

INVITED REVIEW

Perspectives on mental accounting: An exploration of budgeting and investing

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This article provides an overview of recent advances in the literature on mental accounting within the context of consumer financial decision-making. We first discuss the categorization process that underlies mental accounting and the methods people use to categorize funds. We then highlight some of the notable work that examines how mental accounting influences budgeting, spending, and investment decisions. The article concludes by proposing an agenda for future research, focusing on current gaps in our knowledge and promising areas to explore.

KEYWORDS

decision-making, household finance

Mental accounting is “the set of cognitive operations used by individuals and households to organize, evaluate, and keep track of financial activities” (Thaler, 1999). While traditional accounting efforts by businesses and corporations are well established, the ways in which people perform these same activities is the source of an exciting and growing body of research. The literature on mental accounting explores processes such as how people group expenses into categories, assign funds to these categories, determine budgets, and perform elements of cost–benefit analyses.

Individuals and households face a wide array of complex financial choices that can have long-lasting effects on their economic well-being. Understanding the ways in which mental accounting can influence how people manage their finances is of great importance. This article provides a summary overview of mental accounting within the context of consumer financial decision-making.¹ We first discuss the categorization process that underlies mental accounting and the methods people use to categorize funds. We then turn to implications of mental accounting for budgeting, spending, and investment decisions. We conclude by proposing an agenda for future research, focusing on current gaps in our understanding and promising areas to explore.

1 | MENTAL ACCOUNTING AS CATEGORIZATION

Grouping funds into different categories, or “accounts” is a defining element of mental accounting. For example, expenses incurred at H&M or the Gap may be grouped together in a spending category specific to clothing. Prior research has argued that the cognitive processes underlying mental accounting are similar to those that underlie the categorization of objects and events more generally and that mental accounting can therefore be understood through the cognitive principles of categorization (Heath & Soll, 1996; Henderson & Peterson, 1992). For instance, under one proposed framework, expenses are tracked by first being noticed (i.e., booked) and then assigned to a meaningful account (i.e., posted) based on judgments of similarity and categorization (Heath & Soll, 1996).

This approach highlights important reasons why individuals might engage in mental accounting. Categorization is a way of organizing information into groups based on commonalities. This organization improves cognitive efficiency by facilitating the quick recall and judgment of relevant information (Henderson & Peterson, 1992). Within the domain of consumer finance, categorizing funds can facilitate the processing of information for evaluating financial

decisions. Absent such categorization, a person would need to consider her full financial portfolio when faced with nearly any consumption decision. Even a simple question such as how much is available to spend on tonight's dinner would require integrating across present and future wealth as well as incorporating all debts and all anticipated current and future expenses and opportunity costs. If that same person was to instead incorporate principles of mental accounting, she could focus on evaluating the decision for a given accounting period (e.g., a year), taking into consideration how much she believes is reasonable to spend on dining out given her income and expenses, how much she has already spent dining out, and how much more she expects to spend on these costs in the given period. This latter assessment is manageable for most people whereas the former is not.

While categorizing funds can reduce the cognitive effort associated with making a financial decision, it can also lead to systematic errors. Under standard economic theory, the categorization of funds into mental accounts should have no effect on subsequent behavior since the boundaries of mental accounts are only notionally set. Yet a wealth of evidence finds that the way we group and label funds influences our preferences for spending. Put another way, mental accounting violates the economic principle of fungibility—the notion that money is interchangeable (Abeler & Marklein, 2017; Shefrin & Thaler, 1988; Thaler, 1990, 1999). Even when funds are categorized only by the method of payment used (cash or credit), differences in the marginal propensity to spend across separate categories persist (Soman, 2003). In the following section, we discuss two primary methods for categorizing funds and how such categorization affects behavior.

2 | METHODS FOR CATEGORIZING FUNDS

2.1 | Sources and uses of funds

A common practice in mental accounting is to categorize funds based on their origin. For a given household, funds to be spent include the inflow of resources (e.g., income or capital gains) and the stock of available resources (e.g., retirement savings or housing wealth) (Thaler, 1999). Early studies focused on how wealth might change (e.g., receiving a raise or anticipating a future inheritance check) and proposed three broad categories that might intuitively comprise a person's wealth over her lifetime: current income, current assets, and future income (Shefrin & 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 (Courant, Gramlich, & Laitner, 1986;

Shefrin & Thaler, 1988). In other words, people are differentially tempted to spend (consume) a dollar of wealth depending on which of three categories that dollar is from, even though the source of income is normatively irrelevant. Receiving a raise today, for instance, will lead to a greater increase in spending than an equivalent increase in a future inheritance check.

