

“Paper or Plastic?”: How We Pay Influences Post-Transaction Connection

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Does the way that individuals pay for a good or service influence the amount of connection they feel after the purchase has occurred? Employing a multi-method approach across four studies, individuals who pay using a relatively more painful form of payment (e.g., cash or check) increase their post-transaction connection to the product they purchased and/or the organization their purchase supports in comparison to those who pay with less painful forms of payment (e.g., debit or credit card). Specifically, individuals who pay with more painful forms of payment increase their emotional attachment to a product, decrease their commitment to nonchosen alternatives, are more likely to publicly signal their commitment to an organization, and are more likely to make a repeat transaction. Moreover, the form of payment influences post-transaction connection even when the objective monetary cost remains constant and when the psychological cost is indirect (i.e., donating someone else's money). Increasing the psychological pain of payment appears to have beneficial consequences with respect to increasing downstream product and brand connection.

Keywords: subjective value of money, payment mechanism, pain of paying, commitment, economic psychology

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When consumers pay for something, does the form of payment that they use—for example, whether paying by cash, credit card, or debit card—change how much they value the product they bought or how committed they feel to the brand? From consumer research, consumer welfare, and managerial perspectives, this question lies at the intersection of two fundamental shifts in consumer culture: (1) the decreasing use of cash for payment transactions and (2) declining brand loyalty and product retention. In this article, we investigate whether the type of payment used to make a purchase can increase how much people value their purchase and influence how connected people feel toward the associated brand/organization.

The past two decades have seen large changes in how frequently people use plastic instead of paper money during payment transactions (Foster, Schuh, and Zhang 2013). In 1999 paper payments (i.e., cash and checks) accounted for nearly 60% of in-store payments. By 2010 that number shrank to a little over 40% as plastic cards (i.e., debit, credit, and gift cards) became the preferred form of

payment for a majority of in-store payments (Foster et al. 2013). The trend away from paper seems to be advancing, with mobile and online transactions also gaining momentum.

Over the same time period, product life cycles have shortened substantially, a trend that will likely continue due to rapid technological innovation (Bayus 1994, 1998; Khessina and Carroll 2008; Klepper 2007). Consumers today have many more brands and products to choose from in any given product category. Consequently, the product turnover rate has increased and brand loyalty has decreased (Van Belleghem 2013). An “out with the old, in with the new” mentality has led to a more competitive marketplace, giving nascent brands an opportunity to succeed but also making brand commitment and loyalty harder to achieve (Simonson and Rosen 2014).

In this article, we argue that these two fundamental shifts in consumer culture may be related. In particular, we argue that the way consumers pay can significantly influence their post-transaction connection to the product they purchase and/or to the organization their purchase supports. Drawing on the pain-of-paying literature (e.g., Prelec and Loewenstein 1998; Raghurir and Srivastava 2008) and theories of dissonance and self-perception (e.g., Bem 1967; Festinger 1957), we argue that consumers justify using more painful forms of payment (e.g., paying by cash or check vs. debit/credit card or voucher) by increasing both their post-transaction psychological and behavioral commitment. We test our proposed hypotheses by employing a multi-method approach across four studies. Data from a field experiment, a lab experiment, an online experiment, and an archival data analysis suggest that consumers who use more painful forms of payment are more psychologically connected to their chosen alternative, less connected to their nonchosen alternatives, and more likely to showcase their behavioral commitment either by publicly signaling support for a cause (i.e., wearing a lapel pin) or by making a repeat donation, in comparison to those who pay using less painful forms of payment.

CONCEPTUAL FRAMEWORK

Payment Form and Pain of Payment

Classic economic theory states that the utility of a consumption experience is determined by the sum of the experience’s benefits minus the associated costs (e.g., Deaton 1992; Hicks 1946; Marshall 1920; von Neumann and Morgenstern 1944). Classic theory defines these costs as economic in nature; they are a function of the price paid for the specific good or experience. For example, paying less money overall—for example, \$10 versus \$20 for a pair of headphones—decreases the costs associated with an item, subsequently increasing overall utility, whereas

paying more money increases costs and decreases utility (e.g., Doob et al. 1969; Hicks 1946).

