Influence of motivated reasoning on saving and spending decisions

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Abstract

The decision to save enhances well-being in the long-term but it conflicts with the desire to spend money to gain immediate gratification. In this research, we examine the influence of having single versus multiple accounts on individuals’ savings and spending decisions. We find that individuals save more with a single account than with multiple liquid accounts. Utilizing work on motivated reasoning and fuzzy-trace theory, we suggest that multiple accounts engender fuzzy gist representations, making it easier for people to generate justifications to support their desired spending decisions. However, a single account reduces the latitude for distortion and hinders generation of justifications to support desirable spending decisions. Across four studies that provide participants with the opportunity to earn, spend, and save money, we demonstrate the proposed effect and test the underlying process.

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Introduction

“A penny saved is a penny earned.” Benjamin Franklin

Well-being has been defined as what is ultimately good for the individual. However, conflicts arise when well-being or happiness in the present could be at the cost of long-term well-being. One driver of well-being is savings behavior because in the long-term, savings leads to greater well-being by reducing uncertainty and allowing one to lead a more comfortable life. However, the counterpart of savings, spending, allows one to buy a product or service immediately and receive immediate gratification that can enhance well-being in the short-term but may be detrimental to well-being in the long-term. Policy makers and government agencies continuously advise people on increasing their savings and have devised several plans to enhance savings rate. For instance, research has examined the many factors that influence how individuals decide on retirement investments—their allocations, choice portfolio, whether they revisit their decisions—all in the hope that individuals can make informed decisions that can increase long-term well-being (Goldstein, Johnson, & Sharpe, 2008; Samuelson & Zeckhauser, 1988).

An important way in which people save money is by allocating their resources across different accounts, especially bank accounts in financial institutions. In this research, we examine how number of accounts can influence savings versus spending rate. That is, whether having money across more versus fewer liquid accounts can increase savings. Although not specific to the area of savings, past research gives us opposing cues of whether savings would be enhanced with less versus more accounts.

First, economic theory would suggest that money is fungible—money in one account is a substitute for money in another account (McCloskey, 1987). Therefore, it would predict that without transaction costs people should save the same amount of money regardless of how many accounts they have. Second, findings in mental accounting, which relax the fungibility assumption, propose that people budget money across various categories to make rational trade-offs between competing uses of money. Such monetary segregation works as a control mechanism (Thaler, 1999). This account would predict that it is more painful to pull money out of multiple accounts rather than out of just one account since it is more painful to separate losses. If we apply the findings from this set of research to the single versus multiple accounts context, it would predict more spending with a single account as compared with multiple accounts. Third, research in the area of consumption has found that when self-regulation concerns are activated, people are less likely to begin consuming and actually consume less of a hedonic product (i.e., potato chips) when presented with a single large package as opposed to multiple small packages (Coelho do...
Vale, Pieters, & Zeelenberg, 2008). Therefore, conflicting predictions from different research findings make it intriguing to study how having single versus multiple accounts could influence savings rate and spending rate.

In this research, we propose that when there are no transaction costs (e.g., in liquid accounts2), individuals will save more and spend less when they have a single account compared to multiple accounts. Our proposition is based on research in motivated reasoning (Kunda, 1990; Mishra, Shiv, & Nayakankuppam, 2008) and fuzzy-trace theory (Brainerd & Reyna, 1990; Reyna & Brainerd, 1991, 2011). Utilizing motivated reasoning, we propose that individuals find spending more enjoyable than saving and are motivated to search for reasons to justify their purchase decisions. In such a situation, vague as opposed to precise information makes it easier for them to distort the available information to follow desirable spending motives. In line with the predictions of fuzzy-trace theory, we propose that the gist from multiple accounts tends to have fuzzier representations since information comes from multiple sources. Fuzzy representations from multiple accounts are malleable to different interpretations and hence, individuals with multiple accounts are able to distort their financial situation in order to justify spending decisions. On the other hand, since single account-holders have less fuzzy representations from a single source, they find it difficult to distort information to help justify spending; hence, they save more and spend less.

It is worth noting that if one considered the psychological cost of assimilating the totals across multiple accounts in order to get a view of their financial situation then people should actually be less willing to spend in the multiple accounts condition. This should happen because greater psychological cost would increase the transaction cost associated with the assimilation process and reduce the utility derived from the decision. However, we predict just the opposite because people utilize the fuzzy representations from multiple accounts to justify desirable spending decisions.3

Our proposition is opposite to the common current practice in the banking industry, which is to open multiple liquid accounts for new clients. The conventional wisdom being that greater number of accounts would result in greater savings for their customers. In fact, people are told that even the complication of handling multiple accounts will be far outweighed by the many benefits of having multiple accounts (EconomyWatch, 2010). However, we suggest that this common practice, unknown to financial institutions, is likely to encourage spending not saving if accounts do not impose any restrictions on withdrawals.

Previewing briefly, we first review existing literature on motivated reasoning which shows that (a) people search for justifications to pursue desired outcomes and (b) find it easier to distort the more malleable vague information to justify these outcomes. Second, we review literature on fuzzy-trace theory (which explains how representations from the available information from different sources can be verbatim and gist based). Based on this review, we present our theoretical conceptualization for the proposed effect. We then describe findings from four studies that demonstrate the effect and test our proposed theoretical account.

Theoretical review

Motivated reasoning and justification generation with vague information

Much research has demonstrated that motives influence reasoning (Kruglanski & Freund, 1983; Kunda, 1990). For instance, individuals trying to pursue a desired outcome might be motivated to perceive information in a manner that is most beneficial to them (Kunda, 1990; Marks, 1951). However, despite wanting a desired outcome, people also want to appear rational and objective to themselves and any independent observer. Thus, people attempt to construct seemingly rational justifications for their desired conclusions in order to appear rational and objective (Darley & Gross, 1983; Kunda, 1990).