Within these wealth partitions, funds are commonly categorized by their source. For example, many studies suggest that people label changes in current income either as “regular income” or as a “windfall gain” (Arkes et al., 1994; Ishikawa and Ueda 1984; O'Curry, 1999; O'Curry & Strahilevitz, 2001; Milkman & Beshears, 2009; Shefrin & Thaler, 1988; Thaler, 1999). These studies consistently find that people are more likely to spend windfall gains than regular income. For example, biweekly-paid workers typically receive two paychecks each month; however, for about 2 months a year, they instead receive three as a predictable result of the distribution of days in the calendar. These workers spend more in months following the “extra” third paychecks, consistent with treatment of these “extra” paychecks as windfalls (Zhang, 2016). Categorizing funds by their source can influence the types of goods that people are likely to purchase, in addition to how much to spend. Consumers are more likely to spend windfall gains on luxury goods (e.g., dining out at an expensive restaurant) than on more essential goods (e.g., shopping at the grocery store) (O'Curry, 1999).

A second common method for categorizing funds is by their intended use, for instance, based on the product it will be used to purchase. Households may set budgets for various expenses (e.g., a gas budget or an entertainment budget) and treat funds within each tagged mental account as distinct and imperfectly substitutable (Hastings & Shapiro, 2013; Heath & Soll, 1996; Thaler, 1985). In some cases, a match between a labeled source of income and possible uses of the funds (i.e., how typical a good is of those generally purchased with funds from that source) leads this categorization to emerge. Put another way, people spend money on purchases that align with the source of the funds used. For example, beneficiaries of the Supplemental Nutrition Assistance Program (SNAP) who receive restricted-use funds for purchasing food exhibit a higher marginal propensity to consume SNAP-eligible food out of their SNAP benefits than out of cash (Hastings & Shapiro, 2017). Reinhardt, Bartels, and Parker (2015) observe similar behavior in a retail context: in comparison to those who receive an unrestricted-use gift card, people who receive a retailer-specific gift card prefer 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 products that are less congruent (e.g., sweaters from a Levi's store). 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 funds used (O'Curry, 1999).

2.2 | Sets of choices and outcomes

People also categorize funds by grouping choices or event outcomes together, a practice commonly referred to as choice bracketing (Read, Loewenstein, & Rabin, 1999). Brackets can be defined broadly over large sets of choices or narrowly over very small sets of choices. For example, an individual deciding whether to make a purchase may consider only the purchases made thus far on this shopping trip (narrow bracketing) or the set of all purchase made across all stores during the week (broad bracketing). Importantly, choice bracketing facilitates the defining of separate mental accounts.

An important and common way in which choice bracketing behavior manifests is temporal bracketing—grouping funds based on the timing of their future use. Specifically, people can choose to temporally combine or separate different expenditures into the same or different mental accounts (Linville & Fischer, 1991; Thaler & Johnson, 1990). Consistent with this behavior, the temporal distance between two outcomes can influence their cognitive integration: temporally separate outcomes are more likely to be segregated across different mental accounts while temporally proximate outcomes are more likely to be integrated into the same account. Temporal bracketing also plays a large role in setting household budgets in which people must determine the period (e.g., daily, monthly, etc.,) over which they evaluate and reconcile their mental accounts (Read et al., 1999; Thaler, 1999). These budgeting periods can directly influence both financial decisions and judgments (Ülkümen, Thomas, & Morwitz, 2008). 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 consequences. For instance, temporal decoupling of expenditures (e.g., the payment of a tax and the later use of tax revenue) can affect attitudes toward the eventual use of those funds (Sussman & Olivola, 2011; see also Sussman & White, forthcoming).

Key elements of prospect theory (Kahneman & Tversky, 1979) have important implications for mental accounting and can affect the way people form and evaluate groups of outcomes. In particular, under prospect theory, people evaluate events in relation to a reference point, with changes coded as either a relative gain or a relative loss. For instance, a homeowner might decide whether to sell her house by considering whether its current nominal market value exceeds its original purchase price (i.e., her reference point) (Genesove and Mayer, 2001). Prospect theory thus implies that spending decisions can be driven not just by market prices but also by how good of a deal a purchase might be. In other words, people evaluate a purchase by its “transaction utility”: the perceived value a buyer receives from the relative difference between her reference price for a given product and its actual market price (Thaler, 1985). For instance, paying \$5 for a bottle of water may be expected at

a movie theater yet seem too high a price to pay at the grocery store, even though the bottle of water in each scenario is the same.