Recent research on the pain of paying suggests that the benefits and costs of a transaction are not solely economic: subtle nuances of the payment experience can also make a consumption experience more or less attractive. When consumers make purchases, they typically experience a pain of paying, which refers to the negative affective reaction that consumers experience when parting with their money (Zellermayer 1996). This pain is psychological rather than physical in nature (Mažar et al. 2015) and depends on factors other than payment magnitude.

The form of payment used for a transaction (e.g., cash, check, credit/debit card) is one such factor influencing the pain associated with paying (Raghurir and Srivastava 2008; Soman 2001, 2003; Thomas, Desai, and Seenivasan 2011). Payment forms vary in terms of the degree of transparency of the payment. The greater the transparency, the more painful and aversive it is for the consumer to part with money. Cash, the legal tender of money, is considered the most transparent and psychologically proximal form of payment. Consumers must physically part with cash in a transaction, so they can easily feel the money they are spending during that transaction and can also easily see the amount being spent (Soman 2001). Subsequently, cash is the most painful form of payment (Raghurir and Srivastava 2008). Paying by check or voucher is less transparent and thus less painful than paying by cash. Whereas checks and vouchers easily show the amount or value of a transaction, no physical money changes hands, leading to consumers feeling less pain of payment in comparison to when they pay by cash (Soman 2001). Credit cards, debit cards, and other forms of plastic money are even less transparent; the ritual of swiping a card obscures the cash value of the transaction, divorcing people further from its economic reality (e.g., Feinberg 1986; Raghurir and Srivastava 2008; Soman 2003; Thomas et al. 2011). Finally, some recent technological developments in consumer payment, such as automatic payroll deductions or mobile payments, have introduced payment forms that are even less transparent than credit or debit cards because consumers may not even know the payment has occurred.

Although not the focus of the present research, in addition to payment form and payment magnitude, Prelec and Loewenstein (1998) argue that the extent to which individuals experience pain of paying also depends on when they pay for the experience. They argue that paying later for an experience and avoiding debt in that given moment tends to feel less painful than paying at the time of the experience or before the experience has occurred, even if the objective cost remains fixed (Prelec and Loewenstein 1998). Although this theoretical account is consistent with the notion that cash is more psychologically painful than check or credit card, this account also implies that a debit card—which, like cash, also immediately drains one’s

resources—should be psychologically no different than cash—and distinct from credit card payments. However, research by Thomas et al. (2011) demonstrates that this is not the case. They find that individuals report less pain of paying with debit cards in comparison to cash. Moreover, to the best of our knowledge, there is no empirical support, published or otherwise, that finds behavioral or psychological differences between debit, credit, and gift cards, which is consistent with the theoretical conceptualization that the pain of payment is caused by the payment form and not by payment decoupling or time discounting of delayed payment (Thomas et al. 2011). Thus our research centers on the argument that the physical form of payment can influence the disutility or psychological aversion to parting with money, creating varying levels of pain of payment for the consumer, above and beyond the psychological pain experienced from the economic magnitude of the purchase.

The insight that different payment forms are associated with different levels of pain has implications for understanding and predicting real-world consumer behavior. Scholars have shown that using less painful and less transparent forms of money reduces the barrier to spending, increasing (1) the probability of making a purchase from a consideration set, (2) the decision speed, and (3) the amount spent while making a purchase from a consideration set (Feinberg 1986; Raghurir and Srivastava 2008; Shah, Bettman, and Payne 2015). Soman (2001) showed that consumers who paid for a past expense using a relatively low-pain credit card were more likely to purchase an additional discretionary product (e.g., a boxed set of CDs from an artist that they liked) than those who paid for the same past expense using a relatively higher pain check. Similarly, Prelec and Simester (2001) find that individuals bid nearly twice as much money for an item in an auction setting when using a credit card than when using cash. Interestingly, even priming the notion of cash prior to a product evaluation leads people to focus on a product's costs and negative attributes, whereas priming debit/credit cards prior to a product evaluation leads to a focus on the product's benefits and positive attributes (Chatterjee and Rose 2012). In addition, feeling more pain of payment can decrease immediate post-purchase satisfaction with a product (Soster, Gershoff, and Bearden 2014). These results, along with other prior work in the pain of payment literature, suggest that less painful forms of payment are associated with positive outcomes during consumer deliberation and purchase (e.g., increased willingness to purchase a product, higher willingness to pay for an item, greater point-of-purchase satisfaction).