The search for justifications may also emerge when the desired decision is in conflict with a more virtuous decision (e.g., one between immediate gratification versus long-term well-being) (Okada, 2005; Simonson, 1989). In such conflict-laden situations, two extreme outcomes are possible. The person can ignore the long-term consequences and decide in favor of immediate pleasure but this can lead to post-decision regret or guilt at having sacrificed long-term well-being. Alternately, a person can give up the immediate pleasure in favor of long-term well-being but this may be an undesirable or even painful option. A compromise approach is one in which they can relish the immediate pleasure yet come up with reasons to justify their decisions to themselves and others and mitigate long-term regret or guilt (Mishra & Mishra, 2011).

Moreover, vague information facilitates decisions that follow a compromise approach. Past research has demonstrated that vague (or fuzzy) information is malleable (Brainerd & Reyna, 1990) and provides greater latitude for generating justifications that help resolve the conflict between appearing objective and yet pursuing a desired outcome (Mishra et al., 2008). Conversely, clear and precise situations constrain distortion, forcing decision makers to be relatively more objective in their decisions (Okada, 2005). It has been shown that it is easier to construct justifiable reasons with information provided in the form of a range (which appears vague e.g., 1 oz versus 0.5–1.5 oz) rather than the same information in the form of a single number (precise) since the former is easy to interpret as desired (Mishra et al., 2008). In the domain of goal-setting and self-presentation, research has found that people strategically distort vague information to perceive themselves at an advantage. For instance, athletes were more likely to exaggerate their abilities on vague dimensions (mental toughness) than on precise dimensions (running speed) (Felson, 1981); people perceive themselves to be better than average on vague abilities (driving) rather than on precise abilities (parallel parking) (Dunning, Meyerowitz, & Holzberg, 1989); they indulged in favorable self-deception when the feedback received about their behavior was vague (Sloman, Fernbach, & Hagmayer, 2010); and individuals become more optimistic in predicting desired outcomes in the post action stage when they have vague information rather than when they have precise information (Mishra et al., 2008).

In sum, predictions using motivated reasoning actually consider two factors that can influence the subsequent outcome (a) motivation to pursue the desired outcome and (b) ability to distort information to justify the desired outcome. The first factor relates to individual’s motivation to follow their desired outcomes. If the motivation is increased, then individuals will search for justifications to pursue the desired outcome; however, if motivation is decreased then such a pursuit will diminish in strength. That is, if ability to distort and justify is kept constant, then motivation for the desired outcome will moderate the magnitude of people’s pursuit. On the other hand, ability to justify pertains to internal or external factors that can be utilized by the individual to justify the desired outcome. If these factors are malleable to interpretational distortions, then individuals will find it easier to generate justifications to follow their desired outcomes. If motivation to pursue the desired outcome stays the same, then the ability to justify will moderate the pursuit of desired outcomes. For instance, if the motivation to spend is kept constant, then the ability to distort
and justify information will moderate the degree to which people can follow their desired outcome (spending).

Insights about ability to distort information can be derived from research in fuzzy-trace theory.

**Fuzzy-trace theory**

Fuzzy-trace theory suggests that judgment and decisions tend to be fluid in nature and depend on the gist derived from the presented information (Brainerd & Reyna, 1990; Reyna & Brainerd, 1995). The theory suggests that when people encounter information they form mental representations, which show how the information has been perceived. Representations can be of two types – verbatim and gist (Reyna & Brainerd, 2011).

Verbatim representations preserve the encountered information in all its exactness or accuracy. On the other hand, gist representations are vague impressionistic representations of the encountered information, which may contain the bottom-line meaning or a sense of what that information held. The gist tends to be a subjective interpretation that could be influenced by emotions, education, culture, experience, etc. (Reyna & Brainerd, 2011). An example given of information encoding from verbatim to fuzzy as mentioned in Brainerd and Reyna (1990) is the following. If the encountered information is $A = 7$, $A' = 3$, and $B = 10$ then the verbatim representation will preserve the information exactly (i.e., $A = 7$, $A' = 3$, and $B = 10$) while the gist (fuzzy) representation would preserve a pattern which would say there is “more $B$ than $A$, more $B$ than $A'$, and more $A$ than $A'$”. Hence, as can be seen as one moves from the verbatim end of the continuum to the fuzzy end, representations of the encountered information become less exact and fuzzier.

Applied to a decision-making situation, the fuzzy-trace theory suggests that the decision maker can extract multiple representations from the available information (Reyna & Brainerd, 1991). These multiple representations provide the decision maker with processing options (i.e., whether and what representations become available to her in order to decide). However, it has been found that individuals show a greater inclination to reason and decide based on gist, rather than verbatim representations. The rationale for using gist representations is based on many factors (Brainerd & Reyna, 1990). Gist representations tend to be encoded more easily and completely while it is less likely that verbatim representations are encoded in all its completeness. Given the complexity of verbatim representations, they are more unstable memorialily; hence, such representations are more likely to be forgotten or retrieved with inexactitude. Moreover, verbatim representations are less accessible because they might need very specific cues for the retrieval process to become activated. However, given that gist representations are based on the global meaning rather than very specific content, they can be retrieved using a broad range of retrieval cues. Gist representations are preferred for information processing since they are more malleable to manipulations compared to the rigid verbatim representations. Gist representations are more fluid in nature because they contain senses and patterns rather than well-articulated, specific structures; hence, they are more amenable to being molded into judgments. Such a fluidity of the gist representations allow it to absorb new information without having to change its meaning much, again making it more amenable to manipulations. Finally, verbatim representations are not only representationally complex but they are also complex to process given that they are very specific and rigid. The complexity increases the effort required to process the verbatim representations to provide an output (i.e., it takes up more processing resources). In fact, such representational and processing complexity associated with verbatim representations may be the reason why experts compared to novices rely on the meaning-based gist representations in order to make decisions, indicating that such processing occurs at an advanced level that results in the optimal use of processing resources. For example, when presented with information on patients with different levels of cardiac risk, physicians with more domain-specific knowledge were more likely to rely on qualitative gist than novices when making decisions for patient care (Reyna & Lloyd, 2006).

