Mažar et al. (2017)

In some cases, rather than exhibiting behavior that is consistent with debt aversion, people hold debt while simultaneously holding liquid assets (e.g., Gross and Souleles, 2002). One area of recent research has focused on how the relationship between assets and debts can influence perceptions of wealth. All else equal, individual perceptions of personal wealth should be driven by overall net worth (the difference between one's assets and debts) and should not depend on the level of assets and debts. Sussman and Shafir (2012) find, however, that people differentially perceive the relative wealth of financial profiles with equal total net worth but different asset and debt levels. In particular, financial profiles with higher asset and debt levels are viewed as wealthier when the overall net worth of those individuals is negative (e.g., $50,000 in assets and $100,000 in debt is preferred to $20,000 in assets and $70,000 in debt) while financial profiles with low asset and debt levels are viewed as wealthier when the overall net worth is positive (e.g., $70,000 in assets and $20,000 in debt is preferred to $100,000 in assets and $50,000 in debt). The authors further find that these differences in perceived wealth can in turn affect financial decisions, such as the willingness to take on additional debt. By providing evidence of individuals differentially focusing on their assets (or debts) when their net worth is negative (or positive), these findings suggest that individuals may consider the two sides of their balance sheet as psychologically distinct when judging their overall wealth. This finding provides one factor that may contribute to debt averse behavior among many while also accounting for debt seeking behavior in some cases.

Potential Benefits

While the benefits of mental accounting and segregating funds more generally are numerous, we focus our discussion on the primary benefits that have received the most attention in the literature thus far. First, segregating funds can help simplify the often overwhelming process of financial planning by limiting the complexity of choices households face (Thaler 1999). Budgeting can make spending rules clear while also increasing the pain of paying, helping people stay on track (Rick et al. 2007; Kan et al. 2017). As mentioned at the outset of this section, most consumer financial decisions involve making trade-offs between competing uses for funds. Segregating funds can facilitate making these trade-offs by narrowing the set of choices under consideration that may compete for use of allocated funds (Simon 1947; Read et al. 1999).

Second, segregating funds can help households maintain financial discipline (Shefrin & Thaler 1988). There is a large body of research in both psychology and economics documenting individuals' struggles with managing their self-control problems (Shefrin & Thaler 1981; Soman et al. 2005). Within the consumer finance domain, self-control problems typically arise in one of two circumstances: when choosing what type of good to consume (e.g. a luxury good versus a necessity good) and when choosing when to consume (e.g. spend today versus save for the future). In either case, self-control problems can lead individuals to overconsume or overspend relative to what would otherwise be optimal,

which for individuals trying to financially plan, can lead to failure to meet both short and long-term goals.

In the face of such self-control problems, segregating funds allows people to resist the temptation of immediate consumption opportunities by pre-committing their spending or otherwise limiting their ability to overspend (i.e., setting a budget; Heath and Soll 1996). For instance, a person may set an "entertainment budget" and allocate a certain amount of money to be spent on entertainment expenses, such as attending a play or tickets for a sporting event. The segregation of funds can thus facilitate the creation of heuristic decision rules that govern how and when to spend (Shefrin and Thaler 1981, 1988). Such budgeting rules could include going out to dinner only once a month or purchasing lattes only when meeting with friends. Similar rules might designate certain funds, for example funds earmarked as savings towards a house down payment, as off-limits for current spending. Budgeting rules may even govern the accumulation of debt. For example, people may choose to prohibit borrowing except for financing the consumption of specific goods (e.g., purchasing a car) or the consumption of specific classes of goods (e.g., emergency spending) (Shefrin and Thaler 1981; Wertenbroch et al. 2001). They may also choose to follow a budgeting rule that allows spending only from current income, which would prohibit borrowing to smooth consumption as it declines over the pay-period (Huffman and Barenstein 2005) or the life cycle (Friedman 1957). Segregating funds and creating explicit mental budgets can make consumption goals more concrete as well. Reinforcing or increasing the salience of the goals tied to mental budgets can help facilitate self-control, particularly when the mental budget is associated with a goal of limiting overconsumption (Krishnamurthy and Prokopec 2010; Soman and Cheema 2011).