Important research remains to be done to build a full account of how mental accounting categories are formed; however, these studies offer a framework for understanding the cognitive underpinnings of mental accounting behavior. In the following sections, we discuss some of the current research on the implications of mental accounting for consumer behavior, focusing on two important applications: budgeting and investing.

3 | BUDGETING

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). For individuals or households, mental accounting guides this process. Budgets can play an important role in how households manage their financial lives, 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.

3.1 | Current survey evidence on budgeting

Households are often encouraged to budget, and a variety of financial products have been created to facilitate this budgeting process. Yet surprisingly little is known about how people actually budget. Most surveys on budgeting aim primarily to capture engagement—whether or not individuals have a budget. For example, the 2015 National Financial Capability Study estimated that just over half of individuals (56%) report having a household budget (Lin et al., 2016). For longer-term financial planning, a survey of participants in plans administered by Teachers Insurance and Annuity Association of America (TIAA) reports that roughly 39% of respondents agree or strongly agree that they have spent a significant amount of time developing a financial plan (Ameriks, Caplin, & Leary, 2013). While informative, these surveys largely refrain from important questions on how or why budgeting takes place.

Emerging studies underscore the many ways in which households might budget, especially when financially constrained. For instance, one strategy to cope with a financial shortfall is for a person to stretch her financial resources (“efficiency planning”) to make the most of what she has (e.g., using coupons). An alternative strategy is to sacrifice less important goals (“priority planning”; Fernbach, Kan, & Lynch 2015). Financially constrained households may also cope with financial shocks to their budget by establishing a “pecking order” of resources to turn toward during hard

times (Lusardi, Schneider, & Tufano, 2011). For example, households that are strapped for cash may try to borrow first from friends and family before turning to their credit cards. Households may similarly 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 is tied to our understanding of mental accounting behavior and how individuals categorize funds. Principles of mental accounting can operate informally to influence how people spend their money even in cases with no formal or explicit budget.

3.2 | Assets versus debts

In addition to its direct influence on cash flows, mental accounting can affect how people view their household balance sheet and overall financial wealth. Much like that of a business, a household balance sheet provides an overview of the finances of a household. Perceptions of this balance sheet and the assets and liabilities that comprise it can influence how much people feel they can afford to spend and how they choose to finance purchases.

One important branch of the mental accounting literature concentrates on individual attitudes toward debt. A surprising, but well-documented empirical fact is that some people hold significant high-interest debt while simultaneously holding low-interest liquid assets (Gross and Souleles 2002). While a number of studies put forth plausible explanations for this pattern of simultaneous borrowing and savings, a consensus on what factors are driving this behavior has yet to be reached (Fulford, 2015; Laibson et al. 2003; Sussman & O'Brien, 2016; Telyukova, 2013).

A second puzzle in the literature concerns individuals' willingness to take on debt. People borrow to move consumption forward from the future to the present. Their willingness to borrow should depend entirely on the relative value of consumption today versus in the future and the cost to moving that consumption forward (i.e., the interest rate). Yet a number of studies provide empirical evidence documenting a strong aversion to debt and suggest that such behavior may stem from a psychological aversion rather than financial trade-offs. This puzzling behavior is difficult to rationalize with standard economic models.

To explain this phenomenon, Prelec and Loewenstein (1998) propose a "double-entry" mental accounting model in which people engage in two important behaviors. First, people associate or "couple" the consumption and payment of a good and in doing so make two mental entries: (a) the utility from consumption after subtracting the disutility of associated payments and (b) the disutility of payments after subtracting the utility of associated consumption. For example, driving a car brings to mind the payments required to purchase the car while paying for a car brings to mind the future enjoyment to 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 any pain of prepayment is mitigated by thoughts of the future pleasure of that consumption. Under this model, paying in advance decouples the immediate pain of paying from the pleasure of consumption. The car owner can enjoy driving the car as if it were free, and any pain of prepayment is buffered by thoughts of the future enjoyment of driving. The double-entry mental accounting model thus predicts a preference for paying for consumption in advance, that is, it predicts debt aversion. Hirst, Joyce, and Schade-wald (1994) also provide related evidence on debt aversion. They argue that people prefer to borrow for goods when the repayment of the associated debt corresponds with the timeline of consumption benefits. Because debt can vary significantly in the timing of future payments, such a preference can give rise to debt aversion. Students, for instance, may be resistant to taking out a loan since repayment typically extends far past when students are in school.