Fuzzy-trace theory has been used to explain several instances when individuals have made biased numerical assessments. For instance, fuzzy-trace theory explains why base-rate neglect might happen (Reyna & Brainerd, 1995). On hearing that children may get into 20 accidents on swings compared to only 5 on slides, individuals are likely to assume that swings are more dangerous than slides without taking into account the base rate that children play more on swings than slides. Such base-rate neglect happens because people take away the gist of the information of 20 versus 5 rather than compiling all the information of frequency of play on swings versus slides. Extracting the gist also influences assessment of numerosity, especially relative numerosity (Reyna & Brainerd, 2008). For instance, movement from 0% to 1% appears greater than movement from 1% to 2% since the gist of the former would be movement from “none to some” and the latter as “some to some more”.

Finally, as described earlier, encountered information has multiple representations stored in memory. These representations are ordered according to a hierarchy from verbatim to gist representations, and decisions utilizing the gist are most likely to operate at the fuzzy level of the hierarchy (Reyna & Brainerd, 1991). Therefore, in numerical odds assessment, fuzzy-trace theory would predict that the gist representations derived from multiple sources is likely to be more fuzzy. However, a single source is more unambiguous and hence the representations are less fuzzy.

**Proposed theoretical account**

The theoretical review offers four main takeaways: (1) individuals are motivated to search for reasons that can help them justify their desired outcomes (Kunda, 1990; Okada, 2005), (2) pursuit of the desired outcome depends on both motivation to achieve the outcome and ability to distort information that allows one to pursue it, (3) vague information or situation allows individuals greater latitude to generate justifications for the desired outcome (Mishra et al., 2008), and (4) the gist from multiple sources present greater fuzziness compared to a single source (Brainerd & Reyna, 1990).

Utilizing motivated reasoning and fuzzy-trace theory, the following predictions can be made about the way account information from single versus multiple accounts is extracted and used to make spending versus saving decisions. Individuals are conflicted between wanting to save money (long-term benefits) and wanting to acquire a product (immediate gratification). They are less likely to feel guilty about spending money if they can generate reasons to justify their purchase; in the absence of justifications, they restrain spending. Research on motivated reasoning predicts that if the available information is vague (as opposed to precise), then the vagueness of the available information provides individuals more ability to distort it to follow desired outcomes.

Fuzzy-trace theory helps in understanding how information from multiple accounts could appear vague. This theory suggests that the representations from multiple accounts have greater fuzziness because the information is coming from multiple sources. Therefore, we propose that the fuzziness in the multiple accounts provides individuals greater ability to distort information to justify their desired spending decisions. That is, the fuzzy representations from multiple accounts are more malleable to motivated distortions (for instance, by extracting fuzzy representations about...
which account they used to spend in the past or how much they have). Conversely, the representation from a single account is likely to be less fuzzy and is perceived to be more exact because it is extracted from a single source. Therefore, the single account because of its exactness, hinders the ability to distort information in order to generate desired spending justifications. In sum, we predict that individuals with multiple accounts would spend more and save less compared to individuals with a single account.

Study overview

Next, we present four studies that demonstrate the effect and test the viability of the proposed theoretical account based on motivated reasoning and fuzzy-trace theory. In order to capture realistic behavior, participants in all the studies had the opportunity to earn money across five tasks and were also given the opportunity to spend their earned money on different products. All studies utilize single and multiple accounts, which help manipulate ability to distort information since the gist representation from multiple accounts will have greater fuzziness (and hence greater ability to distort information for spending justifications) than the representations from a single account. However, it is worth noting that across all studies the verbatim representations from the single versus multiple accounts is controlled for since money earned in the five tasks is not dependent on the account condition (e.g. earning $100 is the same irrespective of whether it is represented as one value or three values). The difference in spending would occur because the gist representation from multiple accounts is different (fuzzier because it is extracted from multiple sources) than the gist representation from a single account. In Study 1, we demonstrate the proposed effect and show that when people are chronically less motivated to spend, they are less likely to search for justifications, they are less likely to use the fuzzy gist representations from multiple accounts, and hence, the proposed effect is moderated. Study 2 manipulates ability to distort by priming individuals to arrive at an accurate conclusion irrespective of whether it is their desired outcome or not. The accuracy prime constrains ability to distort the gist representation from single and multiple accounts. Study 3 further manipulates ability to distort by introducing a requirement of having to justify their spending and saving decisions to another individual, which constrains them to make a decision backed by justifiable reasons. Finally, study 4 provides an altruistic reason for spending, which reduces the conflict between saving and spending in favor of spending and allows individuals to justify spending decisions.

Study 1: moderation by frugality

The aim of Study 1 was to show the proposed effect and test the underlying mechanism. Our theoretical account has two parts—motivation to pursue the desired spending decision and the ability to justify such decisions. In this study we consider both parts. First, we examine the influence of having different intrinsic motivations to spend on the saving and spending patterns. Past research has found that people with the dispositional trait of frugality are less likely to spend more when the information is fuzzier and provides the ability to distort (multiple accounts condition) rather than when it does not provide the ability to distort (single account condition). On the other hand, high frugals are less motivated to spend, so the ability to distort information does not have much value since they are not searching for spending justifications. Therefore, they would spend or save the same irrespective of whether they had a single or multiple accounts.

Method

Ninety-one participants (average age = 24.12 years, age range = 18–58 years, female = 33%, married = 33%, employed = 83.5%) took part in this study for partial course credit and were randomly assigned to one of two conditions—single account or multiple accounts. In the next section we will describe the study procedure in which we assessed participants' behavior that had real monetary consequences as they made savings and spending decisions. We will refer back to this procedure in subsequent studies; hence, we explain it in detail here.

Study procedure for saving and spending behavior

Participants were randomly assigned to one of two conditions—single account or multiple accounts. In order to find out how many accounts we should use in the multiple accounts condition, we conducted a national survey with two hundred and ninety participants (average age = 33.95 years, age range = 18–73 years, female = 61.03%). We asked participants how many liquid accounts they had (savings or checking). The results indicated that participants held 1.49 checking and 1.48 savings accounts which added up to 2.97 total liquid accounts. Hence, in the multiple accounts condition we used three accounts for our studies.

The study was computer-based and participants were placed at separate computers. The cover story informed the participants that the researchers wanted to pretest a task that they were planning to use in a future study. The task was designed to investigate people's purchase behavior when they perform various mental acuity tasks.