In some instances, funds are segregated into physically separate accounts. Early papers on mental accounting often point to the observed habit of households placing cash into separate envelopes, each labeled with a specific spending category or use (Zelizer 1994; Thaler 1985, 1999). Formally segregating funds in this way can help in the management of self-control problems by increasing the psychological cost required to transfer funds. For example, Soman and Cheema (2011) find that partitioning funds earmarked as savings into two distinct accounts (sealed envelopes) increased the overall level of savings by participants, thus helping households maintain financial discipline and better reach their savings goals. Beyond the decreased fungibility of funds arising from psychological barriers, formal segregation can also introduce real frictions (e.g., bank processing delays or transfer fees) that discourage transferring funds outside of a given account (Shefrin and Thaler 1998). For this reason, formally segregating funds may be especially useful when trying to encourage long-term savings behavior where people face current temptation to spend out of those savings (Thaler 1999).

Potential errors

While the section above details several ways in which segregating funds can benefit households, doing so also has the potential to lead to errors in decision-making. These errors can occur either because mental accounts are too flexible or because they are too rigid.

Though individuals may segregate funds as a way of establishing internal rules on spending, mental accounts are in fact often malleable (Cheema and Soman 2008). In particular, mental accounts may fail to strictly segregate funds when the classification of expenses is unclear or ambiguous. For instance, an expense could be classified as belonging to more than one mental account (e.g., dinner while traveling for work may be classified as a food expense or a work expense). In the absence of a crisp categorization of expenses and funds, individuals who are motivated to do so are able to circumvent the self-control imposed by budgeting rules and convince themselves to overspend. Even in the absence of a motivation to evade one's budgeting rules, expenses that are hard to classify may lead to errors in decision-making. An expense that seems exceptional (unusual or infrequent) may be more difficult to classify than an expense that is more ordinary. Consequently, people are more likely to place these exceptional items into smaller or ad hoc budget categories that lack sufficient context to be meaningful. For example, people are likely to consider spending money on a present for a friend's birthday, on a weekend with relatives visiting from out of town, or on tickets for a favorite band as unique expenses that will occur only once rather than as part of a broader category of expenses (e.g., "spending on infrequent festivities"). When people believe an expense is unusual and will either not recur or will recur infrequently, they may fail to record or record incompletely the expense when posting the expense to their mental budget (Sussman and Alter 2012; Sussman et al. 2015[6]). Failure to appropriately account for an expense can lead to overspending on the expense itself as well as in subsequent periods if individuals overestimate the amount of funds remaining that can be spent.

People tend to overspend on exceptional expenses even when they are large, because they are infrequent. However, in a reverse case, people will ignore even frequent expenses when they are small because people tend to ignore costs they consider trivial (Gourville 1998). People will be more likely to make an identical large purchase when the payment is described in small installments (e.g., as "pennies-a-day"). In both cases, people ignore an expense because they fail to recognize how the individual spending incident fits into a broader spending category[7].

[6] See also Sussman, Alter, and Paley (2017) for a discussion of mental accounting for exceptional items in the context of food consumption.

[7] Installment pricing can also alter the mental representation of a contract's benefits, leading people to think of these as more separate and discrete. This change in representation can increase expected benefits when there are diminishing returns to scale for the benefits (over time or other aggregation). This process can increase purchase intentions even for nontrivial costs (Atlas and Bartels, 2018).

A failure to appropriately account for an expense can extend to other contexts as well. In a recent study, Cheng and Cryder (2017) provide evidence that people engage in "double mental accounting," a phenomenon where people mentally deduct a single gain multiple times when that single gain is associated with multiple purchases. For instance, individuals who receive a gift card (single gain) for future spending in return for current spending (multiple purchases) mentally discount the gift card funds from both the current purchase and the future purchase, even though in reality, the gift card funds can only be applied toward one of those two purchases.

A related pitfall of segregating funds stems from the potential mismatch in the timing of when budgets are set and when consumption opportunities arise. Budgets that are set in advance of consumption serve as useful pre-commitments against the temptation of overspending. For the budget to effectively facilitate self-control, the budgeting rules must by nature be fairly inflexible. However, this non-fungibility of funds can yield sub-optimal behavior, particularly when it is difficult to anticipate consumption needs in advance. Not only can this inflexibility in budget adjustment lead people to overconsume or underconsume goods, but it can also affect the types of goods that are consumed. Purchases that are highly typical of the associated mental account can lead people to consume less on goods within that category. More generally, an inflexible budget prevents individuals from reallocating funds to other categories in response (Heath and Soll 1996). For instance, Hastings and Shapiro (2013) find that when global conditions cause the price of gas to fall by roughly 50 percent, consumers responded by substituting regular gasoline for premium-grade gasoline, rather than by purchasing other types of goods. And, not only did consumers shift to purchasing premium-grade gasoline, but that shift far exceeded what would normally be expected from consumers had they instead received an increase in their income equivalent to the savings from gas prices falling. In other words, inflexibility in consumers' adjustment of their gas budgets lead them to over spend on gas relative to what would be optimal had they not segregated funds for a gas budget in this way.