Returning to perceptions of household balance sheets, all else equal, a person's view of her personal wealth should be driven by her net worth—the difference between her assets and debts. Holding constant her overall worth, the level of assets and debt should not matter. However, Sussman and Shafir (2012) find that people differentially perceive the relative wealth of financial profiles with equal net worth but different asset and debt levels (see also Sussman, 2017). Financial profiles with higher levels of assets and debt are viewed as wealthier when overall net worth 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 profiles with low levels of assets and debt are viewed as wealthier when 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). These differences in perceived wealth can greatly influence financial decisions, particularly the willingness to take on additional debt. By providing evidence of people differentially focusing on their assets (or debts) when their net worth is negative (or positive), these findings suggest that people 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.

3.3 | Potential benefits and repercussions

Two central benefits of mental accounting that have received significant academic attention are the simplification of financial decisions and the implementation of spending rules. First, segregating funds can help simplify the often-overwhelming process of financial planning by limiting the complexity of choices that households face (Thaler, 1999). Budgeting can help clarify spending rules and financial goals while also increasing the pain of paying, thus helping people to stay on track (Kan et al. 2015; Rick, Cryder, &

Loewenstein, 2007). Second, segregating funds can encourage financial discipline (Shefrin & Thaler, 1988). In the face of self-control problems, segregating funds allows people to resist the temptation of immediate consumption opportunities by pre-committing their spending (i.e., setting a budget; Heath & Soll, 1996). For instance, a person may set an “entertainment budget” and only allocate a certain amount of money to be spent on entertainment expenses. The segregation of funds can thus facilitate the creation of heuristic decision rules that govern how and when to spend (Shefrin & Thaler, 1988; Thaler & Shefrin, 1981). Such budgeting rules could include going out to dinner only once a month or designating certain funds, for example, funds earmarked as savings toward a house down payment, as off-limits for current spending.

Segregating funds also has the potential to lead to errors in decision-making. These errors can arise as a result of mental accounts being either too flexible or too rigid. Though individuals may segregate funds as a way of establishing internal rules on spending, mental accounts are in fact often malleable and may fail to strictly segregate funds when the classification of expenses is unclear or ambiguous (Cheema & Soman, 2006). For instance, an expense could be classified as belonging to more than one mental account (e.g., clothes purchased for work may be classified as a clothing expense or a work expense). Without the crisp categorization of expenses and funds, individuals who are motivated to do so can circumvent the self-control imposed by budgeting rules and convince themselves to overspend (see also Imas, Loewenstein, & Morewedge, 2017).

Even in the absence of a motivation to evade one's budgeting rules, expenses that are hard to classify may lead to decision-making errors. An expense that seems exceptional (unusual or infrequent) may be harder to classify than a more ordinary expense. 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 may consider money spent on a Broadway show or on a birthday present to be one-time expenses rather than part of a broader set 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 fully record the expense when posting it to their mental budget (Sussman & Alter, 2012; Sussman, Sharma, & Alter, 2015).² Failure to appropriately account for an expense can lead to overspending on the expense itself as well as in subsequent periods.

People tend to overspend on exceptional expenses even when they are large, because they are infrequent. However, people will often 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.³

Potential mismatch in the timing of when budgets are set and when consumption opportunities arise can also lead to suboptimal behavior. Budgets set in advance of consumption serve as useful pre-commitments against the temptation of overspending. The budgeting rules must therefore be fairly inflexible by nature to effectively facilitate self-control; however, this inflexibility can be problematic in instances when it is difficult to anticipate consumption needs in advance. An inflexible budget can prevent people from reallocating funds to other categories, potentially leading to over- or under-consumption (Hastings & Shapiro, 2013). It can also affect the types of goods that are consumed since purchases that are highly typical of an associated mental account can block spending on other goods within the same category (Heath & Soll, 1996).

While categorizing funds can improve cognitive efficiency by narrowing the set of choices to consider, doing so also risks the possibility of 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 general, broad bracketing or less segregation of funds allows people to consider a more complete set of information, albeit with a trade-off of higher decision-making costs (Read et al., 1999).