Participants were asked to complete five tasks. The tasks consisted of matching brand slogans, solving math problems, matching state names and shapes, unscrambling animal names, and completing patterns. Each correct response helped them earn money and they could earn a maximum of $100 across all five tasks ($20 in each task). After each task, participants were given the opportunity to buy a product. Before beginning their tasks, participants saw images of all five products that they would have the opportunity to purchase during the study in a random order. This allowed participants to plan for the possible purchases. A pretest (N = 41) was used to select attractive products to include in the study. All the products had high purchase-likelihood and pretest participants were willing to pay amounts that were close to the actual retail value. The products included a university notepad set ($4), a university t-shirt ($10), a movie rental gift card ($6), a photo album ($8), and a computer mouse ($12).

To enhance the relevance of these tasks and to mimic what happens in the real world, we did two things. First, participants were told that 2 out of every 100 participants would actually receive the products they purchased and any remaining money they earned in the mental acuity tasks through a lottery. Second, as part of the cover story, we informed them that they could deposit the money they earned in an account (single or multiple accounts depending on condition) similar to a bank account, and they could use it to buy products. The single-account condition had one account; the multiple-account condition had three accounts. Each account appeared as an image of a safe on the screen (please see the screen snapshots in Appendix A). Prior to a deposit, participants
saw a beginning balance. After they deposited their earnings across one or three accounts, they saw the updated balance. Participants assigned to the multiple accounts condition had the option of depositing all their money in one account or spreading it in any combination across three accounts. Participants could also buy or decline to buy a product after seeing a picture, brief description, and price. Those who did not buy the product were again shown their account balance(s) and started the next earning-task. Participants who made a purchase first withdrew enough money to cover the cost from their account(s). Participants with three accounts withdrew the money in any combination from their accounts in increments of $1 (i.e., they could withdraw or deposit $5 in their accounts but not $5.25 or $5.50). After withdrawing the money participants were told that they had bought the product, they were then shown their updated balance, and then they started the next task. This process continued for all five earning and buying tasks.

Participants could earn a maximum of $100 (if all their answers across all tasks were correct) and they had the opportunity to purchase zero to five products (i.e., spend a maximum of $40).

Participants in Study 1 completed the five rounds of earning and buying tasks as described in the previous paragraphs. Moreover, participants completed some unrelated filler tasks. Embedded in these tasks was the frugality scale which had been adopted from past research (Lastovicka et al., 1999). The frugality scale contained eight items, including “I believe in being careful in how I spend my money,” and “There are things I resist buying today so I can save for tomorrow.” Items were answered on a 6-point Likert scale ranging from 1 (definitely disagree) to 6 (definitely agree). The order of the administration of the frugality scale was counterbalanced such that some participants filled out the scale before the earnings and savings tasks while others filled it out after the tasks.

Results and discussion

The dependent variable was calculated as the percentage of earnings saved in each task (i.e., 1 - [money spent in task1/money earned in task1]). This allowed us to control for differences resulting from the absolute amount of money earned and spent. For instance, even if we find that two participants saved $90 it is possible that participant 1 earned $100 and spent $10 leading to the $90 savings while participant 2 earned only $90 and spent nothing again leading to $90 saved. Therefore, using percentage saved gave us a better picture of all the transactions.

In our first analysis, we wanted to check if behavior was consistent with the tenets of fuzzy-trace theory, which suggests that information from multiple accounts is fuzzier since information is extracted from multiple sources. Therefore, the predictions based on fuzzy-trace theory would require that the information in the multiple accounts condition should come from multiple sources. In other words, participants should have money available in multiple accounts. To examine if this precondition was fulfilled, we considered only the multiple account condition and defined usage as deposit and/or withdrawal from the account. Participants in the multiple account condition could deposit money in only one account, two accounts, or all three accounts; similarly, they could withdraw from one, two, or three accounts. The results indicated that none of the participants used just one account, 6.38% of the participants used two accounts, and 93.62% of the participants used all three accounts. \( \chi^2(1) = 35.76, p < .01 \). This provides support for the role of fuzzy-trace theory because a participant contemplating a spending decision would look at all the accounts that have money in them in order to decide. Money in all accounts will mean that information of the financial situation is extracted from multiple sources, which will make the gist appear fuzzy and facilitate motivated distortions. Further, focusing just on withdrawals, we see that 85.1% of the participants did not withdraw any money from their accounts (i.e., they did not spend any money), 23.4% withdrew from only one account while 68.09% withdrew from more than one account, \( \chi^2(1) = 27.1, p < .01 \). The latter demonstrates that a majority of participants were not utilizing the multiple accounts for some form of budgeting strategy, they were withdrawing from more than one account.

We next examined the moderation by frugality. The 8-item frugality scale was averaged (cronbach’s alpha = .74) to form a measure of frugality. While treating frugality as a continuous measure, the dependent variable of the percentages of money saved in each task was subjected to an account \times frugality repeated measures analysis using the generalized linear modeling method. The money saved in each task did not interact with account \times frugality, \( F < .85, p > .49 \). Therefore, money saved across the five tasks was averaged and used as a dependent variable in the subsequent regression analysis which utilized account and frugality as predictors. This regression analysis revealed a significant influence of account, \( t(87) = 4.7, p < .01 \). This was due to participants saving more with a single account (\( M = 86\% \)) than with multiple accounts (\( M = 80\% \))—a pattern consistent with our prediction. The analysis also yielded a significant account \times frugality interaction, \( t(87) = 2.06, p < .04 \). A spotlight analysis (following Aiken & West, 1991), at one standard deviation below the mean frugality score (i.e., relatively low frugality score), showed that there was a significant difference between the amount saved across account types, \( \beta = 1, t(87) = 3.88, p < .001 \). However, at one standard deviation above the mean frugality score (i.e., relatively high frugality score) the amount saved across account types did not differ significantly, \( t(87) = 1.03, p > .30 \). For ease of exposition, we ran another analysis in which, after a median split, we divided the participants into high versus low frugals. Participants’ savings rate differed across tasks, \( F(4,348) = 22.45, p < .01 \), but money saved in each task did not interact with account \times frugality. Therefore money saved across the five tasks was averaged and used as a dependent variable in the account \times frugality ANOVA. A significant main effect of account, \( F(1,87) = 9.18, p < .01 \) and an account \times frugality interaction emerged, \( F(1,87) = 7.39, p < .01 \). Low frugals saved more (\( M = 89\% \)) with a single account than with multiple accounts (\( M = 78.3\% \)), \( F(1,87) = 16.83, p < .01 \). However, having single versus multiple accounts did not influence the savings rate of high frugals (\( M = 85.1\% \) versus \( 84.5\% \)), \( F(1,87) < 1, p > .8 \).

