Labeling Debt as Ordinary versus Exceptional to Motivate Consumers to Increase Credit Card Repayments

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CONTRIBUTION STATEMENT

Our research makes four important contributions. First, we demonstrate implications of the mental accounting process for how people repay their credit card debt and that the mental accounting process can affect not only budgeting and spending but also debt repayment decisions. While prior research indicates that labeling expenses as ordinary or exceptional has consequences for how people spend funds (Sussman and Alter 2012; Sussman, Sharma and Alter 2015), we show that labeling debt in this manner can also affect consumers' debt repayment decisions. Given constant borrowing rates, $1000 in debt should be treated the same regardless of how it is categorized. It shouldn't matter debt is debt, but we show that labeling debt influences consumers decisions of which debt to repay and how much to repay.

Second, we add important insights to the psychological process underlying the effect of labeling debt as ordinary or exceptional. We show that because exceptional expenditures are infrequent and uncommon, consumers consider debt acquired through exceptional spending to be more acceptable than debt acquired from ordinary spending. When debt is sorted into ordinary and exceptional debt, consumers prioritize ordinary debt and make larger repayments to ordinary debt (vs exceptional debt). Until now, research had yet to examine preference to repay certain types of debt. This builds on work that has focused on how consumers make use of borrowing and credit to justify different types of expenses (e.g., Tully and Sharma 2018).

Third, we demonstrate the fungibility of debt accounts, as consumers prioritize some debts over others, and we show that consumer debt repayment behavior can be predictably affected by debt categories that are provided to them. Because consumers' spending in a category decreases future spending in that category as it reaches its budgeted amount (e.g. Heath and Soll 1996;

Soman 2001) understanding how consumers manage and clear entire debt accounts to guide future spending becomes an important endeavor.

Lastly, our debt type labeling interventions are readily implementable and can be easily used to help consumers make better debt repayment decisions. We show and test three ways to encourage greater repayments: 1) Consumers can use different credit cards for different types of spending, one is used for ordinary expenses and the other is used for exceptional expense, 2) Credit card companies can organize credit card statements by sorting exceptional and ordinary expenses, and 3) Credit card companies and financial planning applications (e.g., Mint.com, HelloWallet.com) can make consumers aware of exceptional sepending amounts and notify users of unusual expense spending to increase repayments.

ABSTRACT

As the amount of revolving consumer credit card debt continues to rise, it is important to find ways to encourage consumers to allocate discretional funds to repaying credit card balances. In the present paper, we study a series of interventions that encourage consumers to increase the size of their repayments. Across three experiments and a field study of more than 3'000 indebted consumers, we show that labeling consumers debt as either ordinary or exceptional can increase consumer repayments on their credit card accounts – but only when the expenses were predominantly ordinary. We show that debt labeling increases repayments when the debt is predominantly ordinary because consumers are more motivated to repay debt they consider unacceptable to have, and that consumers view debt as less acceptable if it results from ordinary spending than exceptional spending.

America's household debt-to-income ratio, fueled by the diffusion of credit cards, has steadily risen over the past half-century (Calem and Mester 1995). Originally designed as a convenient method of payment for wealthy individuals making exceptional purchases (Kaynak, Kucukemiroglu, and Ozmen 1999), credit cards are now used by consumers of all income levels as a convenient payment method and source of unsecured debt (Draut and Silva 2004; Bird, Hagstrom, and Wild 1999). Consequently, Americans now carry outstanding credit card balances of over $800 Billion (growing at 7%), an average of roughly $16,000 per indebted US household (Federal Reserve Bank of New York 2018). Given the societal importance of the problem, it is no surprise that researchers have looked at strategies that can help reduce consumer debt. For example, researchers have focused on understanding how to reduce the amount of spending, hoping that by reducing spending we can reduce debt. Such strategies have included a host of self-control strategies including pre-commitment (e.g., Cheema and Soman 2006; Thaler and Shrin 1981), framing spending as less experiential (Tully and Sharma 2018) and providing participants with their FICO scores (Homonoff, O'Brien and Sussman 2018).

Beyond reducing spending, research has also considered debt repayment strategies of consumer debt once it exists. Some researchers have focused on helping consumers by improving the way that the debt is organized (i.e., reduce interest rates) through debt consolidation (Gal and McShane 2012) and debt refinancing (e.g., through crowdfunding; Morse 2015). Given that debt is often accumulated across multiple debt accounts, researchers have also looked at strategies to help consumers choose (well) how to allocate between their different debt accounts (Amar et al. 2011; Brown and Lahey 2015), and also how to motivate them to allocate more funds toward their debt (i.e., increase repayment amounts; Kettle et al. 2016).

In line with prior research which has focused on helping consumers apply more of their funds toward debt (e.g., Lynch 2011; Mazar, Mochon and Ariely 2018; Salisbury 2014), we propose a series of interventions designed to increase consumers' debt repayment amounts. Building on prior literature in mental accounting which suggests that consumers tend to view spending as falling on a continuum from ordinary to exceptional (Sussman and Alter 2012; Sussman, Sharma and Alter 2015)[1], we show that interventions which label consumer debts as coming from ordinary or exceptional spending motivate consumers to make larger credit card repayments – but only to the extent that their debts came predominantly from ordinary expenditures.

Specifically, we show that although consumers do not think to categorize credit card statements in terms of debt accounts arising from ordinary (versus exceptional) spending, debt labeling interventions (e.g., encouraging individual credit cards to be used for only ordinary (exceptional) expenses, explicit sorting of expenses on credit card statements by credit card companies, and sending consumers unusual spending notifications) can lead consumers to consider the underlying nature of their debt and increase repayment amounts. Using evidence from three experiments and field data from more than 3,000 indebted consumers, we show that debt labeling interventions will lead consumers to make to greater repayments when debt is mostly ordinary. This increase in repayment behavior occurs because consumers view debt as less acceptable if it results from ordinary spending versus exceptional spending, and consumers are more motivated to repay debts they consider unacceptable.

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[1] Exceptional expenses are unusual or infrequent, and ordinary are common and purchased frequently (Sussman and Alter 2002).

Our research makes three important contributions. First, we demonstrate that the mental accounting process can affect not only spending but also debt repayment decisions. In particular, we extend prior research that shows how the nature of expenses (as exceptional versus ordinary) affects the amount that consumers spend (Sussman and Alter 2012) or donate (Sussman, Sharma and Alter 2015) and show how ordinary vs exceptional expenses are differently perceived and repaid once they become credit card debt. We also show that consumers do not naturally think to sort their debt in terms of ordinary and exceptional expenses despite the potential benefit of doing so. As a consequence, interventions are necessary to get consumers to consider the nature of their spending once it has become debt.

Second, we add important insight to the psychological process underlying these effects by showing consumers consider revolving debt acquired through exceptional spending to be more acceptable than debt accumulated with ordinary spending. When emphasis is placed on the exceptional versus ordinary nature of the spending that created the debt, consumers prioritize ordinary debt over exceptional debt and make larger repayments to ordinary than to exceptional debt. We thus contribute to a growing literature that considers how consumers make use of borrowing and credit to justify expenses (e.g., Tully and Sharma 2018).

Third, we demonstrate the fungibility of debt accounts, as consumers prioritize some debts over others, and we show that consumer debt repayment behavior can be predictably affected by debt categories that are provided to them. Because consumer spending in a category decreases future spending in that category as it reaches its budgeted amount (e.g., Heath and Soll 1996; Soman 2001), understanding how consumers manage and clear entire debt accounts (categories) to guide future spending becomes an important endeavor.

Substantively, our debt type labeling interventions are readily implementable. The banking industry is indeed capable of helping consumers manage their credit card debt (Mazar, Mochon and Ariely 2018). Credit card companies and financial planning applications (e.g., Mint.com, HelloWallet.com) can use algorithms to characterize the nature of each transaction, so they can establish consumption patterns and thus detect unusual purchases (Duman and Ozcelik 2011). We propose and test three ways to encourage greater repayments by having consumers categorize their debt in terms of their ordinary or exceptional nature: 1) labeling consumer credit cards as either ordinary or exceptional such that consumers use the different cards for different types of spending 2) organizing credit card statements to separate exceptional from ordinary expenses, and 3) notifying consumers of exceptional spending events by sending unusual expensenotifications by email.