While categorizing and segregating funds can facilitate making trade-offs by narrowing the set of choices to consider (and the associated cognitive burden), doing so can lead to myopic decision-making. For example, while it is important for people to set aside money for future savings, earmarking funds for specific purposes can lead people to maintain these savings even when doing so means incurring high interest rate debt (Sussman & O'Brien, 2016). In another example, Camerer et al. (1997) study how the behavior of New York City taxi drivers changes in response to changes in the demand for taxi services (e.g., temporary demand shocks from weather changes, conventions, etc.). When the demand for taxi services increases, drivers can spend less time searching for their next customer; as a result, when demand increases, driver earnings per hour also increase. The authors find that taxi drivers segregate their earnings at the daily level. In other words, they decide how long to drive by aiming for a daily income target. This means they simply quit working once they reach that target on high demand days, even though they would

earn more by working longer hours when the "hourly wage" is high (i.e., when demand is high).[8] By focusing on a very narrow time horizon rather than a broader time horizon of one week or month, the drivers effectively leave money on the table that they otherwise could have made. This behavior is not specific to taxi drivers by any means; Rizzo and Zeckhauser (2003) observe similar narrow bracketing behavior with doctors. In general, broad bracketing or less segregation of funds allows people to consider a more complete set of information, though it comes with a trade-off of higher cognitive costs for decision-making (Read et al. 1999).

Treatment of windfall gains as distinct from other funds can also lead to overly narrow decision making. In an examination of restitution payments after World War II among Israelis as an example of windfall gains, Landsberger (1966) finds that groups receiving the largest windfalls spent less than 25% of the amount received. However, those receiving the smallest windfalls spent more than twice the amount of the windfall, suggesting that a narrow focus on these funds led people to spend more than they otherwise would (see also Milkman and Beshears 2009). Additionally, recent research shows that people are more likely to take out a sizable loan for an automobile in months adjacent to receiving a bonus, even when this bonus amount is less than $500. This pattern is consistent with differential treatment of the bonus as a windfall gain (Chan, Jiang, and Zhang, 2017). Unfortunately, people who take out auto loans during this period are also more likely to default on these loans, suggesting that focusing on this bonus amount leads people to spend beyond their means.

Implications for Investing

In addition to influencing how people spend current funds and choices around how much debt to hold, mental accounting can influence the types of investment decisions that people make, as well as the timing of those decisions. Investing is typically thought of as a long-term financial behavior and requires making a trade-off between consumption today and consumption in the future. Over a long time-horizon, earmarking funds across different time periods can help prevent overconsumption in the present due to self-control problems. On the other hand, segregating funds and more generally treating funds as non-fungible across mental accounts can also lead to sub-optimal behavior. In this section, we explore the implications, both positive and negative, of mental accounting and the cognitive processes that underlie investment behavior.

Opening and closing accounts

[8] Subsequent research on the income-targeting has yielded mixed results (see Farber 2015 for an overview of the literature). While several papers have found evidence in support of income-targeting (Fehr and Goette 2007; Crawford and Meng 2011; Chang and Gross 2014), others have failed to find supporting evidence (Oettinginer 1999; Farber 2005, 2008, 2014; Stafford 2015; Chen and Sheldon 2015).

Temporal labels allow for the crisp categorizations of funds. For example, there is no ambiguity in what time horizon a day represents. However, the choice of when an account is considered open versus closed can be quite flexible (Thaler 1999). As noted in the discussion on budgeting, flexibility in the categorization process and in the evaluation of funds can result in malleable mental accounting (Soman and Cheema 2006). This malleability in the temporal bracketing of a mental account has implications for how individuals choose to invest. In particular, the practice of investing often features "paper gains" and "paper losses"—unrealized changes in the value of an investment. Once an investment is sold, any changes in the value of the investment are then realized, with funds being transferred between accounts (e.g., cashing out a stock after a sale). Shefrin and Statman (1987) first proposed a model of an investor who opens a mental account when she makes an investment and then closes that mental account when she subsequently sells the investment. As long as she has not sold the investment, the mental account remains open regardless of what paper gains or losses she experiences. The authors suggest that the nominal purchase price is the natural reference point for the value of the investment against which the investor will evaluate the relative gain or loss. Investors tend to be reluctant to realize a loss (and eager to realize a gain) and any changes in value are realized when the asset is sold and the mental account therefore closed. Consequently, investors "sell winners too early and ride losers too long", a tendency that is now referred to as the "disposition effect" (Shefrin and Statman 1987; Barberis and Xiong 2009). Later research has documented this behavior both in the laboratory (Weber and Camerer 1998) and in the field for individual traders (O'Dean 1998) as well as for professional traders, market makers, and mutual fund managers (Locke and Mann 2000; Coval and Shumway 2005; Shapira and Venezia 2001; Wermers 2003; Frazzini 2006). Taken together, this research suggests an important role for financial advisors to help individual investors who may suffer from this behavioral bias.