This analysis indicates that frugality, which reflects the dispositional motivation to spend versus save, influences the proposed effect—low frugals demonstrate the effect while high frugals do not. However, it was worth examining further the reason why we obtained differences between the behaviors of high and low frugals. Was it because high frugals by their innate traits are more motivated to save and hence, they are not influenced by having a single versus multiple accounts? Or is it because high frugals are also interested in buying but they use strategies of budgeting, such as segregating one or more accounts as savings accounts to curb their spending? In order to disentangle the cause, we ran the following analyses with participants assigned to multiple accounts (we did not use single account participants because they had only one account, making it hard to assess whether they were using any strategies of budgeting). In the multiple accounts condition it was possible for participants to deposit and withdraw from all three accounts, two accounts, or only one account. We examined whether there was an influence of frugality on the deposit and withdrawal pattern i.e. whether high and low frugal differed on how many accounts they used to deposit and withdraw money. If we do not observe a significant influence of frugality on deposits and withdrawals it will support prediction 1 while a significant influence will support prediction 2. We ran two separate multivariate logistic regression analyses, one with deposits as the dependent variable and the next with withdrawals as the dependent variable.
Frugality was the predictor in both analyses. The results indicated that the influence of frugality on deposits, Wald $\chi^2 (1, N = 47) = 0.1, p > .74,$ as well as withdrawal, Wald $\chi^2 (3, N = 47) = 1.97, p > .57,$ was not significant. In other words, it shows that participants with a high (compared to low) frugality score were not using the accounts strategically to increase their savings because they were withdrawing and depositing money across accounts in a similar manner. Rather, it is the case that they were not searching for justifications in the multiple accounts condition. However, we acknowledge that this is indirect support for the role of justification in the proposed effect; hence in order to gain further evidence for justification, in Studies 3 and 4 we directly manipulated justification by either hindering or facilitating their search for a justification to spend.

Since our proposed effect shows that participants save less with multiple accounts, one could argue that the multiple accounts act as a distraction, which results in participants spending more in the multiple accounts condition. In order to test for this account, we examined the amount earned across the five mental acuity tasks—if participants are distracted in the multiple accounts condition then they should perform worse in the mental acuity tasks than those with a single account and hence, earn less. However, as described in Appendix B, the amount earned was not significantly different between the two conditions, which renders the distraction explanation less feasible. Appendix B also presents the amount earned and the amount saved across the different conditions for all four studies. It demonstrates that the proposed effect occurs because of dissimilar levels of savings but not due to dissimilar levels of earnings. In the next study we examine the role of fuzziness in causing the effect.

### Study 2: role of fuzziness

The main aim of this study was to test the role of fuzzy-trace theory in the proposed effect. Why do single account-holders spend less than multiple account-holders? Our theorizing suggests that since individuals with a single (multiple) account extract less fuzzy (more fuzzy) representations they are unable (able) to distort the information to pursue their desired spending decision. In order to test this theorizing further, we manipulate people's ability to distort information through a method distinct from number of accounts (single versus multiple). A commonly used procedure to reduce individual's ability to distort information is by priming them to make careful, accurate decisions (i.e., priming them with an accuracy motive) (Kunda, 1990). The accuracy motive primes individuals to arrive at an accurate conclusion irrespective of whether it is their desired outcome or not.

Therefore, in the control condition individuals in the multiple accounts condition will have greater ability to distort information compared to those in the single account condition. However, in the accuracy prime condition, the ability to distort information will be reduced for both conditions. To test this we utilized a 2 (accounts: single versus multiple) × 2 (prime: control versus accuracy) between-participants design. Given this design, we expect that in the control condition the proposed effect should emerge (i.e., greater spending in the multiple accounts condition). However, in the accuracy prime condition the ability of participants to distort information in the multiple accounts condition will be constrained and hence they will spend less compared to the multiple account-holders in the control condition. Further, since single account-holders already have constrained ability to distort given the less fuzzy representations that they extract from a single account, the accuracy prime should not significantly influence the amount they spend. In sum, this study tests the proposed underlying process by keeping the motivation to spend constant while manipulating the ability to distort information in order to justify spending decisions.

### Method

One hundred and forty-six participants (average age = 23.3 years, age range = 18–37 years, female = 35%, married = 29%, employed = 78.1%) took part in this study for partial course credit and were first randomly assigned to either the control condition or the accuracy prime condition. The priming manipulation was adopted from previous work (Kunda, 1990; Mishra et al., 2008). Those in the accuracy prime conditions were asked to describe in detail an incident in which they made a very careful, calculated decision and collected information to make unbiased and accurate judgments. Participants in the control conditions were asked to describe in detail an incident that happened in the past week. After the priming manipulation, participants followed the same procedure as described in Study 1 in the section titled “Study Procedure for Saving and Spending Behavior” where they earned money based on their performance in five mental acuity or association tasks. Participants were randomly assigned to have either a single account or three accounts. They could deposit the money they earned in those accounts. They were also provided with the opportunity to buy products with the money they had earned.

### Results and discussion

The percentages of money saved in each task were subjected to an account × prime repeated measures analysis. Similar to the previous study, participants’ savings rate differed across tasks. In some tasks they saved more money than in others, $F(4, 564) = 45.86, p < .01.$ However, since money saved in each task did not interact with account × prime, $F(4, 564) = 1.74, p > .13,$ money saved across the five tasks was averaged. A significant account × prime interaction emerged, $F(1, 142) = 5.15, p < .02.$ Consistent with previous studies, in the control condition participants with a single account saved more (M = 86.5%) than participants with multiple accounts (M = 79.2%), $F(1, 142) = 7.78, p < .01.$ However, among participants who were primed with an accuracy motive, the average amount saved was statistically similar across the single-account (M = 86.8%) and multiple-accounts (M = 85.7%) conditions, $F(1, 142) = .18, p > .65.$ Fig. 1 graphs the results.