The remainder of the paper is organized as follows. In the next section, we draw from prior literature on mental accounting and consumer debt to argue why (and when) we expect that debt labeling interventions encouraging consumers to categorize their debt (as varying from ordinary to exceptional) increase consumers' motivation to repay their debt. Then, we turn to three experimental studies. In Study 1, we show that if consumers use different credit cards for different expenses, that is, if one credit card is labeled and used for only ordinary expenses and the other as used only for exceptional expenses, consumers treat these types of expenses differently once they become credit card debt and make greater repayments to the ordinary debt. In Study 2, we focus on labeling line items on credit card statements. We show that organizing statements such that debt types are labeled (in terms of ordinary versus exceptional) increases repayments, but only when the debt is predominantly ordinary. In Study 3, we provide evidence of the proposed process which relies on the consumers' perceived unacceptability of carrying

debt that comes from revolving on ordinary expenses. Finally, in Study 4, we use data from a budget monitoring service designed to help consumers get out of debt (HelloWallet). After developing a measure to quantify the proportion of debt that is ordinary versus exceptional at the individual-category-period level, we show that when consumers' debt is predominantly ordinary, an unusual spending notification leads to increased subsequent debt repayment amounts.

CONCEPTUAL BACKGROUND

Budgeting and Mental Accounting

Budgeting refers to the process by which consumers estimate expenses for a given period relative to the income they generate. Consumers rely on budgets to manage their income, expenses, and debts in the short-term so that they may achieve their long-term financial goals. As part of the budgeting process, people segregate and categorize expenses into accounts, which they use to guide their spending behavior (Thaler 1999). As one example, a consumer may budget $150 per month for clothing, and establish a spending rule for that category to help govern how and when to spend on clothing. Once the accounts are set, the consumer tracks category expenses in a two-stage process in which expenses are "booked" (noticed and recorded) and "posted" (assigned to the corresponding expense category) (Health and Soll 1996). If either of these stages is not completed, budgeting becomes inaccurate because expenses are not properly recorded. Successful budgeting requires consumers to accurately track spending across categories, and effectively segregate their funds into accounts derived from these categories (Heath and Soll 1996; Sussman and Alter 2012; Thaler 1999).

Recently, Sussman and Alter (2012; see also Sussman, Sharma and Alter 2015) showed that consumers perceive expenditures as falling along a continuum from ordinary to exceptional. Ordinary expenses are things like monthly bills, lunch and coffee at work, and gas for your car. These expenses occur within the *normal course of everyday events* while exceptional expenses are those that are infrequent, often one-time expenses and those that occur outside the *normal course of everyday events* (Sussman and Alter 2012). Examples of exceptional expenses would be concert tickets, going to a nice restaurant for a special occasion, or an emergency car expense. Sussman and Alter (2012) find that consumers accurately estimate spending across ordinary expenses, but underestimate spending for exceptional expenses. Consumers are also more likely to overspend on purchases they deem to be exceptional rather than ordinary (Sussman and Alter 2012), and make larger donations when prompted to consider the donation to be exceptional rather than ordinary (Sussman, Sharma and Alter 2015). Such categorization of expenses is consistent with that of prior research which finds that consumers categorize expenses in their determination of whether to incur additional debt. Thaler and Shefrin (1981) identified the debt-ethic whereby consumers set rules to govern the types of goods they consider permissible to incur debt to acquire. For example, Hirst, Joyse, and Schadewald (1994) found that people borrowed in line with a product's longevity, and felt greater discomfort borrowing for purchases they expected would last for a short (versus long) period.

Less is known of the mental accounting of expenses once they become debt. Moreover, how consumers use credit cards has evolved, and the increased use of credit cards to buy everyday items has blurred the lines of borrowing and debt. By offering convenience at the point of purchase and aggregating all expenditures, the ability to track expenses and category spending becomes increasingly difficult from a budgeting perspective. Once expenditures become

aggregated into a single balance for that credit card account, any mental accounts consumers established during their budgeting thus become obscured or lost. That is, the way that consumers categorize individual expenses into multiple mental accounts may not naturally extend beyond spending even though how consumers categorize debt could influence how they prioritize repayments and how much the choose to repay.

Prioritization of Credit Card Debt

Once credit card spending accumulates and turns into (revolving debt) debt, consumers must manage and try to get out of debt while minimizing the total amount of interest paid. Credit card debt is a type of revolving debt defined by an open-ended term. Without a definite repayment end date, it is a continual source of credit as long as the appropriate minimum monthly payments are made. Consumers can thus carry debt on credit cards from one month to the next.

Given that the accumulated debts are aggregated at the account level, prior research aiming at increasing repayment amounts has largely focused on characteristics which differentiate the debt accounts at an aggregate level: the number of open accounts, the balance of the accounts, and the interest rate (e.g. Amar et al. 2011; Brown and Lahey 2015; Kettle et al. 2016). Indeed, allocating funds to revolving debt is challenging task for indebted consumers, and a host of practitioner research has debated the merit of different allocation strategies which focus on the repayment of smaller accounts first (i.e., snowball method) as opposed to accounts with the highest interest rates (i.e., avalanche method; Ramsey 1998). Likewise, research has shown that consumers prefer to concentrate their repayments across a smaller set of accounts where they feel greater progress will be felt (Amar et al. 2011; Brown and Lahey 2015) and that doing so can motivate consumers to work harder (and faster) which can accelerate repayments and enable

consumers to get out of debt faster (Kettle et al. 2016). What we have learned from this research is that we need to consider consumer decisions of how to allocate a fixed amount of funds between accounts in addition to the tradeoff of how much consumers choose to allocate to their debts as opposed to spend on themselves.

In addition to how credit card account information is currently provided (e.g., amount of debt, interest rate), we believe that having consumers think about the nature of the expenses that resulted in the debt might have important consequences on how much they choose to repay. Specifically, we believe that consumers perceive some debts to be more acceptable than others and that some accounts are more important to keep open or clear before the next expense period. Indeed, in a Harris poll of over 2000 adults in 2016, Nerdwallet (El Issa, 2017) found 86% of Americans believe that there are acceptable reasons for going into debt – particularly emergency purchases, medical expenses, and other expenses that occur when exceptional circumstances dictate (e.g., unemployment) but that it is unacceptable to incur debt due to spending on ordinary, everyday expenditures – a finding that the authors attribute to a consumer perception that there is stigma associated with being unable to manage their finances properly.

To see why, recall that ordinary debt is debt resulting from charging ordinary or common expenses on a credit card. For example, using credit to pay a monthly cable and internet bill, gas or groceries. Given the frequency of spending in this category, ordinary expenses are often necessary and automatic. In contrast, exceptional debt is the result of charging unusual or rare expenses on a credit card. Examples of exceptional debt include vacations, expensive dinners out, car repairs, and concert tickets. These expenses are typically not necessary or sometimes expected. Given different debt accounts, we believe that people may choose to pay down certain debts first because consumers may feel uncomfortable revolving on certain classes of goods

when trying to manage or get out of debt – those that occur frequently and regularly. Specifically, failing to clear ordinary debt accounts is problematic for consumers because the predictable, recurring nature of ordinary expenses means the consumer has limited ability to change their future spending, and overspending in ordinary accounts means they will likely have to borrow again in future periods. By contrast, being uncommon or infrequent, exceptional expenditures are not expected to recur, and thus not as problematic for consumers when their spending exceeds their budget. For this reason, we hypothesize that consumers will be motivated to repay ordinary debt before exceptional debt.

Summary & Hypotheses

Insofar, we have argued that when *credit card debt* is composed of mostly ordinary versus mostly exceptional expenses, consumers will prioritize the debt that is composed primarily of ordinary expenses. We have also argued that we believe that consumers are unlikely to intuitively categorize debt based on the underlying expenses that caused the debt unless the nature of the debt is brought to their attention. As such, we believe it may be necessary to create interventions that make debt type salient and explicitly label debt as varying from ordinary to exceptional to increase the amount that consumers repay.[2] That is, we expect that consumers, without help, may not categorize debt along the same lines (i.e., ordinary vs. exceptional) when it comes to evaluating debt that is the result from aggregated credit card expenses. Specifically, we hypothesize that:

H1a: When labeled, ordinary debt is prioritized over exceptional debt, and

H1b: Labeling debt (ordinary vs. exceptional) increases repayments if the debt is mostly ordinary.