However, what happens after the purchase has occurred? Although past research has demonstrated that attenuating the pain of payment can increase spending, purchasing, and positive evaluations during the consumer deliberation and purchase process, it remains largely silent on the important question of implications for post-purchase

outcomes. To the best of our knowledge, Kamleitner and Erki (2013) have conducted the only scholarly research that investigates the role that payment form may have on product relationships. Specifically, they examined how payment form affects attachment and psychological ownership of a given product. In one study, they found correlational evidence that those who paid for an item of clothing with cash report feeling more ownership at time of payment, attachment, and pain of payment than those who paid for the item with a credit or debit card; however, pain of payment did not influence the effect of payment mode on ownership when added as a covariate. In a second study, they measured whether there are differences in feelings of psychological ownership as a function of (1) whether individuals spend replica cash or a replica plastic card to pay for a pen and (2) race of participants (Asian vs. non-Asian). In this study, they found no main effects of payment mode or cultural background on psychological ownership, attachment, or pain of payment, but they did find a significant interaction for ownership. Non-Asian students immediately experienced a stronger sense of psychological ownership for the pen when they paid by replica cash than if they had paid by replica card; however, Asian students did not show a difference, which the researchers hypothesized might be due to Asians viewing credit cards as a source of investment and debt rather than as a source of convenience. The role of cultural meanings of different forms of payment is a very interesting topic that deserves further research, although it is not the focus of our present work.

Our research goes beyond Kamleitner and Erki (2013) and other previous work in several key ways. First, we systematically manipulate the payment forms used across studies (i.e., cash, "plastic," voucher, or check) to determine whether the form of the payment has a causal role in significantly influencing an individual's connection to a purchased product. As discussed earlier, previous research has demonstrated that experiencing less pain of payment can have a positive impact on consumers during the deliberation and point-of-purchase process (e.g., Chatterjee and Rose 2013; Soster et al. 2014); thus it is important to determine whether experiencing increased pain of payment can lead to beneficial effects on post-transaction relationships. Second, whereas past research has focused on ownership and attachment to products, we examine the impact that payment form can have on both product and organizational relationships. Third, Kamleitner and Erki (2013) find an immediate difference of payment form on psychological ownership in their correlational study. We look to fill a void in prior pain of payment literature by investigating how different forms of payment influence long-term psychological and behavioral connection. In particular, across studies, we vary the time periods after the transaction has occurred in order to examine the robustness of the payment effect on downstream consumer relationships. Fourth and

finally, we examine the theoretical mechanism of the effect more deeply by looking at the role of pain of paying in the relationship between how one pays and how connected one feels post-transaction. Thus in the sections that follow, we extend the pain of payment literature by addressing the potential long-term consequences of paying with more or less painful forms of payment on post-transaction psychological and behavioral connection to a product, brand, and organization.

Pain, Value, and Commitment

We ground our hypotheses about the relationship between payment form and post-transaction commitment in research on the long-term effects of painful experience. Theory and research in multiple disciplines support the idea that painful experiences lead, somewhat paradoxically, to increased value and commitment (e.g., Bem 1967; Brehm and Self 1989; Festinger 1957; Kivetz and Simonson 2002a; Mischel, Cantor, and Feldman 1996). Research on effort justification and dissonance reduction suggests that people justify prior feelings of investment by valuing the chosen outcome more (Aronson 1997; Aronson and Mills 1959; Cooper and Fazio 1984; Festinger 1957; Kahneman, Knetsch, and Thaler 1991). Gross (1998) argues that people who experience physical or emotional pain to obtain a particular goal or outcome tend to justify the pain of their experience psychologically by seeing more value in the outcome they achieve. This psychological connection between pain and value is consistent with the price-quality heuristic, wherein consumers value expensive products more than cheap products of the same quality (Rao and Monroe 1988; Scitovsky 1945; Stiglitz 1987). More expensive products are more painful to purchase and, to justify this pain, they are more valued by consumers. Research by Koo and Fishbach (2010) suggests that even perceived costs can affect consumer expectations and enjoyment.