4 | IMPLICATIONS FOR INVESTING

People must plan their financial strategies over their lifetime, making trade-offs between consumption today and consumption in the future. Mental accounting can influence the investment decisions that people make when assessing these trade-offs over the long-term. In this section, we explore the implications of mental accounting for investment behavior, once again highlighting both the potential benefits and pitfalls that may arise as a result.

4.1 | Opening and closing accounts

When investing, people purchase financial assets at a given price that are then held to be sold on a future date. Mental accounting has important implications for how individuals choose to make these investment decisions. As noted earlier, one way in which people engage in mental accounting behavior is by temporally bracketing a set of choices or outcomes to be narrowly evaluated within the same mental account. The flexibility in how people assign expenses previously highlighted in our discussion on budgeting can similarly apply to how people temporally bracket. Specifically, the choice of when a mental account is considered open

versus closed can be quite flexible (Thaler, 1999). Flexibility in the temporal bracketing of mental accounts can therefore affect how people characterize changes in the value of an investment. In particular, investors often draw a distinction between unrealized changes in value—paper gains and paper losses—and realized changes in value once an investment is sold (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 making an investment and then closes that mental account upon selling, with the nominal purchase price as the natural reference point against which relative gains or losses are evaluated. In other words, the mental account remains open while the investment is unsold, regardless of any paper gains or losses the investor experiences. An implication of this model is that investors will exhibit what is now referred to as the disposition effect: a tendency to “sell winners too early and ride losers too long” (Barberis & Xiong, 2009; Shefrin & Statman, 1987). This tendency stems from investors' reluctance to realize a loss (or eagerness to realize a gain) by selling their assets and therefore closing the associated mental account and has been documented across a variety of settings, both in the laboratory and in the field (Coval & Shumway, 2005; Frazzini, 2006; Locke & Mann, 2000; O'Dean, 1998; Shapira & Venezia, 2001; Weber & Camerer, 1998; Wermers, 2003). Another way to avoid the disutility from realizing a loss is by selling the original asset and then buying a new asset in quick succession (Frydman, Hartzmark, & Solomon, 2018). Described as “rolling” a mental account from one investment to another, the sale of an initial asset and subsequent purchase of a new asset can help keep a mental account open (i.e., no realized loss).

Investors may also differentially take on risk based on prior outcomes. Imas (2016), for instance, shows that people take on more risk after a paper loss and less risk after a realized loss. He finds that individuals are reluctant to realize a loss in their investments after a paper loss and instead take on more risk than they otherwise would have preferred. In another study, Thaler and Johnson (1990) demonstrate that individuals are more risk-seeking following a prior gain and exhibit greater risk-aversion following a prior loss. A common example of this behavior is the tendency for gamblers to reframe their winnings (house money) as distinct from their initial investment (own money). Doing so mentally recodes any losses as reductions in the gain from winning as if losing house money is less painful than losing one's own money. This mental recoding can lead to escalating commitment in instances when tracking and accounting for additional investments against a mental budget is difficult, for example, when additional investments differ from the initial sunk investment in the type of resource, timing, or format (Heath, 1995; Thaler, 1980). Such behavior can result in serious consequences and highlight a need for careful monitoring of how investors respond to prior outcomes.

4.2 | What assets to purchase

Under standard economic theory, individuals should consider their financial portfolio as a whole. Yet some individuals narrowly bracket their investments, assigning different investments to different mental accounts. For instance, funds associated with an employer (e.g., company stock or employer-matched retirement savings contributions) may be categorized as distinct from other funds that are held (Benartzi & Thaler, 2001; Choi, Laibson, & Madrian, 2009). As another example, individuals may treat “new money” as distinct from “old money” in their retirement plans, reallocating future funds that are not yet contributed while failing to reallocate current funds that are already accumulated (Ameriks & Zeldes, 2000; Benartzi & Thaler, 2007).

How choices are subjectively grouped can also influence investment behavior. This influence arises in part because people exhibit diversification bias—a preference for greater variety when making choices in combination than when making choices separately (Read & Loewenstein, 1995; Simonson, 1990). For example, an individual will tend to seek a more diverse bundle of flavors when purchasing three yogurts simultaneously than when purchasing a single yogurt across three separate instances. An implication of this bias is that the timing and framing of individual investment opportunities can influence how investors allocate their funds; a set of choices presented simultaneously may be viewed as a set of investment opportunities in a portfolio, whereas those same choices presented sequentially (or otherwise separately) may be viewed as individual investment opportunities. Benartzi and Thaler (1998) find that in some instances people exhibit an extreme version of diversification bias, or what they call the “ $1/n$ heuristic”: an individual presented with n funds will tend to allocate a roughly even split of their resources ($1/n$ of their money) to each available fund. That is, the allocation of resources across assets can naively depend simply on the number of funds offered. More generally, the choices and allocations people make over money or consumption can depend on how options under consideration are subjectively grouped (Fox, Ratner, & Lieb, 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.