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[2] Such labeling has been shown to be effective. For instance, Tully and Sharma (2017) showed that labeling an experience as planned (versus unplanned) increases consumers' willingness to borrow to pay for it.

Moreover, a key premise underlying our theorizing is that the predictability of future expenses underlies the difference in perceptions of ordinary versus exceptional debt. Consumers feel greater financial control when their spending is ordinary rather than exceptional (Sussman and Alter 2012). Because ordinary debt results from predictably recurring expenses, holding this type of debt suggests that the consumer is failing in their budgeting. We hypothesize, therefore, that consumers deem ordinary debt to be less acceptable than exceptional debt precisely because ordinary debt stems from predictable, recurring expenses directly under their control.

> **H2:** Ordinary debt repayment is prioritized over exceptional debt repayment because consumers believe that that revolving on ordinary debt is less acceptable than revolving on exceptional debt.

STUDY 1

We designed study 1 to examine whether, when labeled, ordinary debt is prioritized over exceptional debt. To do so, we created a hypothetical context in which an individual has two credit card accounts – one used for ordinary purchases, the other used for exceptional purchases[3]. We measured debt repayment allocations to those cards. We expected, in line with H1a, that consumers would allocate more money to repay the credit card used for ordinary expenses than the credit card used for exceptional expenses.

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[3] This kind of labeling strategy (i.e., making some cards to be used only for emergency or exceptional expenses) is common, and frequently recommended (e.g., Johnson 2010). https://www.creditcards.com/credit-card-news/emergency-credit-cards-1267.php

Methods

   Participants. We recruited a total of 179 participants (95 female) from Amazon

Mechanical Turk to participate in exchange for financial compensation. Participants ranged in

age from 20 to 74 years (M = 38.7 years). All participants owned at least one credit card

(Maximum 10 credit cards) and had an average total credit card debt of $2,418.37

(Minimum=$0; Maximum $34,118.00).

   Procedure. First, we gave participants a description of exceptional and ordinary expenses

(adapted from Sussman and Alter 2012) that read:

> Sometimes we purchase items within the normal course of everyday events. These
> are usual expenses that are common and expected. For example, buying groceries
> and filling your car with gas.
> We also sometimes purchase items outside the normal course of everyday
> events. These are unusual expenses that are not common or expected. For
> example -- buying gifts and going to a nice restaurant to celebrate a
> special occasion.
> People often categorize and separate these kinds of expenditures.
> Imagine that you have two credit cards, one of which you use for regular
> expenditures (gas, cable, groceries) and the second you use for unusual or
> unexpected expenses (e.g., gifts, vacations).

We then showed participants two credit card statements, and we asked them to look at

each entry and at each item purchased closely (see appendix 1). One of the cards contained only

ordinary expenses (e.g., groceries, gas) and the other contained only exceptional expenses (e.g.,

jewelry, flowers). We counterbalanced the credit card brand (Citi vs. Bank of America), the

amount of credit card debt ($527.15; $567.28), and the order of presentation (Citi first vs. Bank

of America. As a manipulation check, we asked participants to rate the "types of purchases" on

each card (1 = very common; 5 = very unusual). Participants then read the following:

> Imagine that you are unable to completely repay both credit cards this month, and
> that you only have a total of $600 to put towards your credit cards

How would you choose to pay off these credit cards? Please allocate the
$600. The amount of money paid down on each card must total $600.

The allocation amount was our dependent variable of interest. Finally, we asked

participants some demographic information.

Results

Across scenarios, participants rated the expenses on the ordinary card as more common

(M = 1.55, SD = 1.01) than the expenses on the exceptional card (M = 3.28, SD = 1.27; $t(178)$ =

11.80, $p < .001$). Consistent with hypothesis 1a, participants allocated significantly more of the

$600 to the ordinary card in comparison to the exceptional card (M $_{ordinary}$ = $343.55 vs M

$_{exceptional}$ = $256.54; 57.26% ordinary, Z=1.94, p=.05). We note that the tendency to allocate more

to the ordinary card held regardless of brand, or whether it was shown first or second, and

including or excluding the 36% of participants who decided to allocate 50% to each ($300 per

card regardless of the balance).

Discussion

Study 1 suggests that consumers allocate more money to a credit card that carries

ordinary expenses than to a card that carries exceptional expenses (H1a). However, our

reasoning suggests that consumers would not prioritize the repayment of ordinary debt unless it

is made salient, that is, unless ordinary and exceptional expenses are explicitly noted.

Additionally, whereas Study 1 used a debt labeling intervention of two cards, another

intervention is to categorize debt at the credit card account level. In Study 2, we move to a

context where consumers have a single credit card statement and manipulate whether the debt is

mostly ordinary (vs. exceptional) and whether or not the credit card statement explicitly identified the debt as coming from ordinary or exceptional expenditures.

STUDY 2

We designed study 2 to determine whether bringing attention to the nature of debt is necessary for debt type (ordinary vs. exceptional) to affect repayment amounts. Moreover, we wished to test a second type of debt labeling intervention, whereby transactions on a credit card statement are sorted into ordinary versus exceptional debt, as consumers may often carry both exceptional and ordinary expenses on the same credit card.

Specifically, in this study, we showed participants a single credit card and, using a 2x2 between-subject design, we independently manipulated (1) debt type: whether the majority of the expenditures were ordinary versus exceptional, and (2) debt labeling: whether or not the credit card statement explicitly identified the debt as being accumulated from ordinary or exceptional expenditures. Holding total debt constant, because consumers prioritize ordinary debt (H1a, see Study 1), we expected repayments would be larger when the majority of the expenditures were ordinary (vs. exceptional) - but only when the debt was labeled (H1b).

Methods

Participants. A total of 240 undergraduate students (141 female; $M_{age} = 19.6$ years) participated in this experiment for partial course credit. Participants reported owning 1.4 credit cards on average and had an average total credit card debt of $1,195.29 (Minimum = $0; Maximum = $32,813.00).
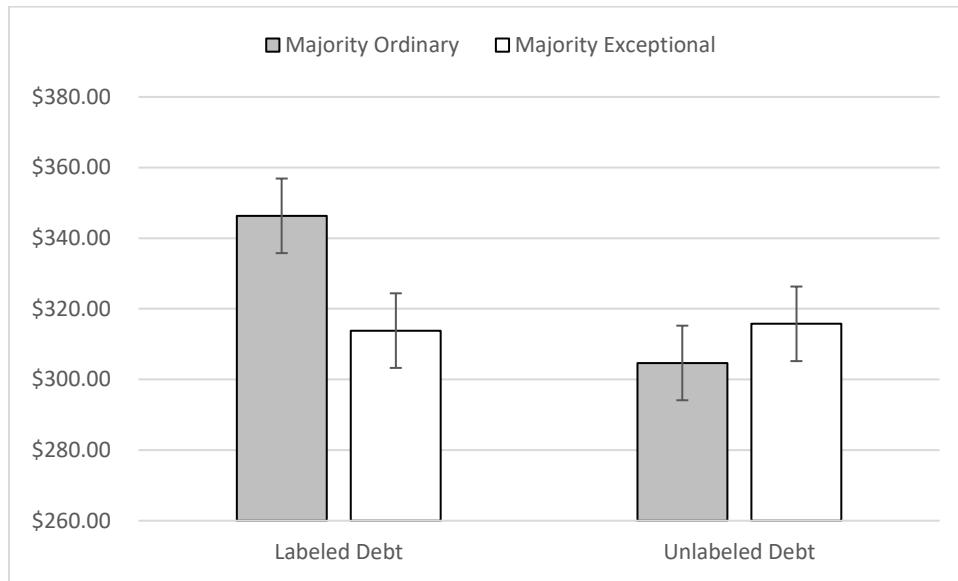
Procedure. We had participants enter the lab and seat themselves at computer terminals. Once seated, we randomly assigned them to one of the experimental conditions. All participants were told to imagine that the credit card was theirs, to look at each entry and each item purchased closely, and that they would be asked to respond to some questions regarding the credit card statement. Participants in the categorized conditions were shown an image of a credit card statement categorized into ordinary and exceptional debt (see appendix 2). Included with the image was a statement reading that credit card companies can determine whether debt is from ordinary or exceptional expenses. In the control condition, participants were shown a credit card statement, however there was no mention of ordinary versus exceptional expenses and the debt was not categorized and sorted. The total amount of debt was the same for all conditions.