Applying this theoretical framework to pain of payment and purchasing, we argue that people who pay with more painful forms of money will be both more psychologically and more behaviorally committed to their chosen alternative. There is empirical evidence that certain types of pain can influence commitment. Regarding psychological commitment, Aronson and Mills (1959) found that participants who underwent a more painful and severe initiation to join a group expressed more liking and affiliation for the group than those who had a milder initiation or no initiation at all. Similar effects have also been noted in consumer research (Sheth 1968). Cardozo (1965) demonstrated that exerting more effort in order to acquire a product during a shopping task produced more favorable initial evaluations of the product. In a recent and related example, Mochon, Norton, and Ariely (2012) found that exerting effort to create a product disproportionately increased consumers'

valuation for the product. Experiencing pain when making a decision not only increases the attractiveness of the chosen alternative, but it can also decrease the attractiveness of a rejected alternative (Harmon-Jones and Harmon-Jones 2007). Brehm (1956) conducted an experiment where participants rated the desirability of different products (e.g., toaster or coffeemaker). The participants were then given either a difficult decision (i.e., choosing between two highly rated alternatives) or an easy decision (i.e., choosing between one alternative that was rated high and another that had a low rating). After making their choice, participants rerated the desirability of the products. Individuals who made a psychologically easier or less painful decision did not change their ratings between the alternatives. In contrast, individuals who made a psychologically more difficult or painful decision rated the chosen option as more attractive and the nonchosen alternative as less attractive, a phenomenon known as spreading of alternatives.

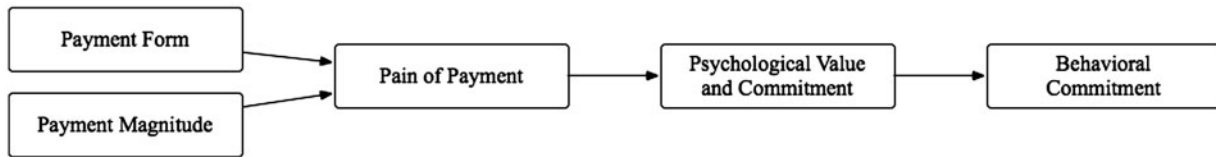
Regarding behavioral commitment, the attitudes literature suggests that psychological shifts are associated with subsequent behavioral change congruent with this shift (Ajzen 1991; Fishbein and Ajzen 1975). Evidence for such attitude-behavior consistency between psychological and behavioral commitment can be found in, among others, research on the relationship between commitment to one's organization and altruism toward members of that organization (Organ and Ryan 1995) and research by Smith and Swinyard (1983) demonstrating that even a small direct commitment, such as a product trial, can increase purchase behavior. Given the close relationship between psychological and behavioral commitment, we argue that increased pain of payment will, via its effect on psychological commitment, lead to increased behavioral commitment as well. Supporting this assertion, Doob and colleagues (1969) found that introducing a product at a promotional price—effectively lowering the pain of payment—may drive initial sales but ultimately leads to decreased behavioral commitment, as represented by lower long-term sales.

Integrating the previous arguments, Figure 1 shows our conceptual framework regarding the downstream consequences associated with the painful elements of a transaction. We hypothesize that using a more psychologically proximal form of payment increases the psychological pain of paying, just as increasing the magnitude of payment makes the transaction feel more painful. We further hypothesize that the pain of paying will increase post-transaction connection, first psychologically in terms of how much consumers value their experiences and how committed they feel toward the entity they supported with their purchase, and then behaviorally, in terms of how likely they are to signal support publicly for a cause or make a repeat donation. Regardless of whether one increases pain of payment by paying with a more painful form of payment (while keeping the objective payment value constant) or by paying more money overall (and, in

FIGURE 1

THE IMPACT OF PAYMENT FORM AND MAGNITUDE ON PSYCHOLOGICAL AND BEHAVIORAL COMMITMENT THROUGH PAIN OF PAYING

Overall Model



turn, keeping the form of payment constant), we argue that increased pain of payment leads the consumer to be more psychologically and behaviorally committed to a given product or organization.