To avoid experiencing the disutility that comes with realizing a loss, investors may sometimes "roll" a mental account from one investment to another by selling the original asset and buying a new asset, all within a short window of time (Frydman et al., forthcoming). By allowing some flexibility in the framing of mental accounts, rolling the mental account allows investors to avoid realizing the loss that would have been associated with closing the mental account after the sale of the initial asset. By making the sale of the initial asset and subsequent purchase of the new asset quickly, the mental account remains open with same reference point linked to the purchase price of the initial asset. Looking at the behavior of individual investors, Frydman et al. (forthcoming) find that investors do indeed display behavior consistent with rolling mental accounts: investors are more likely to sell a new asset if its value exceeds that of the initial asset investment, regardless of whether the value of the new asset exceeds or is at a loss relative to its own initial purchase price. Consistent with the notion that the timing of the sale of the initial asset and the purchase of the new asset must occur within a sufficiently short window of time to be

bracketed into the same mental account, the authors further find that the longer the gap in time between the initial sale and subsequent purchase, the greater the likelihood of observing the disposition effect. These findings lend further support to the influence of mental accounting on investor behavior.

The psychological distinction between a paper loss and a realized loss, and thus between an open mental account and a closed mental account has implications for risk-taking behavior as well. In a series of laboratory experiments, Imas (2016) documents a differential effect of paper versus realized losses on risk-taking behavior. In particular, the author finds that people take on more risk after a paper loss and less risk after a realized loss and that the increased risk after a paper loss represents a deviation from individuals' original planned risk-taking strategies. That is, after a paper loss, individuals are reluctant to realize a loss in their investments and instead take on more risk than they otherwise preferred prior to experiencing the paper loss. Such behavior can result in serious consequences for the individual investor and highlight a need for careful monitoring of these types of investor behaviors.

The effect of prior outcomes on risk-taking behavior extends outside of paper versus realized changes to gains and losses more generally. Specifically, individuals engage in more risk-seeking behavior following a prior gain and exhibit more risk-aversion when following a prior loss (Thaler and Johnson 1990). A commonly cited example of this behavior is the gamblers tendency to reference "playing with house money" when their current winnings exceed the initial investment they made to play. By reframing the winnings (house money) as separate from their initial investment to play (own money), they can mentally recode any losses incurred as reductions in the gain from winning as if the disutility associated with losing house money is less than the disutility associated with losing one's own money. In support of this proposed mental accounting, studies have documented greater risk-seeking behavior in a setting where house money accounting is possible relative to a setting where it is not (Battalio et al. 1988; Thaler and Johnson 1990). Similarly, a prior loss can lead individuals to engage in more risk-seeking behavior when faced with an opportunity to return to the original reference level (the initial investment) and break even (Thaler and Johnson 1990). In general, whether an individual decides to follow an initial (sunk) investment by increasing her investment ("escalating commitment") or decreasing her investment ("de-escalating commitment") can depend both on whether the individual has set a mental budget and how difficult it is to mentally track any additional investments against that budget (Thaler 1980; Heath 1995). The more difficult it is to track and account for additional investments against a mental budget, either because the additional investments differ from the initial sunk investment in the type of resource or in their timing and format, the more likely the individual is to respond by escalating commitment.

Investor behavior can be influenced not only by when they consider a mental account to be open or closed but also by the frequency with which they evaluate the mental

account (and thus reset their reference point for an investment). When an investor is differentially sensitive to losses (loss averse), the more frequently she evaluates an investment or "counts her money," the less attractive a risky asset will appear. In other words, investors may exhibit "myopic loss aversion," a tendency to take an overly short-term view on an investment (Benartzi and Thaler 1995). This myopic loss aversion can help explain one of the most striking facts about the behavior of the U.S. stock market: the financial phenomenon referred to as "the equity premium puzzle." Historically, the observed returns on stocks are much higher than that of government bonds (i.e., there is a significant equity premium), so much so that it suggests a surprisingly high level of risk aversion among investors. Though the persistence of the equity premium remains an ongoing puzzle for researchers, myopic loss aversion can help explain why investors may appear especially risk averse when it comes to holding stocks.