After participants spent some time looking at their credit card expenditures, we told them to imagine that they had $400 left over in their monthly budget, and we asked them to allocate the $400 to either pay down their credit card or to spend on themselves. The study concluded with some demographic questions.

Results and Discussion

We analyzed the data using a 2 (categorization) x 2 (debt type) ANOVA: a significant two-way interaction emerged ($F(1,236) = 4.64$, $p < .05$; see figure 1). Consistent with H1b, in the control condition, there was no effect of actual debt type on debt repayment ($M_{ordinary} = 304.67$, $SD = 96.45$; $M_{exceptional} = 315.75$, $SD = 80.11$; $F(1, 236) = .55$, $p < .46$). In the labeled condition, however, participants allocated more money to their debt when their credit card had a majority of ordinary debt ($M_{ordinary} = 346.33$, $SD = 67.42$) as compared to when their credit card had a majority of exceptional debt ($M = 311.92$, $SD = 80.67$; $F(1, 236) = 5.31$, $p < .05$).

FIGURE 1: EFFECT OF DEBT TYPE AND LABELING ON DEBT REPAYMENT (STUDY 2).

Discussion

The results of study 2 suggest that consumers do not differentiate between ordinary and exceptional debt when attention is not explicitly brought to these categories. Having further established that consumers prioritize repayment of ordinary debt, we turn our attention to assessing our proposed mechanism – the unacceptability of revolving on ordinary debt (H2).

STUDY 3

We designed study 3 to examine our proposed mediator – the perceived acceptability of revolving on debt – for the effect of labeling debts as ordinary versus exceptional on debt repayment intentions. Similar to the design used in Study 2, we created a hypothetical context in

which an individual has a single credit card, and we manipulated whether the majority of the expenditures on that card were ordinary or exceptional. Like in Study 2, the debt on each credit card statement was sorted into ordinary and exceptional debt. We measured consumers' perceptions of the acceptability of the debt and participants' debt repayment intentions.

Methods

Participants and design. We recruited a total of 125 participants (61 female; M_{age} = 33.47 years) from Amazon Mechanical Turk in exchange for a small payment. Participants reported owning 1.9 credit cards on average and had an average total credit card debt of $1796.43 (Minimum = $0; Maximum = $25,264.00). The study design was a single factor between-subject design with two conditions: whether the majority of the expenditures were ordinary versus exceptional.

Procedure. We gave the same description of exceptional and ordinary expenses as in study 2, and then randomly assigned them to one of the experimental conditions. We then showed participants an image of a credit card statement with expenditures sorted into two categories: ordinary and exceptional (see appendix 2). We told them that the card belonged to someone named Alex and that they would be asked to respond to some questions regarding the credit card statement, and to closely look at each entry and each item purchased. With the image was a statement reading that credit card companies can categorize debt in terms of ordinary and exceptional expenses. The total amount of debt was the same for both conditions: we manipulated debt type by making either the majority of expenses ordinary or exceptional. The majority debt type (ordinary or exceptional) had\almost twice as many entries and dollar amount than the other.

After participants spent some time looking at the credit card statements, we then asked them to rate the types of purchases made on the card (1 = very common; 5 = very unusual) as a manipulation check. Next, we had participants then respond to the following six questions about Alex and his credit card debt (1 = strongly disagree; 5 = strongly agree), presented in random order: (1) Alex is financially responsible. (2) Alex is financially competent. (3) Alex is committed to getting out of debt. (4) Alex is able to control his spending. (5) Alex's debt is typical. (6) Alex is in control of his finances. The six items were combined to make a reliable perceived financial control index (α = .903) with higher scores indicating greater perceived financial control. Perceived financial control was included as a covariate in our analyses.

As our measure of perceived acceptability of debt, we asked participants "Is it OK that Alex has these types of expenditures when trying to get out of debt" (1 = strongly disagree; 5 = strongly agree). Finally, participants were told the following:

> Imagine that Alex is unable to completely repay his credit cards this month, and that he only has a total of $600 to put towards his credit cards or to spend on himself. Alex can use the money to pay down the credit cards or spend the money on himself. How much should Alex pay down on this credit card versus spend on himself. The amount of money allocated must total $600.

Participants then answered some demographic questions, were thanked for their participation and provided with a completion code.
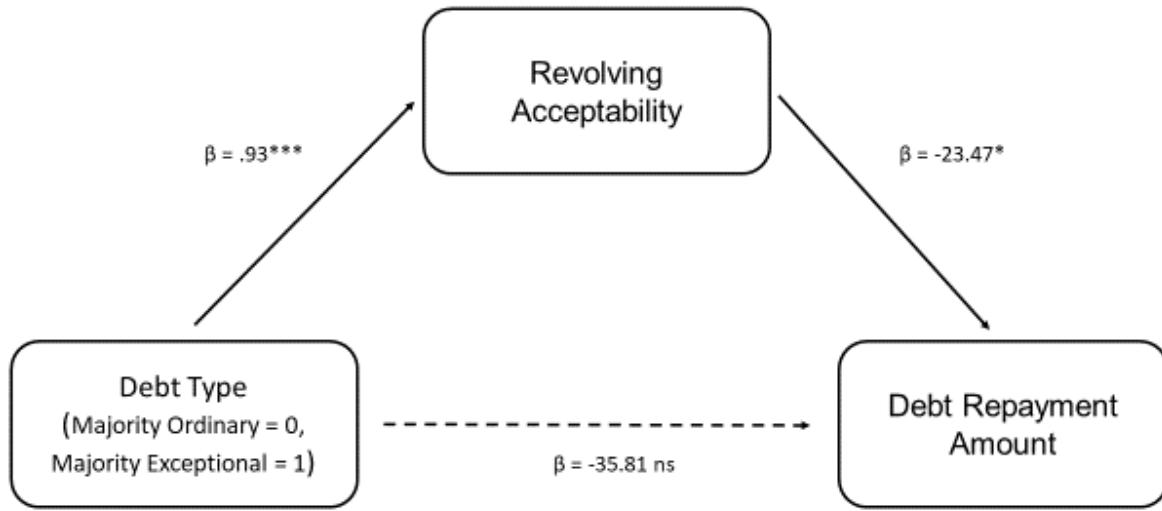
Results

We analyzed our key dependent variable – allocations of the $600 – using an ANOVA with debt condition (majority ordinary vs. majority exceptional) as the predictor variable. Participants in the with a credit card statement containing a majority of ordinary debt indicated that Alex should allocate more money to debt (M = 505.68) than participants with a credit card statement containing a majority of exceptional debt (M = 450.81; $F(1,123)$ = 5.81, p = .017).

Participants felt that Alex had greater financial control when his credit card debt had more ordinary debt (M = 2.93) in comparison to when his credit card had more exceptional debt (M = 2.51; $F(1,123) = 7.09$, $p = .009$). Finally, participants thought it was less acceptable for Alex to have ordinary debt (M = 2.54) in comparison to exceptional debt (M = 3.27; $F(1,123) = 16.46$, $p < .001$).

To test for mediation (H2), we calculated the indirect effect through debt acceptability controlling for perceived financial control, and obtained a bias-corrected and accelerated 95% confidence interval via 10,000 bootstrapped resamples. As depicted in Figure 2 below, the model has debt type as the independent variable (0 = ordinary dominant; 1 = exceptional dominant), debt acceptability as the mediator, financial control as a covariate, and repayment allocation amount as the DV. The indirect effect of debt condition on repayment allocation amount, through revolving acceptability, was significant and negative (-22.00; 95% CI -48.61, -3.20).