OVERVIEW OF EXPERIMENTS

We conducted four studies to investigate how the psychological pain associated with different payment forms affects psychological connection and subsequent behavioral commitment following an economic transaction. We use a multi-method approach, testing our hypotheses using a field experiment, a lab experiment, an online experiment, and archival data. We also operationalize psychological commitment and behavioral commitment in multiple ways, emphasizing the broad applicability of our findings. We categorize any measure that encompasses feelings and intentions as psychological value and commitment. This includes emotional attachment or feelings of connection to a given product or brand, willingness to accept, or estimated likelihood of engaging in a future behavior (e.g., likelihood to recommend a product or brand). We operationalize behavioral commitment as any measure that captures an actual observable behavior. In the present research, behavioral commitment specifically refers to wearing a lapel pin and making a repeated donation to one's alma mater.

In study 1, we manipulate the form of payment used for purchase in a controlled field experiment. We examine whether paying for a mug increases the psychological connection to the mug when the mug is purchased with one's own cash compared to when the mug is purchased with one's own "plastic" (i.e., debit/credit or student card). Study 1 also examines whether the effect of payment method on post-transaction psychological connection is mediated by the pain of payment. In study 2, a laboratory experiment, we rule out the potential alternative explanations that income effects, transaction costs, or halo effects drive the results. Study 2 examines whether the pain of paying effect can influence both post-transaction psychological connection and behavioral commitment even when

the individual is spending someone else's money and when the objective dollar amount is held constant. This study also assesses whether paying with a more painful form alters the psychological connection for nonchosen alternatives. In study 3, an online experiment, we manipulate the process by which these effects occur by increasing the pain of payment via both payment form and payment magnitude, in order to determine whether an increase in people's psychological commitment is due just to differences in the payment form or more broadly to pain of payment from any source (e.g., higher payment amount, holding form constant). Finally, in study 4 we use archival donation data to investigate how the pain of payment influences post-transaction behavioral commitment in a real-world setting on a longer time horizon by measuring repeat donation likelihood as a proxy for post-transaction connection. Specifically, we examine whether (1) donating in year t by check, a more painful form of payment, versus donating using a credit/debit card or (2) donating a larger amount of money in year t increases the likelihood of donating in year $t + 1$. Study 4 also tests whether the pain of paying effect is robust over time in a domain that has meaningful economic consequences. Figure 2 provides a graphical summary of the theoretical paths that the different studies test.

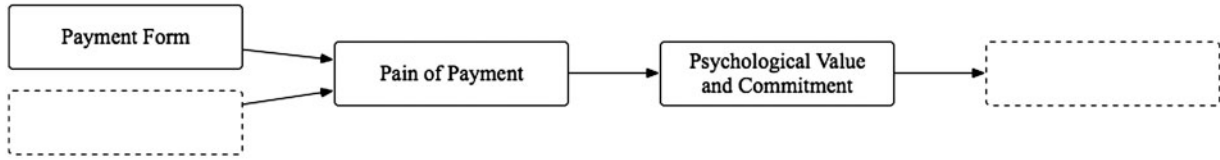
STUDY 1: MUG FIELD EXPERIMENT

Study 1 investigates whether paying with a more painful form of payment increases how much consumers value a product after the transaction is completed. To establish that there is a causal relationship between payment form and post-transaction psychological value and connection, we manipulate whether consumers pay for a mug using cash or plastic card. We then examine whether paying by cash increases the perceived value of the mug as measured by the participant's subsequent willingness to accept the amount for the purchased mug (i.e., the endowment effect) and by purchasers' rated post-transaction psychological connection as measured by their emotional attachment toward the mug. We also examine whether the psychological pain associated with payment mediates the relationship between