What assets to purchase

Mental accounting, and in particular the bracketing or grouping of items, also has implications for the set of investments people choose to consider and the variety of that set of investments. For instance, individuals may assign different investments to different mental accounts rather than consider their portfolio as a whole. Individuals may consider company stock from their employer as belonging to a unique, separate mental account from other funds they hold (Benartzi and Thaler 2001). They may choose the asset allocation for their own retirement savings contributions separately from the allocation for the employer's matched retirement savings contributions (Choi et al. 2009). And they may fail to reallocate "old money" already invested (current accumulated assets) despite reallocating "new money" (future funds not yet contributed) (Ameriks and Zeldes 2000; Benartzi and Thaler 2007).

Whether a set of choices is presented together (e.g., a set of investment options in a portfolio) or separately (e.g., several individual investment opportunities) can also affect which options are eventually chosen. Specifically, people exhibit diversification bias—a preference for greater variety when making choices in combination (i.e., when choices are bracketed together) than when making choices separately (Simonson 1990; Read and Loewenstein 1995). For example, consider an individual who goes to purchase three yogurts. A person with diversification bias would be more likely to purchase a variety of yogurt flavors on a single trip to the supermarket when buying three yogurts all at once than if she were to buy a single yogurt on three separate trips to the store. Additional research has shown that this diversification bias extends to the realm of investing. Benartzi and Thaler (1998) find evidence that some people exhibit an extreme version of diversification bias, or what they call the "1/n heuristic": when presented with n funds, individuals have a tendency to roughly allocate an even split of their resources (1/n of their money) to each of the available funds. This tendency suggests that their allocation of resources across asset types will be strongly influenced by the set and the number of funds

offered. More generally, the choices and allocations people make over money or consumption depends on the subjective grouping of the options under consideration (Fox et al. 2005). An individual may allocate her funds differently across the same set of investment options when shown those options grouped by asset class versus grouped by economic sector.

Concluding Remarks and Future Research

Consumer financial behavior has long been used to gauge the overall well-being of individuals and their households. Why and how people choose to spend, borrow, save, and invest and the plans they make for engaging in these behaviors has direct implications not only for their personal well-being but also for the various companies and financial institutions they interact with in making these decisions. To complicate matters further, people often seek advice from financial advisors, planners, and other experts as well as from non-experts such as friends and family, thus expanding the potential set of influences driving consumer financial behavior.

In this chapter, we discuss a number of ways in which financial decision-making is informed by mental accounting. Our understanding of mental accounts depends crucially on understanding what leads individuals to form the mental accounts that they do, the conditions under which the associated mental accounting rules remain effective, and the subsequent influence of mental accounting on outcomes. Despite its prevalence and importance, there remains a sizeable gap in our understanding of mental accounting and its effects on financial well-being. Below, we sketch some of the current gaps in knowledge and suggest a few promising avenues of research for the future.

Formation and Evolution of Mental Accounts

Research on the flexibility of mental accounts has largely focused on self-driven malleability in mental accounts in settings where people can exploit flexibility in classifying ambiguous expenses or in accommodating unclassified expenses to sidestep the self-control imposed by mental accounting budgeting rules (Cheema and Soman 2008). However, much of the existing research takes certain mental accounts as given (e.g., a food account, an entertainment account, or a gas account), and additional research is needed to better understand how people select accounts and how accounts may evolve over time and as a result of environmental factors. For example, there has been minimal attention devoted to how external forces can strengthen or weaken the categorization of funds. In situations where mental accounting facilitates self-control, any external weakening of mental accounts presents a potentially serious concern. These concerns especially hold when the weakening of mental accounts is accompanied by financial costs.