FIGURE 2. MEDIATION (STUDY 3)

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                        ┌─────────────────┐
                        │   Revolving     │
                        │  Acceptability  │
                        └─────────────────┘
        β = .93***                              β = -23.47*
     ┌──────────────────┐                    ┌──────────────────┐
     │   Debt Type      │                    │  Debt Repayment  │
     │(Majority Ordinary│ - - - - - - - - -→ │     Amount       │
     │ = 0, Majority     │    β = -35.81 ns  │                  │
     │ Exceptional = 1) │                    │                  │
     └──────────────────┘                    └──────────────────┘
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Discussion

The results of study 3 support our hypothesis that the perceived acceptability of debt explains why consumers prioritize repayments toward ordinary debt. We believe that sorting expenses on credit card statements into ordinary and exceptional expenses is an easily implementable strategy for credit card companies and our studies suggest that it will influence repayment decisions. Although it is possible that some consumers naturally attend to the difference between ordinary versus exceptional expenses, we have found that this does not emerge in the controlled setting of a laboratory. The results of study 2 revealed that consumers do not differentiate between ordinary and exceptional debt when attention is not explicitly brought to the different types of expenses on their credit card statements. However, given that attention, importance, and effort vary greatly between laboratory and real world settings, especially in a domain as important as consumer debt, it is possible that other interventions that

direct consumers' attention to ordinary versus exceptional spending will have a similar effect to sorting credit card statements

Both insofar and in past investigations, whether an expenditure is exceptional has been largely considered at *expense-category level*. Characterizing debt as ordinary versus exceptional based on the expense-type allows for broad categories that can be used effectively in practice and can be further refined to include hedonic, utilitarian, experiential, and material purchases in each purchase category (Tully and Sharma 2017; Zhang and Sussman 2018). However, one can easily imagine that even product categories that are typically associated with ordinary spending (e.g., cellphone, groceries) can be exceptional at times. For instance, when a family which usually spends $600/month in groceries suddenly hosts a large Thanksgiving dinner and sees their grocery spending go up to $900 in a given month, or when a user sees their cellphone bill go up dramatically due to roaming charges while traveling on vacation. Likewise, one can imagine that categories typically associated with exceptional spending (e.g., airfare, flowers) can become ordinary – when an individual frequently travels for a long-distance relationship (airfare), or when one beautifies their home weekly with purchases from the local florist. When trying to understand how the debt type influences repayment decisions in the field as the nature of what is ordinary likely varies over time, it becomes important to recognize that what is ordinary versus exceptional must be conceptualized and measured at the *consumer-category-period* level.

Moreover, in the field it may not be possible to assess or measure whether consumers formally separate their ordinary from their exceptional along multiple cards (e.g., Study 1) and it may be challenging to get credit card companies to agree to sort expenses on credit card statements (Studies 2 and 3). As a consequence, in study 4 in addition to introducing a way to characterize debt as predominantly ordinary at the consumer-category-period level, we study a

third type of debt labeling intervention: the sending to consumers of unusual spending notifications via email.

STUDY 4

To investigate how labeling ordinary versus exceptional spending influence debt repayments in the field, we used a dataset gathered from HelloWallet. HelloWallet offers financial monitoring and advice for individuals who securely link their HelloWallet account with their credit cards and bank accounts. HelloWallet membership is typically offered to employees of Fortune 250 companies who offer the services as an employee benefit. As part of the service to its members, HelloWallet provides users with reminders of due bills, notifications when saving goals are met, or self-appointed expense limits are reached (e.g., e-mail user when monthly restaurant spending reaches $300).

A critical feature of HelloWallet's service is the assignment of expenses to various predetermined categories. In HelloWallet, regardless of their source, expenses are automatically categorized based on the merchant description. Users may, in turn, re-categorize merchant expenses if they so wish. For our investigation, we focused on categories which could be assessed to contain only expenses (Cable/Internet/Phone, Children, Clothes, Coffee, Education, Entertainment, Gifts, Groceries, Health, Other Bills, Rent, Restaurants, Transportation, Travel, Utilities), income (revenue), and credit card payments.

The dataset we obtained contains weekly-level cash-flows experienced by a sample of consumers across their multiple debit and credit card accounts during January 2012 to June 2013. In addition to these categorized transactions, our data also included the end of week "net worth" in the accounts (i.e., funds – cards). we also obtained a categorized list of the weekly notifications sent from HelloWallet to every user. Such notifications included a notice of unusual

spending, low balance in an account, updates regarding pre-set goals, fee alerts (e.g., when a card is charged a late fee or a transaction fee), reminders (e.g., a credit card payment is due). Consumers received an average of 0.7 notification e-mails per week across all types of notification. Consistent with H1b, we expect that consumers will make greater repayments to their debts when they receive more unusual spending notifications, as opposed to when they receive fewer, to the extent that the expenses they had incurred were predominantly ordinary.

Measuring the Proportion of Spending that is Ordinary (vs. Exceptional)

To investigate the relationship between ordinary versus exceptional spending and credit card repayments, we must be able to assess from data whether a consumer is spending at levels that are beyond what is reasonably expected. Operationalizing what is ordinary versus exceptional requires us to determine a range for normal spending within a given period. As we observed that most consumer bills occur in monthly charges and that credit card bills and statements occur monthly, we chose to use four weeks as our time-unit of analysis. Then for each of the spending categories previously mentioned[4], we can obtain a measure of the proportion of ordinary spending based on how much the current period was greater than what is reasonably expected based on the past three periods. Omitting an index i for consumer for simplification, we can calculate the amount of exceptional spending in category c and period t, e_{ct}, based on:

1) x_{ct}, the spending in category c (e.g., housing) for period t (a four-week period),

2) $\bar{x}_{ct} = \sum_{l=t-3}^{t-1} \frac{x_{cl}}{3}$, the average spending of the last three periods (i.e., $t - 3$ to $t - 1$),

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[4] We also had data categorized in the following categories: Charity, Bank Related, Home, Insurance, Other Bills and Uncategorized. In these categories, weekly balances often reflected both income and expenses (e.g., a mortgage payment vs. a rental income) and often contained miscategorized income based on the company type (e.g., Charity, Bank Related, and Insurance). As our focus is on how consumers react to exceptional (vs. ordinary) expenses, we opted to exclude these categories altogether from our calculations of exceptional/ordinary. However, we account for total cash flows in our analyses.

3) $s_{ct} = \sqrt{\sum_{l=t-3}^{t-1} \frac{x_{ct} - \bar{x}_{cl}}{2}}$, the sample standard deviation over the past three periods, and

4) Z, a level of confidence in deviations from the past three periods, e.g., 1.68.

We assume that $[\bar{x}_{ct} - Z \times s_{ct}, \bar{x}_{ct} + Z \times s_{ct}]$ provides a range of what could be considered ordinary levels of spending during the period. If we then assume that we are interested in measuring spending that is greater than the range and that spending is recorded as negative values (i.e., negative cash flows) then can obtain the exceptional amount by setting $e_{ct} = \max(x_{ct}, \bar{x}_{ct} - Z \times s_{ct})$ and the ordinary amount by $o_{ct} = x_{ct} - e_{ct}$.

To illustrate, consider the spending data from the consumer presented in table X which details average spending for seven periods across two categories: Cable/Internet/Phone (CIP) & Groceries.[5] For the first three periods, we do not have much information about the spending in the CIP category. In the third period, the consumer spent $367.00 on CIP. How exceptional is that amount? We can establish that the past three periods had an average of $\bar{x}_3 = -372.33$ and they had a standard deviation of $s_3 = 56.85$. If we create a one-tail interval around the prior spending, we would expect an ordinary level of expense in the CIP category to be less than -467.85 (obtained by $-372.33 - 1.68 \times \$56.85$). This does not constitute exceptional spending, and as such the amount of exceptional spending $e_{ct}=0$ and $o_{ct} = x_t - \$0 = \$367.00$. In the fifth period, as the amount spend increases sharply to $572.05. This was sharply over the past three period average of $\bar{x}_5 = \$356.57$ which exhibited little variation ($s_5 = 13.05$) such that the expected range would have been $378.59. The amount we then allocate to exceptional is e_5 =$572.05-$378.78=$193.46, with the remainder being the upper limit of the expected range.

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[5] The numbers presented reflect the real monthly cashflows for a consumer in our dataset. To preserve anonymity, we have jittered the data.