Finally, similar to Study 1 when we consider account usage (deposits and/or withdrawals) in just the multiple accounts (combining across control and accuracy conditions), we see that none of the participants used just one account, 5.48% of the participants used two accounts, and 94.52% of the participants used all three accounts, $\chi^2(1) = 57.87, p < .01.$ Considering just withdrawals, we see that 12.33% of the participants did not withdraw any money from their accounts (i.e., they did not spend any money), 26.03% withdrew from only one account while 61.65% withdrew from more than one account, $\chi^2(1) = 28.23, p < .01.$

Therefore, the accuracy prime moderated the proposed effect by reducing the ability to distort for multiple account-holders, which caused them to behave like single account-holders. Specifically, in the control condition, participants with multiple accounts could still distort their financial situation and thus, spent a greater percentage of their earnings compared to participants with a single account. However, when primed with an accuracy motive, participants accessed less fuzzy representations and were unable to manipulate their views of the situation, which resulted in less spending regardless of whether they used a single account or multiple accounts.

### Study 3: savings justification

Past research has shown that although people enjoy buying products, they are able to do so only if it appears like a justifiable decision (Mishra & Mishra, 2011; Okada, 2005). In the absence of justifiable reasons, their spending is constrained. On the other
hand, savings is considered a virtuous decision that can lead to future financial well-being and hence, it is very easy to justify. Research has further shown that people are more likely to search for sound reasons if they have to explain their decision to someone else rather than just to themselves (Okada, 2005; Simonson, 1989). Therefore, like Study 2, in Study 3 we again kept people’s motivation to spend constant but manipulated their ability to distort information by requiring them to justify their saving versus spending decisions to another individual.

A requirement to justify to others constrains people to make a careful decision, which reduces their ability to distort the available account information in order to generate justifications to spend. The design used was a 2 (accounts: single versus multiple) × 2 (condition: control versus justification) between-participants design. We expected that in the control condition the proposed effect would emerge. However, in the justification condition the ability to distort would be reduced. Hence, multiple account-holders, despite having fuzzier representations from the three accounts, would find it difficult to generate justifiable reasons for someone else and consequently would spend less. However, the need to justify to others would have less influence among single account-holders since the single account already constrains the ability to distort in the first place.

Method

One hundred and forty-eight participants (average age = 23.6 years, age range = 18–39 years, female = 36%, married = 34%, employed = 84%) took part in the study for partial course credit and were randomly assigned to one of the four between-participant conditions. A procedure similar to Study 1 was adopted. Participants were randomly assigned to the single or multiple accounts condition. They could earn money through the mental acuity tasks and they could either save the money in the account(s) or they could use it to buy the products (as described in Study 1 in the section titled “Study Procedure for Saving and Spending Behavior”). However, unlike Study 1, we had the justification manipulation appear at the beginning of the study for participants assigned to the justification condition. The justification manipulation informed participants that the researchers were interested in learning the reasons why people decide to buy (or not buy) products. Therefore, they would be asked at the end of all the earning and buying tasks to explain in detail their purchase (spend) and non-purchase (save) decisions. The participants randomly assigned to the control condition did not have to justify their decisions.

Results and discussion

The percentages of money saved in each task were subjected to an account × condition repeated measures analysis. Similar to Studies 1 and 2, participants’ savings rates differed across tasks. In some tasks they saved more than in others, $F(4, 576) = 31.17, p < .01$. However, money saved in each task did not interact with account × condition, $F(4, 576) = .94, p = .43$. Therefore, money saved across the five tasks was averaged. A significant account × condition interaction emerged, $F(1, 144) = 4.07, p < .05$. Consistent with the previous studies, participants in the control condition with a single account saved more ($M = 86.2\%$) than participants with multiple accounts ($M = 78.8\%$), $F(1, 144) = 7.75, p < .01$. However, among participants who were asked to justify their purchase and non-purchase decisions, the average amount saved was statistically similar across the single account ($M = 85.8\%$) and multiple account ($M = 85.7\%$) conditions, $F(1, 144) < 1, p > .95$. Moreover, the average amount of money saved did not differ statistically for single account-holders regardless of whether they were in the control condition ($M = 86.2\%$) or in the justification ($M = 85.8\%$) condition, $F(1, 144) < 1, p > .85$. This pattern is consistent with our proposal that the ability to distort is already inhibited with a single account (relative to multiple accounts) and a further reduction through the justification manipulation does not result in a significant influence. However, for the multiple accounts condition, the need to justify to another person significantly enhanced savings ($M_{control} = 78.8\%$ versus $M_{justification} = 87.5\%$), $F(1, 144) = 7.26, p < .01$. Fig. 2 graphs the results.

Again, when we consider account usage (deposits and/or withdrawals) by combining across multiple accounts (both control and justification conditions) we see that none of the participants used just one account, 6.67% of the participants used two accounts, and 93.33% of the participants used all three accounts, $\chi^2(1) = 56.33, p < .01$. Considering just withdrawals, we see that 14.67% of the participants did not withdraw any money from their accounts, 25.33% withdrew from only one account while 60% withdrew from more than one account, $\chi^2(1) = 25.28, p < .01$.

A moderation of the proposed effect by the justification manipulation provides support for our proposed account. To gain converging evidence, in the next study we provide participants with a justification to spend.

Study 4: justification to spend

In the previous studies, frugality, accuracy prime, and the requirement to justify to others were successful in increasing the savings rate of those with multiple accounts. However, single account-holders remained relatively uninfluenced since the gist representation from the single account was less fuzzy and hence, constrained them from distorting their financial situation to justify spending decisions. The greater savings by single account-holders

Fig. 1. Influence of number of accounts and accuracy prime on percent of earnings saved (Study 2).