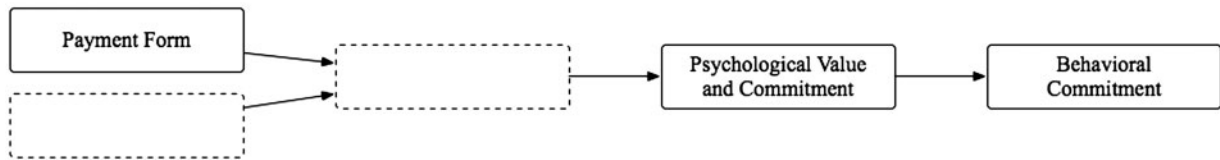
FIGURE 2

THE IMPACT OF PAYMENT FORM AND MAGNITUDE ON PSYCHOLOGICAL AND BEHAVIORAL COMMITMENT THROUGH PAIN OF PAYING, ACROSS EMPIRICAL STUDIES

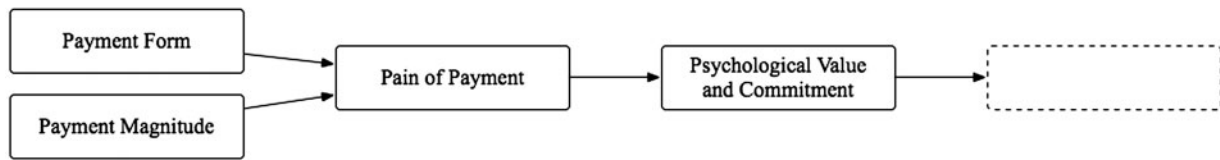
Study 1: Field Experiment



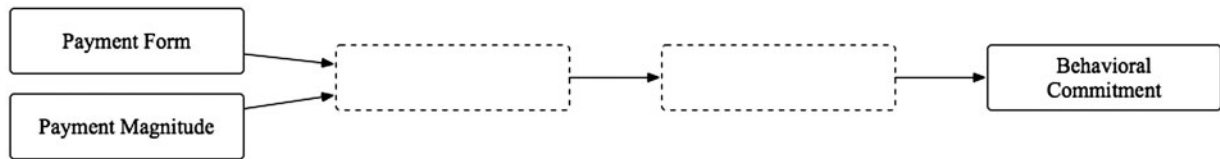
Study 2: Laboratory Experiment



Study 3: Online Experiment



Study 4: Archival Data Analysis



payment form and post-transaction perceived value and connection.

Method

Procedure and Design. The study experimenter approached 98 employees of a private southeastern university, asking each if they would like to purchase a mug. The mug was dark blue and displayed a university logo. Individuals were informed that the mug normally sold for \$6.95 but was discounted to \$2 as part of a promotion. Individuals were randomly assigned to one of two

experimental conditions. In the Pay by Cash condition, individuals were told that they could only purchase the mug with cash. In the Pay by Plastic condition, individuals were told that they could only purchase the mug with a credit card, debit card, or a prepaid university card commonly used on campus. The experimental manipulation did not significantly affect the proportion of the 98 potential participants who chose to purchase a mug ($Prop_{\text{cash}} = 60\%$, $Prop_{\text{plastic}} = 67\%$, $\chi^2(1) = .26$, $p = .61$), which we attribute to the mug's deeply discounted price (Shah et al. 2015). A total of 63 people purchased a mug, 32 in the Pay by Card condition and 31 in the Pay by Plastic condition.

Approximately two hours after the transaction, the experimenter approached everyone who purchased a mug and asked them to complete a follow-up survey.

Measures. The independent variable in our analysis is Paid by Cash, a dummy variable that indicates whether the participants used cash (Paid by Cash = 1) or a form of plastic (Paid by Cash = 0) to pay for their purchase. As described earlier, participants were randomly assigned to pay by cash or by plastic; they did not choose their form of payment. Individuals who were instructed to pay by plastic were allowed to pay using a debit, credit, or prepaid university card that was commonly accepted across campus. We asked the follow-up questionnaire to all participants who purchased a mug ($n = 63$), excluding the 35 participants who did not make a purchase.

The dependent and mediating variables were measured on a post-transaction questionnaire. We measured Psychological Connection with two questions. First, we asked participants, “How emotionally attached are you to the mug?” (1 = Not at all, 7 = Very attached). Second, we asked the participants about the minimum price that they would demand to give up their mug (e.g., their “willingness to accept”). We standardized and then averaged these measures to produce an index of psychological value and connection ($r = .404, p = .001$).