This approach can also capture discrete jumps and large uncertainty such as when categories drastically change in the amount of spending. For instance, in the grocery category, the consumer does not have any transaction in the first three months. That could be for a variety of reasons: perhaps the consumer did not buy groceries (e.g., was out of town, living on a food plan), the consumer spent on cards not in the system (e.g., not all cards are added to HelloWallet), or some of the expenses that should have been categorized as groceries were not. When the fourth period begins, the consumer spends $34.34 on groceries which is entirely allocated to exceptional spending. For the next (fifth) period, the consumer does not spend and as such, there is no exceptional spending. In the sixth period, the consumer spends $47.92 which is higher than all the period observed thus far. However, there was substantial variation in the past three period mean of $11.46 ($s_6 = 19.85$) such that the expect range is quite large (i.e., a limit of $44.81). This results in an allocation to exceptional of e_6 =$47.92-$44.81=$3.11) with the remained $44.81 being allocated to ordinary expenses. Once obtained for each of the categories, we can calculate an exceptional amount e_{it} and ordinary amount of spending o_{it} at the consumer-period level.

Our interest in this field study is to assess whether consumers change their repayment patterns when they experience periods when a large proportion of their expenses are ordinary versus exceptional, and whether their repayment decisions are influenced by the explicit labeling of spending as exceptional, through notifications of unusual spending. We then calculate the proportion of exceptional spending $propexec = e_{it}/(e_{it} + o_{it})$.

TABLE 1 – CALCULATING THE PROPORTION OF SPENDING THAT IS ORDINARY: AN

EXAMPLE WITH TWO CATEGORIES (STUDY 4)

	Total Amount	Average (Prior 3 periods)	Standard Deviation (Prior 3 periods)	Expected	Exceptional Amount	Exceptional Amount	Ordinary Amount
Variable			$\bar{x}_{ct}$	s_{ct}	$\bar{x}_{ct} - Z \times s_{ct}$	e_{ct}	o_{ct}
Period (t)	**Cable, Internet, Phone**						
0	-434.00	-	-	-	-	-	-
1	-322.00	-	-	-	-	-	-
2	-361.00	-	-	-	-	-	-
3	-367.00	-372.33	56.85	-467.85	0.00	-367.00	-367.00
4	-342.00	-350.00	24.43	-391.05	0.00	-342.00	-342.00
5	-572.05	-356.67	13.05	-378.59	-193.46	-378.59	-378.59
6	-529.00	-427.02	126.22	-639.07	0.00	-529.00	-529.00
7	-500.31	-481.02	122.30	-686.48	0.00	-500.31	-500.31
Period (t)	**Groceries**						
0	0.00	-	-	-	-	-	-
1	0.00	-	-	-	-	-	-
2	0.00	-	-	-	-	-	-
3	-34.38	0.00	0.00	0.00	-34.38	0.00	0.00
4	0.00	-11.46	19.85	-44.81	0.00	0.00	0.00
5	-47.92	-11.46	19.85	-44.81	-3.11	-44.81	-44.81
6	-93.74	-27.43	24.70	-68.94	-24.80	-68.94	-68.94
7	-25.21	-47.22	46.87	-125.97	0.00	-25.21	-25.21

Control Variables & Descriptives

We have 3777 consumers for whom we have observations for at least four periods in the

data (M=8.2).[6] Our focal dependent variable was $576.23 per period ($pay_{it}$; 95% CI: [543.6,

608.85]), based on an average spending of $898.40 ($totalspend_{it}$; 95% CI: [886.39, .910.41])

reflecting that consumers who opt for HelloWallet tend to be ones who need help with managing

debt and budgets. These consumers showed an average recorded revenue of $3095.10

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[6] Given that the measures use the past three periods to determine what is exceptional versus ordinary, we need at least moving window of four periods to estimate any effect.

($revenue_{it}$; 95% CI: [3034.69, 3155.53]) and net cash in linked accounts of $10276.16[7]

($netcash_{it}$; 95% CI: [9648.53, 10903.79]).

Critical to our analyses, the consumers received an average of .69 unusual spending

notification per period ($nbunusual_{it}$; 95% CI: [.68, .69]; min=0, max=5) from a total of 2.75

across all types of notifications ($totalnotifications_{it}$; 95% CI: [2.73, 2.78]). Using our

measures, we could also determine that approximately 81.33% of period spending was assessed

to be ordinary in nature ($propexc_{it}$; M=19.67%, median=9.09%). The data shows a high number

of periods for which consumers do not have any exceptional spending (26.75% of consumer-

period observations) and few for which they have more than 50% exceptional spending (only

11% of consumer-period observations). We note that due to the nature of the data, we do not

have access to any demographic information, the number of accounts, or any information

regarding the interest rates on the accounts.

Results

We analyzed the data via fixed-effect regression with credit card repayment as the

dependent variable, our focal independent variables ($nbusual_{it}$, $propexc_{it}$ and their

interaction), the controls previously discussed, and one period lags for repayment and spending

to account for initial conditions and inertia. The results are presented in Table 1, and the focal

interaction is illustrated in Figure 2. We note that credit card repayments are signed to be

positive, that spending is negative, that revenue is positive, and that the Hausman specification

test strongly rejects the hypothesis that a random-effect specification is appropriate ($\chi^2(6) =$

$9805.31, p < .001$).

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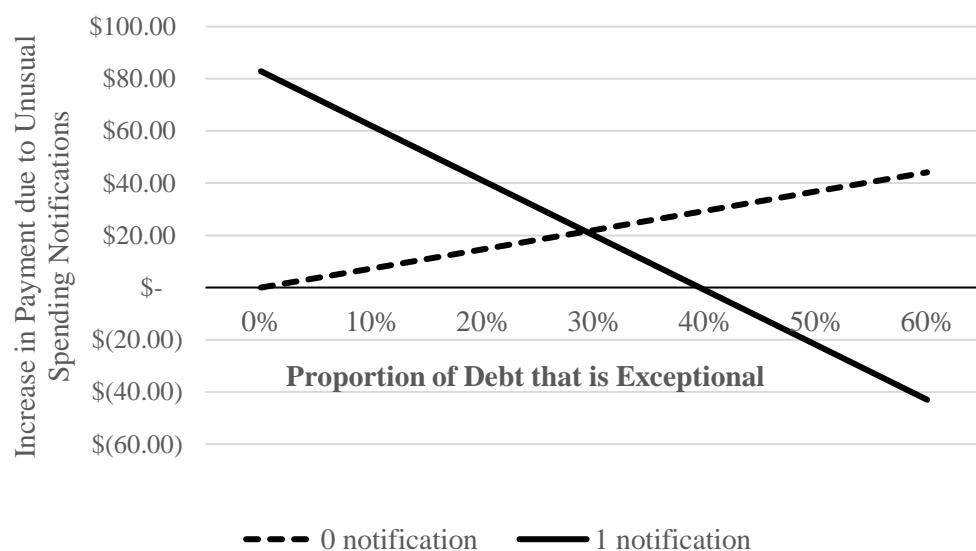
[7] We only have access to the credit card and bank accounts linked to HelloWallet. Our approximation of cash on hand is simply the average end and beginning balance in the linked debit accounts over the period.

TABLE 2 – STUDY 4: EFFECT OF CHANGES IN NUMBER OF UNUSUAL SPENDING NOTIFICATIONS ON CREDIT CARD PAYMENTS AS A FUNCTION OF DEBT TYPE

Dependent variable pay_{it}	Coefficient (SD)	Significance
Focal Interaction		
$propexc_{it}$	73.62 (0.90)	
$nbunusual_{it}$	82.90 (2.39)	**
$propexc_{it} \times nbunusual_{it}$	-283.45 (-2.97)	***
Control Variables		
$pay_{i(t-1)}$	-0.05 (0.02)	***
$totalspend_{it}$	-0.29 (0.05)	***
$totalspend_{i(t-1)}$	-0.28 (0.04)	***
$revenue_{it}$	0.0076 (0.01)	
$netcash_{it}$	-0.0015 (0.001)	
$totalnotifications_{it}$	68.57 (5.84)	***
Intercept	-140.05 (67.22)	**
N (Consumers)	31,125 (3777)	
R²	0.0269	

Note: * denotes p<.10, ** denotes p<.05, and *** denotes p<.01, based on robust clustered standard errors given that we have a "large N small T" panel.

FIGURE 2 – EFFECT OF NUMBER OF UNUSUAL SPENDING NOTIFICATIONS ON REPAYMENTS, AS A FUNCTION OF DEBT TYPE: 0 AND 1 NOTIFICATION SENT

Note: 92% of consumer-periods had 60% or more as exceptional. The mode was 0 (27% of consumer-periods) and the median approximately 9%. The simple effect of debt type conditional on having sent 0 notification ($\beta = 73.62$; i.e., dashed line), is non-significant.