5 | AGENDA FOR FUTURE RESEARCH

Our ability to improve economic well-being depends crucially on our understanding of how individuals and households manage their finances—how they choose to spend, borrow, save, and invest—and the plans they make for engaging in these behaviors. Key to this is an understanding of how financial decision-making can be informed by mental accounting. However, the study of this relationship can be

quite challenging, in part because of the many potential influences that may drive financial behavior. Not only must researchers account for the direct influence of other individuals who may offer advice, either formally (e.g., financial planners and other experts) or informally (e.g., friends and family), but they must also consider the broader institutional environment in which financial decisions are made.

We have discussed a number of studies that help shed light on mental accounting and its relationship with financial decision-making. Yet despite this considerable body of research, there remains a sizeable gap in our understanding of mental accounting. While empirical evidence suggests that people often do engage in mental accounting behavior, there remain a number of open questions, including: how prevalent is mental accounting behavior; what leads individuals to form the mental accounts that they do; how persistent are these accounts across contexts and over time; under which conditions do mental accounting rules remain effective; and what influence does mental accounting have on economic outcomes? With these and related questions in mind, we sketch below some of the current gaps in knowledge and suggest a few promising avenues for future research.

5.1 | Formation and evolution of mental accounts

Research on the flexibility of mental accounts has largely focused on settings where people can exploit the presence of ambiguous or unclassified expenses to sidestep their budgeting rules (Cheema & Soman, 2006). However, much of the existing research takes certain mental accounts as given (e.g., an entertainment account or a gas account). 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 instance, while prior research has shown that people may engage in broad or narrow bracketing behavior when forming mental accounts, there is little empirical evidence on how or the extent to which people differ in the level of specificity with which they categorize their spending. Likewise, little is known about how an individuals' current financial goals influence how they choose to categorize their income or their spending.

There has also 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, especially when accompanied by financial costs. Consider, for example, defined contribution retirement savings plans such as a 401(k). Under these plans, pretax contributions are deducted directly from an employee's paycheck and placed in a 401(k) account with the option to be invested. Withdrawals prior to a certain age are generally subject to an early withdrawal financial penalty to discourage people from cashing out

funds from the account. In addition to providing a formal, tax-advantaged means of segregating funds, 401(k) accounts may also encourage the mental categorization of these funds as retirement savings for the future. 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, Choi, Hurwitz, Laibson, & Madrian, 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. One study 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 or a 401(k) plan with their new employer (Hewitt, 2011). A number of factors may influence people's decision to cash out their accounts, including the need for immediate access to liquid funds. However, the prevalence of this behavior raises the question of whether separating from a job can undo not just the formal segregation of those funds but also any informal mental segregation as well. Outside of the 401(k) account, those leaked funds can be easily spent and may now be categorized as cash-on-hand rather than retirement savings for the future. Recent research on interventions to enhance the effectiveness of earmarking on savings has found that using a visual reminder of the savings goal and physically segregating funds into sealed envelopes significantly can increase the rate of savings (Soman & Cheema, 2011). Additionally, people tend to be more dedicated to keeping money in saving in accounts when the accounts are notionally earmarked for more responsible uses (Sussman & O'Brien, 2016). 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.

5.2 | Mental accounting interactions

While a small recent literature explores how the categorization of funds varies by different individual characteristics (e.g., Abeler & Marklein, 2017; Paul, Parker, & Dommer, 2017; Shah, Shafir, & Mullainathan, 2015), the evidence on such relationships is relatively limited, and more work remains to be done on how people differ in their mental accounting behavior. Potential heterogeneity is especially important when considering how households, rather than individuals, form mental accounts. The financial well-being of a household is often shaped by the decisions of multiple members who may differ in their preferences or decision-making processes. Household members may, for example,

differ in their patience for saving for the future or in how they choose to categorize an unexpected bonus.