The mediating variable is Pain of Payment. Pain is traditionally measured, in both medical and nonmedical settings, with single-item measures (see, e.g., Christian, Eisenkraft, and Kapadia 2015; Soster, Gershoff, and Bearden 2014; Thomas, Desai, and Seenivasan 2011; Wong and Baker 1988). Accordingly, participants described their pain by answering this question: “How painful was paying for the mug when you originally bought it?” (1 = Not at all, 7 = Very painful). Data from a separate online sample confirmed that responses to this question correlate very highly ($r = .72; n = 201; p < .001$) with responses to an adapted form of the widely used Wong and Baker (1998) Faces Pain Rating scale, where people identify the cartoon face that best corresponds to their current feeling of pain (Soster et al. 2014; Thomas et al. 2011).

Results

We analyze the data in two stages. We first investigate whether the experimental manipulation had the predicted effect on the Psychological Connection dependent variable. We then test whether the manipulation affected Pain of Payment and whether Pain of Payment mediates the experimental manipulation’s effect on Psychological Connection.

Effects of Payment Form. Payment form significantly influenced post-transaction valuation. Individuals who paid with cash expressed more Psychological Connection in comparison to those who paid with plastic ($M_{\text{cash}} = 0.46$,

standard deviation $[SD]_{\text{cash}} = 0.71$, $M_{\text{plastic}} = -0.48$, $SD_{\text{plastic}} = 0.68$, $t(61.0) = 5.33$, $p < .001$; see Figure 3). This effect is both significant and relatively large in terms of economic impact. To illustrate the size of this effect, consider the willingness to accept question, which was measured in dollars. The participants in the Cash condition asked for an average of \$6.71 ($SD = \1.63) to sell the mug back, whereas the participants who paid with plastic asked for only \$3.83 ($SD = \1.79).

Pain of Payment. Before testing for mediation, we assessed whether the experimental manipulation influenced the participant’s subjective Pain of Payment ratings. As expected, participants who paid by cash self-reported more pain than individuals who paid by plastic ($M_{\text{cash}} = 4.09$, $SD_{\text{cash}} = 1.45$, $M_{\text{plastic}} = 2.10$, $SD_{\text{plastic}} = 1.47$, $t(60.9) = 5.44$, $p < .001$).

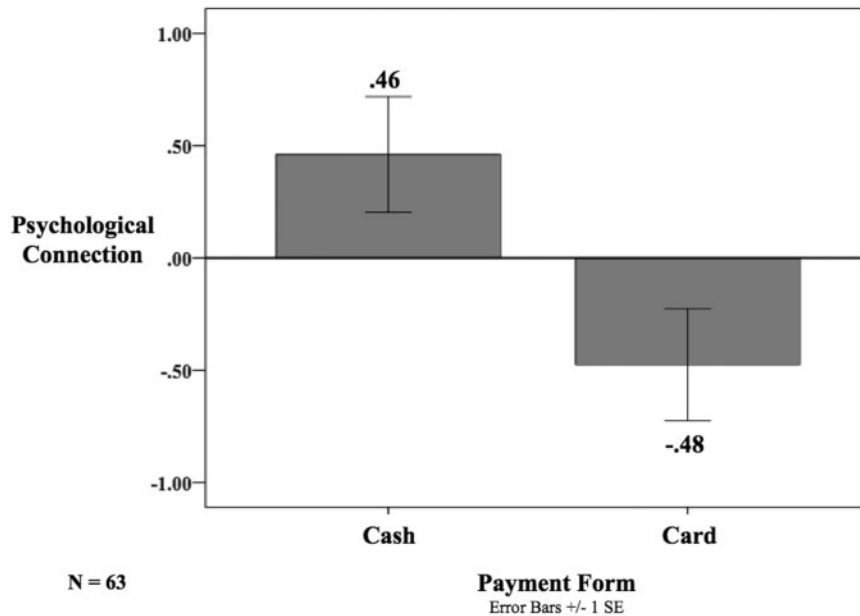
Mediation Analysis. We assessed whether Pain of Payment mediates the relationships between payment form—the experimental manipulation—and the Psychological Connection dependent variable. We used structural equation models and bootstrap analysis to test the significance of the mediation (Zhao, Lynch, and Chen, 2010). A 1000-draw bootstrap suggested that Pain of Payment significantly mediates the effect of paying by cash on Psychological Connection (Indirect effect of paying by cash = 0.31, standard error $[SE] = 0.11$, $z = 2.76$, $p = .006$; direct effect = 0.62, $SE = 0.21$, $z = 3.03$, $p = .002$). Using the language of Zhao et al. (2010), this pattern of results provides evidence of “complementary mediation.”