As expected, we found a significant interaction between the number of unusual spending notifications sent and debt type ($\beta = -273.45, p < .01$), even while accounting for other time-variant variables that influence repayments. This includes the effect of past repayments ($\beta = -.05, p < .01$), total spending in the present ($\beta = -.29, p < .01$) and prior periods ($\beta = -.28, p < .01$), the revenue participants received ($\beta = 0.0076, n.s.$), the cash on hand ($\beta = -.0015, n.s.$) and the total number of notifications users were sent ($\beta = 68.57, p < .05$). In the Web Appendix, we discuss alternative specifications, and our conclusions are similar. We show, for instance, that not all notifications have the same effect in that the total number of notifications does not interact with debt type. We also show that this holds if we code the intervention as a binary variable which indicates whether *at least* one unusual spending notification was sent (1) or not (0) and for various inclusions and omissions of control variables.

To interpret this interaction, it helps to consider the simple effect of sending an unusual spending notification at various levels of debt type. For instance, we find that when consumers have debt that is entirely ordinary ($procexc_{it} = 0$; 26.75% of consumer periods), an unusual spending notification increases repayment amounts by $82.90 ($\beta = 82.90, p < .05$). However, this positive effect of sending unusual spending notifications decreased as consumers had a lower proportion of their debt be ordinary.

Using Johnson-Neyman's (1950; see also Spiller et al. 2013) technique to identify regions of significance at the level of p<.05, we find three regions at which the effect of sending an unusual spending notification differs based on debt type. First, when the proportion of exceptional debt is 6% or less (43% of consumer-periods), the effect of sending an unusual

spending notification is positive. When the proportion of proportion of exceptional debt is between 6% and 47% (44.7% of consumer periods), the effect of sending an unusual notification is not significantly different from zero. When the proportion of exceptional debt is greater than 47% (12.3% of the consumer months), the effect of sending an unusual spending notification on repayment size is even negative.

Discussion

Study 4 had two objectives. First, it tested the effectiveness of a debt labeling intervention that is already used: sending consumers notifications that unusual spending has been detected. Consistent with our theorizing and experiments, we found that the effect of sending these unusual spending notifications depended on whether the consumers' debt was composed predominantly of ordinary debt as opposed to exceptional debt. We found that whereas sending unusual spending notification helped when consumers had mostly ordinary debt, it did not affect when exceptional spending was a significant portion in that period. Moreover, we even found that in the rare cases when consumers' have periods where exceptional debt is close to 50% of their debt, sending an unusual spending notification may contribute to a decrease in credit card repayments. Finally, we note that the use of a fixed-effect specification allowed us to estimate the coefficients and control for unobserved heterogeneity that is constant during the periods of observation (e.g., individual traits, gender).

GENERAL DISCUSSION

Although consumers accumulate debt for many reasons, little is known about how their perceptions of the source of their debt affects their motivation to repay that debt. We have hypothesized that consumers are more motivated to repay debt that comes from ordinary (versus

exceptional) expenditures. We find support for our hypothesis in three experiments and a large-scale field analysis of actual credit card repayments made by indebted consumers. Interventions that sort and label debt as coming from ordinary or exceptional expenditures do influence consumers' repayment decisions. However, our findings suggest that debt labeling interventions are necessary for the nature of the debt as ordinary or exceptional to influence repayment allocation decisions, as consumers do not naturally categorize expenses when it comes to aggregate debt presented on credit card statements.

Theoretical Implications

Our research contributes to the mental accounting literature by investigating how the labeling of debts influences motivation to repay those debts. Whereas prior mental accounting research has focused largely on how individuals create and manage mental accounts (Heath 1995; Henderson and Peterson 1995; Thaler 1999), and how the use of mental accounts affects spending decisions (Cheema and Soman 2006; Milkman and Beshears 2009; Shafir and Thaler 2006), our findings are the first to demonstrate the implications of mental accounting on debt repayment behavior. Critically, given the flexibility that consumers have in creating and tracking their mental accounts (Cheema and Soman 2006), and given that expenses are perceived to exist on a continuum between ordinary and exceptional (Sussman and Alter 2012), our research makes an important contribution to the mental accounting literature by showing that consumers' mental accounting of debt is dependent to external labeling of that debt. Because consumers' mental accounts are obscured when spending is aggregated into debt accounts (e.g., credit card statements), such interventions can play a critical role in motivating debt repayment. Future research should extend our findings by examining these effects in other post-spending contexts,

such as the revision of existing budgets (Cheema and Soman 2006) or the prediction of future expenses (Berman et al. 2016; Peetz et al. 2016)

Despite the best intentions of financial planning programs, it seems that bringing attention to consumers' exceptional spending may instead lead them to delay their repayments if they do not have a high proportion of ordinary debt. Our field data suggest that providing consumers with notifications of exceptional spending leads them to consider all of their debt and leads to increased repayments when their debt has a high proportion of ordinary spending.

We also contribute to a growing body of literature that examines the unique problem of debt repayment within financial decision making. Recent work has investigated consumer debt through consumer spending decisions (Cheema and Soman 2008; Tully and Sharma 2017), the reorganization of existing debt (Gal and McShane 2012), and the allocation of repayments across multiple debt accounts (Amar et al. 2011; Brown and Lahey 2015; Kettle et al. 2016). Our work makes a unique contribution by identifying a novel means to motivate greater debt repayment, and adds to recent work that suggests that even minor interventions can prompt greater debt repayment (Mazar, Ariely, and Mochon 2018).

Practical Implications

The insights gleaned from our research have important practical implications for indebted consumers, financial institutions, and other organizations that help them monitor and repay their debts (e.g., Mint.com). Just as prior work has established the malleability of mental accounts (Cheema and Soman 2006), there is flexibility with which to label spending and debt as ordinary

versus exceptional. Our research suggests that consumers should be prompted, within reason, to perceive their spending as largely ordinary rather than exceptional.

It is also important to influence when and how consumers perceive different spending categories. Past investigations have often characterized spending at the *expense-type level*. This has led to frequent or common categories, such as gas or groceries, always being considered as reflecting ordinary expenses, irrespective of the amount or circumstances. By contrast, infrequent or uncommon categories, such as airfare, have been labeled as exceptional irrespective of the amount or circumstances. Spending and debt might be better labeled as ordinary versus exceptional based on whether the amount exceeds a threshold beyond what is usually and recently spent by each individual.

A second pathway is through extending how algorithms detect unusual spending patterns. Here's a stylized example: over a four-year window, one of the authors made an annual road trip to a popular vacation destination. Without fail over this four-year period, each time the author made this trip his credit card company deemed, through an algorithm, that this trip was unusual, and froze his credit card account until he called in to let them know it was not exceptional. The same principle applies to individual consumers: spending that appears exceptional in a one-year window is likely to appear more ordinary over a four-year window. In our field study, we have characterized what is ordinary versus exceptional on a four week basis, but there is also flexibility for infrequent but predictable expenses, such as property taxes. Recent research on expense forecasting (Sussman and Alter 2012; Berman et al. 2016) supports the notion that consumers would be better served if the nature of their spending was considered over a lengthier time frame. Altogether, the many dimensions along which spending may be labeled suggest that

there is a tremendous opportunity for the banking industry to label spending and debt in a

manner that beneficial to consumers.

Ordinary Credit -$527.15

Bank of America.