Fig. 2. Influence of the need to justify purchases and non-purchases to others (Study 3).
shows that the reduced ability to distort with the single account constrains them from being able to generate as many spending justifications as multiple account-holders. The results across the first three studies are consistent with the proposed underlying process.

If the proposed underlying process were true then it would also predict the following. If we provided participants with an additional reason that could help them justify their spending decisions and help reduce the conflict between saving and spending, it will influence the savings rate of single account-holders. In other words, an additional justification would have greater influence on those with a single account because they are constrained by their ability to distort due to the less fuzzy representations they extracted from the single account. However, giving an additional reason will not have much influence on those with multiple accounts since the latter are already able to use the fuzzy representations from multiple accounts to pursue spending decisions.

Past research has demonstrated that people become more willing to buy a product if a part of the proceeds are donated to a charitable cause (Strahilevitz & Myers, 1998). That is, the charitable donation provides people with a justification that they are being altruistic if they buy the product. Therefore, for each of the products we informed participants that if they decide to buy a product we would donate a percentage of the price to a charity of their choice. Our theoretical account would predict that the charitable donation should moderate the proposed effect by making people with a single account spend more. However, it should not influence those with multiple accounts.

Method

One hundred and eighty-one participants (average age = 24.2 years, age range = 18–50 years, female = 32.1%, married = 34.25%, employed = 78.45%) took part in this study for partial course credit and were randomly assigned to either the control condition or the justification condition. Participants assigned to the justification condition (but not the control condition) were first asked to write a justification for their favorite charity. This name was then used in the subsequent screens. At every buying occasion along with the description of the products, participants were informed that if they decided to buy the product we would donate 15% of the cost of the product to their preferred charity. The procedure otherwise remained the same as in previous studies, that is, participants completed mental accounts tasks in which they earned money that they could deposit in accounts (single or multiple) and use to buy products (as described in Study 1 in the section titled "Study Procedure for Saving and Spending Behavior").

Results and discussion

The percentages of money saved in each task were subjected to an account × justification repeated measures analysis. Similar to previous studies, participants’ savings rate differed across tasks. In some tasks they saved more money than in others, F(4,700) = 45.57, p < .01. However, since money saved in each task did not interact with account × justification, F(4,700) = .78, p = .53, money saved across the five tasks was averaged. A significant account × justification interaction emerged, F(1,177) = 4.31, p < .04. Consistent with previous studies, in the control condition participants with a single account saved more (M = 88.5%) than participants with multiple accounts (M = 83.3%), F(1,177) = 7.78, p < .01. However, among participants who were provided with a justification, the average amount saved reduced significantly for the single-account participants (Mcontrol = 88.5% versus Mjustification = 83.2%), F(1,177) = 5.8, p < .02, but not for the multiple-account participants (Mcontrol = 83.3% versus Mjustification = 84.6%), F(1,177) < 1, p > .5. Fig. 3 graphs the results.

Finally, just like in the previous studies we examined usage (deposits and/or withdrawals) by combining across multiple accounts (both control and justification conditions). We see that 94.7% of the participants used just one account, 7.37% of the participants used two accounts, and 83.16% of the participants used all three accounts, χ²(1) = 106.18, p < .01 – a pattern consistent with the predictions of fuzzy-trace theory. Considering just withdrawals, we see that 13.68% of the participants did not withdraw any money from their accounts, 28.42% withdrew from only one account while 57.89% withdrew from more than one account, χ²(1) = 28.88, p < .01.

The results of the study provide converging support for our proposed account. When participants have a justification to spend, even those in the single account do so and we see the proposed effect disappear.

General discussion

In this research, we demonstrate that individuals allocating their earnings to a single account saved more than those who spread their earnings across multiple accounts. We also test our proposed account based on past work in fuzzy-trace theory and motivated reasoning. Utilizing these two streams of research, we suggest that individuals find it more enjoyable to acquire products rather than save money since the former provides immediate gratification while the benefits from the latter are difficult to perceive immediately. However, people also want to appear to be rational decision-makers; hence, the optimal situation is one when they can generate justifiable reasons to support their desired (buying) decisions. Past research has demonstrated that vague information or situations are more malleable to motivated distortions (Dunning et al., 1989; Felson, 1981). Moreover, the gist from multiple sources has more fuzzy representations and is thus more malleable than essentially the same information from a single source (Brainerd & Reyna, 1990; Reyna & Brainerd, 1991, 1995). Therefore, individuals spreading their earnings across multiple accounts find it easier to generate creative justifications for desired spending decisions since multiple accounts afford more fuzzy representations as opposed to the less fuzzy (more exact) representations from a single account. On the other hand, the less fuzzy representation of a single account makes it difficult for individuals to generate justifications that can support spending decisions. Hence, those with a single account save more than those with multiple accounts.

We tested our propositions across four studies. Study 1 demonstrates the effect and also tests the proposed theoretical account by showing that when individuals are not dispositionally motivated to spend (high frugal), they are less likely to search for spending...
justifications and hence are not influenced by whether they have a single versus multiple accounts. However, low frugals are more motivated to spend and hence utilize the fuzziness from multiple accounts in generating spending justifications. The remaining studies test the theoretical account by changing the ability to distort information—Study 2 (constraining them to be accurate), Study 3 (reducing the ability to distort information for spending justifications by having to justify to others), and Study 4 (facilitating the ability to distort information for spending justification by proving an additional reason to spend). Therefore, Studies 2 and 3 test for the role of fuzziness by demonstrating that when people are constrained to be accurate or reasonable then even those with multiple accounts are constrained to extract less fuzzy representations. This greatly hinders their ability to generate desired spending justifications and hence, they save more compared to multiple account-holders in the control condition.

In the next section we present some theoretical and policy implications of this research. We also discuss some potential theoretical extensions, theoretical distinctions from past research, and potential areas for future research.