Consider, for example, defined contribution retirement savings plans such as a 401(k). Under these plans, pre-tax contributions are deducted directly from an employee's

paycheck and placed in a 401(k) account with the option to be invested. In addition to those funds being earmarked as retirement savings, withdrawals from a 401(k) account prior to age 59 ½ are generally subject to an early withdrawal financial penalty to discourage the cashing out of funds from the account. Recent evidence suggests, however, that this separate account may not be sufficient in light of premature "leakage" of funds from these retirement savings plans (Beshears et al. 2015). While some of the channels through which leakage occurs, such as early withdrawal or the taking out of 401(k) loans, may be due to liquidity needs, other channels can arise as a result of seemingly innocuous outside factors. Most notably, workers have the option to cash out funds from their retirement accounts when leaving a job. A study by Aon Hewitt of over 1.8 million employees found that nearly 42% of employees who left their job in the prior year chose to cash out their retirement accounts rather than remain in their current plan or rollover those funds to an Individual Retirement Account (IRA) or a 401(k) plan with their new employer (AON Hewitt 2011). Though some of those who choose to cash out when leaving their job may need immediate access to cash, the prevalence of this behavior suggests that separating from a job works in part to undo both the formal and informal segregation of those funds. Outside of the 401(k) account, those leaked funds can be easily spent and may now be categorized as cash-on-hand rather than as retirements savings for the future. Recent research has explored interventions to enhance the effectiveness of earmarking on savings and finds that using a visual reminder of the savings goal (in this case, a picture of the household's children) and physically segregating funds into sealed envelopes significantly increased the rate of savings for participants (Soman and Cheema 2011). Taken together, these studies highlight a need for additional research on what factors, both internally- and externally-motivated, can influence the effectiveness of mental accounts.

Mental Accounting Interactions

While there is some research describing how the categorization of funds varies by different individual characteristics (e.g., Abeler and Marklein, 2017; Paul, Parker and Dommer, 2017; Shah et al., 2015), the evidence on such relationships is relatively sparse, and little is known about how past experiences inform mental accounting behavior. Even less attention has been devoted to how households, rather than individuals, form mental accounts, especially in the face of potentially different preferences and categorization processes between members of the same household. The financial well-being of a household often depends on the decision-making input of multiple members within the household. Yet, most research to date on mental accounting has overlooked how intra-household decisions may inform the construction of household mental accounts and has instead either focused on individual decision-making or has treated households as if they can be thought of as a single, unified unit. While this latter assumption can greatly ease the complexity in studying mental accounting behavior, it ignores potentially important intra-household dynamics that may influence household outcomes. For instance, a household

budget for a married couple depends on the inflow of resources from both spouses, which may vary in amount, timing, and reliability, as well as the outflow of expenditures from the household, which may be purchased jointly or separately by both spouses. Potential intra-household conflicts can arise not only from differences in the inflow and outflow of funds across spouses but also by differences in personal tradeoffs and priorities as well as household-specific financial management structures (Ashraf 2009). Within the domain of consumer finance, researchers have only recently begun to extend mental accounting to the financial decision-making of couples. In a recent study, Garbinsky and Gladstone (2017) explore whether couples spend differently out of different types of financial accounts. They find that couples are more likely to purchase essential goods and less likely to purchase luxury goods when spending from a joint account (rather than a separate account) and provide evidence suggesting that these spending patterns are driven by a differential need to justify purchases when spending out of pooled funds (the joint account). These findings underscore a critical need for additional research that can shed light on how households form and manage mental accounts.

Mental Accounting and Technology

Another underexplored area of research is the role of recent technological advances in the financial services sector, or "FinTech," and how such technology can help facilitate or hinder mental accounting. Emerging technology presents both threats and opportunities to consumers as they grapple with their household finances in an ever-evolving financial environment. For instance, recent advances in payments and expense tracking by financial institutions allow consumers to see not only how much they spend each month but also how much of their spending goes to eating out versus retail shopping. In the realm of budgeting, personal financial management applications and personal budgeting software act as financial aggregators and allow consumers to connect different financial accounts to help track spending and saving over time within self-set budget categories. Indeed, some banking institutions now allow customers to open multiple savings accounts and label each with a different savings goal, effectively providing their customers with the ability to make mental accounting behavior more explicit. In the investing realm, automated investing platforms encourage people to designate certain funds (e.g., the "round up difference" between a purchase and the next integer dollar amount) for investing. These platforms often aim to engage people who may otherwise not invest on their own. As technological advances change the financial landscape that consumers face, there is an increasing need for research on how consumer financial behavior will adapt and how our understanding of the role of mental accounting behavior evolves as well.

Mental Accounting and Well-Being

Finally, and perhaps most importantly, there is a pressing need for additional research on how mental accounting and its associated behaviors directly link to overall

financial well-being. While our review highlights the role mental accounting can play in influencing financial decision-making in various settings and the potential benefits and pitfalls that can occur as a result, establishing a direct link between mental accounting and economic outcomes, particularly in the long-term, remains an ongoing challenge.

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