CASH REWARDS ℠ VISA SIGNATURE

		Your Account Number	4500 4839 0001 0001
		Your New balance	$527.15
		Minimum Payment Due	**$20.00**
		Payment Due Date	**April 22, 2014**

Account summary

Previous Balance		$537.64
Payments	537.64	
Total Credits		-$537.64
Purchases		+$527.28
Cash Advances		+0.00
Interest Charged		+0.00
New Balance		$527.15

Transactions since your last statement

REF #	TRANS. DATE	DETAILS	CATEGORY	AMOUNT
823556	March 17	STOP & SHOP	Groceries	249.60
960345	March 19	SHELL OIL	Gas	34.95
502033	March 22	DUNKIN' DONUTS	Food & Drink	5.45
784350	March 26	SHELL OIL	Gas	36.00
936272	March 29	STOP & SHOP	Groceries	201.15

Ordinary Credit -$567.28

citi CITIBANK CASH REWARDS CARD

		Your Account Number	4500 4839 0001 0001
		Your New balance	$567.28
		Minimum Payment Due	**$21.00**
		Payment Due Date	**April 22, 2014**

Statement of Account

Previous Balance		$537.64
Payments	537.64	
Total Credits		-$537.64
Purchases		+$567.28
Cash Advances		+0.00
Interest Charged		+0.00
New Balance		$567.28

Account Activity

REF #	TRANS. DATE	DETAILS	CATEGORY	AMOUNT
823556	March 17	STOP & SHOP	Groceries	249.60
960345	March 19	SHELL OIL	Gas	34.95
502033	March 22	DUNKIN' DONUTS	Food & Drink	5.45
784350	March 26	SHELL OIL	Gas	36.00
936272	March 29	STOP & SHOP	Groceries	241.28

Exceptional Credit- $527.15

citi CITIBANK   CASH REWARDS CARD

Your Account Number	4500 4839 0001 0001
Your New balance	$527.15
Minimum Payment Due	**$20.00**
Payment Due Date	**April 22, 2014**

Statement of Account

Previous Balance		$537.64
Payments	537.64	
Total Credits		-$537.64
Purchases		+$527.28
Cash Advances		+0.00
Interest Charged		+0.00
New Balance		$527.15

Account Activity

REF #	TRANS. DATE	DETAILS	CATEGORY	AMOUNT
823556	March 15	BLUE NILE JEWELRY	Jewelry	335.83
502033	March 20	HALMARK	Cards and gifts	3.99
784350	March 20	WINSTON FLOWERS	Gift	25.79
936272	March 20	GODIVA	Gift	19.54
502033	March 20	CAPITAL GRILL STEAK & SEAFOOD	Fine dining	142.00

Exceptional Credit- $567.28

Bank of America

CASH REWARDS SM VISA SIGNATURE

Your Account Number	3797 100001 11000
Your New balance	$567.28
Minimum Payment Due	**$21.00**
Payment Due Date	**April 22, 2014**

Account Summary

Previous Balance		$337.02
Payments	337.02	
Total Credits		-$337.02
Purchases		+$567.28
Cash Advances		+0.00
Interest Charged		+0.00
Current Balance		$567.28

Transactions since your last statement

REF #	TRANS. DATE	DETAILS	CATEGORY	AMOUNT
823556	March 15	BLUE NILE JEWELRY	Jewelry	375.96
502033	March 20	HALMARK	Cards and gifts	3.99
784350	March 20	WINSTON FLOWERS	Gift	25.79
936272	March 20	GODIVA	Gift	19.54
502033	March 20	CAPITAL GRILL STEAK & SEAFOOD	Fine dining	142.00

Note: Brand and order of presentation were also counter balanced.

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In the manuscript, we provided evidence that when consumers have debt that is in majority ordinary, sending an unusual spending notification increases repayments. Whereas our fixed effect specification accounts for unobserved heterogeneity due to time invariant covariates, it is possible that certain time-variate covariates create concerns. In the present web appendix, we present several additional analyses to show the robustness of the effect. First, we show that the effects are unaffected by the inclusion and exclusion of the controls used in the manuscript. Second, we show that the effect is robust of our coding of the intervention as the sending of *any* unusual spending notification (i.e., 1+ vs 0, instead of the number of sent notifications). Third, we show that sending *any* notification (e.g., unrelated to the type of debt) does not similarly influence repayments.

In Table WA1, we include the model presented in the paper and a model which does not include lags for payments and total spending. The results are nearly identical, in that when there is no unusual spending notification sent we still do not find an effect of the proportion of spending that is exceptional/ordinary on repayments ($\beta = -57.07, p = .44$). However, we do find that sending unusual spending increases repayments when there is no unusual notification sent ($\beta = 64.47, p < .05$) – an effect which decreases as the proportion of spending that is exceptional increases ($\beta = -317.41, p < .01$). Then, we also estimated a model which used an indicator ($bunusual_{it}$) set to one if at least one notification was sent, zero if not. The results are presented in Table WA2, and are very similar.

TABLE WA1 – EFFECT OF CHANGES IN NUMBER OF UNUSUAL SPENDING NOTIFICATIONS ON CREDIT CARD PAYMENTS AS A FUNCTION OF DEBT TYPE

Dependent variable pay_{it}	Model 1 (in Table 2) Coef. (Robust SE)	Sig.	Model 2 (without lags) Coef. (Robust SE)	Sig.
Focal Interaction				
$propexc_{it}$	73.62 (0.90)		-57.07 (73.83)	
$nbunusual_{it}$	82.90 (2.39)	**	64.47 (32.13)	**
$propexc_{it} \times nbunusual_{it}$	-283.45 (-2.97)	***	-317.41 (88.14)	***
Control Variables				
$pay_{i(t-1)}$	-0.05 (0.02)	***		
$totalspend_{it}$	-0.29 (0.05)	***	-.31 (0.05)	***
$totalspend_{i(t-1)}$	-0.28 (0.04)	***		
$revenue_{it}$	0.0076 (0.01)		0.0091 (0.01)	
$netcash_{it}$	-0.0015 (0.001)		-0.0020 (0.002)	
$totalnotifications_{it}$	68.57 (5.84)	***	59.92 (10.77)	***
Intercept	-140.05 (67.22)	**	136.63 (50.88)	***
N (Consumers)	31,125 (3777)		34831 (34831)	
R^2	0.0269		0.0152	

TABLE WA2 – EFFECT OF CHANGES IN SENDING AT LEAST ONE UNUSUAL SPENDING NOTIFICATIONS ON CREDIT CARD PAYMENTS AS A FUNCTION OF DEBT TYPE

Dependent variable pay_{it}	Model 3 Coef. (Robust SE)	Sig.
Focal Interaction		
$propexc_{it}$	104.15 (82.21)	
$bunusual_{it}$	143.65 (58.78)	**
$propexc_{it} \times bunusual_{it}$	-576.92 (153.84)	***
Control Variables		
$pay_{i(t-1)}$	-0.06 (0.02)	***
$totalspend_{it}$	-0.28 (0.04)	***
$totalspend_{i(t-1)}$	-0.28 (0.04)	***
$revenue_{it}$	0.0076 (0.01)	
$netcash_{it}$	-0.0015 (0.001)	
$totalnotifications_{it}$	68.57 (11.23)	***
Intercept	-149.30 (67.83)	**
N (Consumers)	31,125 (3777)	
R^2	0.0269	

Note: * denotes p<.10, ** denotes p<.05, and *** denotes p<.01, based on robust clustered standard errors,

We did find that $totalnotifications_{it}$ increases repayments ($\beta = 68.57, p < .01$). As a

consequence, an alternative explanation for our results is that any notification any by

HelloWallet would similarity get consumers to consider debt types and that our finding is not

specific to unusual spending notification. Under this alternative explanation, however, we would

expect that $totalnotifications_{it}$ would also be moderated by the type of debt – whether they

are mostly ordinary or mostly exceptional. As such, in Table WA3, we also present the results of

a model where we removed $nbunusual_{it}$ and included an interaction between $propexc_{it}$ and

$totalnotifications_{it}$. Whereas we continue to find that notifications do tend to increase

repayments, we do not find that debt type moderates that relationship $\beta = -38.14, p = .28$).

TABLE WA3 – EFFECT OF CHANGES IN SENDING ANY TYPE OF NOTIFICATION ON CREDIT CARD PAYMENTS AS A FUNCTION OF DEBT TYPE

	Model 4	
Dependent variable pay_{it}	**Coef. (Robust SE)**	**Sig.**
Focal Interaction		
$propexc_{it}$	42.97 (101.78)	
$totalnotifications_{it}$	84.72 (12.27)	***
$propexc_{it} \times totalnotifications_{it}$	-38.14 (35.30)	
Control Variables		
$pay_{i(t-1)}$	-0.06 (0.02)	***
$totalspend_{it}$	-0.28 (0.05)	***
$totalspend_{i(t-1)}$	-0.28 (0.04)	***
$revenue_{it}$	0.0076 (0.01)	
$netcash_{it}$	-0.0015 (0.001)	
Intercept	-135.74 (69.19)	**
N (Consumers)	31,125 (3777)	
R²	0.0263	