Such differences can be further complicated by the dynamics that naturally arise when dealing with the realities of a multiperson household. For instance, a household budget for a married couple depends on the income of both spouses, which may vary in amount, timing, and reliability, and on their expenditures, which may be purchased jointly or separately. Even the structure of a household's financial accounts can influence spending decisions. One recent study finds 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 suggests that these spending patterns are driven by a differential need to justify purchases when spending out of pooled funds (Garbinsky & Gladstone, 2017). Households may also differ in how they choose to manage their finances (Ashraf, 2009; Olson & Rick, 2018). Members of the same household may engage in joint decision-making, or they may choose to instead designate one person as responsible for managing the household's finances or even to manage their finances independently of each other.

Despite its importance, research on mental accounting has largely ignored the role of intra-household dynamics and financial decisions from the perspective of the household. Instead, most research has 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, there is a critical need for additional research exploring how households form and manage mental accounts.

5.3 | Mental accounting and technology

The past decade has witnessed significant technological advances in the banking and financial services industry. The potential for such financial technology, or FinTech, to either facilitate or hinder mental accounting remains underexplored in the academic literature despite its rapid growth and disruption of the traditional financial sector. For instance, recent advances in payments and expense tracking by financial institutions have transformed the way people manage their household finances by allowing them to see not only how much they spend but also how much of their spending goes to eating out versus retail shopping. While many financial institutions automatically track spending within preset categories, they increasingly offer online budgeting tools that allow consumers to track their spending within self-determined budget categories. Some institutions also allow their customers to open multiple savings accounts and label each with a different savings goal, effectively providing consumers with the ability to make mental accounting behavior more explicit.

Nor are advances in payment and expense tracking limited to financial institutions. Many third-party personal financial management applications allow consumers to link balance and transaction information across multiple financial accounts, even when those accounts differ in purpose or are held at different financial institutions. By aggregating their financial information, these applications provide consumers with a more comprehensive view of their overall household balance sheet.

The rise of FinTech has the potential to transform how people invest as well. For instance, digital financial advising platforms offer relatively low-cost automated financial advice and investment management services ("robo-advising") as an alternative to traditional financial advising. By lowering the barriers to participation, these platforms often aim to engage people who may otherwise not fully invest on their own.

While technological innovation brings with it many benefits, it isn't without potential risk as well. For some people, the increasing availability and tracking of their financial information can serve as a painful reminder of the financial constraints they face. This can in turn discourage them from budgeting or otherwise engaging with their finances to avoid the disutility from negative information. Relatedly, the ease of automated investing platforms may lead people to pay less attention and to potentially under-adjust their finances over time. As technological innovations change the financial landscape that consumers face, there is an increasing need for research on how financial behavior and decision-making will adapt and how our understanding of the role of mental accounting behavior evolves as well.

5.4 | Mental accounting in the broader context

An important but open question is how mental accounting and its associated behaviors directly link to overall financial well-being. While this paper highlights the role of mental accounting 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. Mental accounting may also have important implications for domains beyond financial decision-making. For example, in the health domain, people may choose to set a limit for how many calories they can consume per day and then allocate those calories across different categories of food that they treat as imperfectly substitutable (e.g., calories for breakfast versus calories for a snack). At present, applications of mental accounting to other domains remain largely unexplored.

Finally, as the literature on mental accounting continues to grow, researchers should expand their focus to include questions on how policymakers and practitioners might leverage insights from mental accounting biases to develop helpful policies and tools. When such behavior instead

proves harmful, it may also be useful to develop interventions to counteract these mental accounting biases. In many ways, the institutional environment that people face is already designed—often unintentionally—to encourage or discourage mental accounting behavior: government benefits are often distinctly labeled and disbursed separately from wage and salary income (e.g., Temporary Assistance for Needy Families or the Earned Income Tax Credit); recurring expenses are often due to a frequency set by others (e.g., a monthly rent payment or credit card bill); and tax-advantaged financial accounts often dictate the allowed use of withdrawn funds (e.g., health savings accounts or 529 college savings plans). Recognizing this influence and exploring how to intentionally develop policies and tools to help improve individual welfare with this institutional environment in mind will help move us closer to a more complete understanding of mental accounting.

ENDNOTES

¹This article is based on and draws heavily from Zhang and Sussman (2018), which contains a more complete review of these topics.

²See also Sussman, Alter, & Paley (2017) for a discussion of mental accounting for exceptional items in the context of food consumption.

³Installment 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 & Bartels, 2018).

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