Theoretical implications

In the introduction to this manuscript, we had discussed some research about choices made in the food domain that showed that individuals tend to consume more from small containers of food rather than large containers (Coelho do Vale et al., 2008). Multiple theoretical explanations have been provided to explain these findings across different consumption domains such as consumption norms, self-regulatory factors, or contextual cues. The findings from our research, especially the predictions from fuzzy-trace theory, can be used to better understand these findings. Similar to our findings, fuzzy-trace theory could potentially predict the pattern of results in the food consumption studies. Just like spending, individuals like consuming food. In fact, many initiatives, individual- and policy-driven, are undertaken to curb overconsumption and its resultant problems. The gist from multiple packets of food provides a fuzzier representation of what has been consumed and what is left compared to the gist from a single packet. It is very clear how much has been consumed from a single packet. However, when consumption occurs from multiple packets the gist can be distorted to justify enjoyable consumption decisions because there is interpretational latitude about the total amount consumed. Hence, people consume more from multiple containers, assuming transaction costs of opening the packets are negligible. Similar predictions can be made when multiple individuals consume from the same pot. For instance, with salsa and chips, fondue, or many appetizers, food tends to be shared among all of the people at the table. There is less exactness about how much one is eating and overconsumption can occur. Similarly, research on malleability of fuzzy representations can be used to explore how unhealthy food consumption can be reduced by providing more exact information about consumption. For instance, the impact of a container that is transparent versus opaque. Based on our findings we would predict that with the transparent container people would consume less than from an opaque container (how most existing packs are designed). Future research should consider such situations in the food domain when fuzzy representations from the context can result in overconsumption.

In this manuscript, we demonstrate that the gist from multiple accounts facilitates generation of desirable spending justifications. When people distribute their earnings across multiple, rather than a single, account it adds greater vagueness to financial decision-making. This vagueness gives people the ability to generate justifications that help them pursue desired spending decisions. Therefore, we add to research that has shown that information in the form of a range appears vaguer than the same information as a single value (Mishra et al., 2008). Here we show that increasing the number of accounts in which one puts in money increases the vagueness of the situation.

We contribute to research in financial decision-making by showing that whenever there is an element of vagueness in the decision-making environment, people will utilize it to justify their buying decisions. This is in line with much research on justification which has shown that people like to appear rational in their own eyes and in the eyes of others while still pursuing a desired outcome (Kunda, 1990; Okada, 2005). Future research could explore situations that inhibit distortion such as involving more than one person in the management of the account(s) e.g. having joint or family accounts could hinder the justification generation process. The need to appear objective in spending decisions to others (e.g., one’s spouse) might have a strong influence on financial decisions. Further, our findings contribute to the extant work in behavioral economics by showing that relaxing the fungibility assumption can lead to rich insights into people’s actual saving behavior. Despite the fact that our tasks do not impose any transaction costs, we find that people treat money differently when it is in a single account versus across multiple accounts leading to different rates of savings—a pattern that cannot be predicted without relaxing the fungibility assumption.

Much research on goal progress has examined different factors that can influence goal pursuit such as a clear goal-outcome link, conflicting sub-goals, or progress made to date (Locke & Latham, 2002). Considering the proposed effect from a goal progress perspective adds further insights into individuals’ savings behavior. It is possible that those with a single account save more initially because they are constrained from generating justification to buy products and as time progresses they derive satisfaction from observing their savings increasing and subsequently save more. A goal-based approach might also predict that people should be motivated to earn more in the tasks so that they can see their savings grow further. Unfortunately, we do not observe such a difference in earnings across the single and multiple accounts conditions but suggest that future research should examine the interaction between goal progress and holding single versus multiple accounts. If in the long-term goal progress starts influencing the proposed effect then we should observe further increases in the savings rate with a single account.

While our national survey shows that people on average tend to have three liquid accounts, a question worth asking is whether we might observe further moderation of the proposed effect if we used three versus six accounts. We argue that people might not spend more with six accounts compared to three accounts because if we consider preciseness versus vagueness then one is the only precise number. Fuzzy-trace theory supports this prediction since the level of fuzziness increases most from comparisons of 0% to 1% but less so for comparisons of 2% to 3% (Reyna & Brainerd, 1991, 2008). Any number of accounts greater than one starts adding vagueness to the situation. People are as likely to generate good enough justifications with three as with six accounts. Hence, we would probably not see any significant difference between three and six accounts conditions because the latitude to generate justifications with three accounts would still be comparable to six accounts.

Policy implications

Although savings is an important step to financial well-being, people find it difficult to curtail spending. As we discussed earlier, the inability to save appears to be independent of income and education level—high-income/college-educated US households have just as much trouble saving money as low-income households with no college degree (Maki & Palumbo, 2001). The current national personal savings rate of 5% (i.e., the percentage of GDP that is saved
by households across the nation) is a testament to individual’s inability to save money (Rankin & Brown, 2011). Given the economic climate, the timeliness of the current research has implications for individuals and public policy makers. The failure of several banks in the last few years has prompted many individuals to spread their money across various banks to hedge against potential bank failure. Our findings indicate that this strategy could hurt their savings rate. Individuals who want to increase their overall proportion of savings should consolidate their earnings into a single liquid bank account, which will help limit their ability to justify unnecessary purchases and will subsequently increase their savings rate. Second, if individuals find it difficult to consolidate money into a single account then they should try to reduce the vagueness of having money across multiple accounts by utilizing software and services that provide a consolidated view of all of their accounts in one place. This type of aggregate reporting could help reduce vagueness and enhance savings. Third, conventional wisdom suggests that people should spread their earnings across different accounts to increase their savings. However, we find a paradoxical situation in which a behavior that is designed to increase savings might result in greater spending. That is, people might diversify their savings across accounts but that very act, which was meant to increase savings, might result in greater spending because people misuse the vagueness created by multiple accounts to pursue enjoyable buying decisions.

Finally, one could argue that very few people actually hold only one account and hence this could constrain the applicability of this research. However, that is exactly the point that we are trying to make through this research that the habit of holding too many accounts may prove detrimental to people’s savings rates. In fact, it would benefit people if they reduced the number of account they had if they wanted to increase savings.

Appendix A

Screen shots of single and multiple accounts.

Appendix B

Total earnings and total savings for the four studies.

<table>
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<th>Condition</th>
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<th>Total saved ($)</th>
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<tr>
<td></td>
<td>Single (high frugal)</td>
<td>96.64</td>
<td>82.14</td>
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<tr>
<td></td>
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References