Discussion of Study 1

Study 1 suggests that payment form influences the psychological connection individuals feel toward their chosen option. The subjective pain associated with paying mediated this effect. Holding the price of the item constant, the psychological pain of payment increased the psychological connection consumers felt toward the product they purchased.

Study 1 has several limitations. First, we used self-report measures of post-transaction psychological connection and were not able to assess the behavioral consequences of payment form. Second, the participants had to spend their own money in order to participate in study 1. Although \$2 should be too small to create wealth and income effects, we do not know whether having people pay for the mugs created a biased sample of participants given that we only measure those who chose to purchase the mug. In other words, we do not know anything about people who did not want a mug. In addition, there may also be economic differences across payment forms. For example, credit card users who have rewards points or have cash back programs may, in fact, be paying less than \$2. Similarly, it is possible

FIGURE 3
 PSYCHOLOGICAL COMMITMENT AS A FUNCTION OF PAYMENT FORM: STUDY 1



that cash users may have limited cash available in their wallet and thus might have to incur an automatic teller machine (ATM) fee or might perceive additional transaction costs by making an additional trip to the ATM in order to make the cash payment. For these cash users, \$2 may feel greater than \$2 due to these additional costs. Third, halo effects might also be driving the results; individuals may not feel more connected to their purchases per se, but rather they may simply have a more positive impression of their purchase (Nisbett and Wilson 1977). To overcome these limitations, study 2 uses a controlled laboratory experiment to examine whether donating someone else’s money increases psychological connection, in turn increasing behavioral commitment. Study 2 also tests whether increasing the pain of payment affects connection to just the chosen alternative or whether the pain of payment also influences connection to the nonchosen alternatives.

STUDY 2: CHARITY LABORATORY EXPERIMENT

In study 2, we test whether having individuals use more or less painful forms of payment (i.e., \$5 cash or a \$5 voucher) affects psychological connection to a chosen charity and subsequently influences behavioral commitment, even when the donated money is not their own. In addition, we test whether psychological connection to the nonchosen alternatives is influenced by payment form. We

hypothesize that increasing the pain of payment will (1) increase both psychological connection and behavioral commitment to the chosen alternative and (2) decrease psychological connection to the nonchosen alternatives. We measure psychological connection by asking participants to complete self-report measures. We measure behavioral commitment by measuring whether participants wear a ribbon lapel pin from their chosen charity one week following their initial donation (Baca-Motes et al. 2013).

Method

Participants. A total of 94 undergraduates (61.7% female) from a southeastern university participated in this between-subjects experiment.

Experimental Manipulation. The participants were randomly assigned to one of two payment form conditions. Half of the participants donated to one of three charities using a five-dollar bill; the other half donated using a five-dollar voucher. The five-dollar voucher had the same dimensions as the five-dollar bill (6.14 inches long × 2.61 inches wide × .004 inches thick) so as to limit potential confounds due to differences inferred from the size of the payment modes.

In order to rule out wealth effects, none of the participants in this study donated their own money. However, we hypothesize that transactions conducted with another person’s money will still lead people to experience feelings of

pain, although the effect is likely to be smaller. This belief is grounded in research showing that conscious and non-conscious primes influence downstream behavior (Lang, Bradley, and Cuthbert 1998; Leventhal and Tomarken 1986; Zemack-Ruger, Bettman, and Fitzsimons 2007). According to this literature, concepts may be strongly linked with specific feelings and behaviors. Invoking those concepts activates the associated memories and behaviors, regardless of whether the concept was consciously or subconsciously experienced. Extending this paradigm to the present study, we argue that the concept of paying money is automatically associated with pain of payment feelings. Therefore, we expect that individuals who spend other people's money—even though they do not personally experience an economic loss—will still experience pain via the automatic association between payment and the subjective pain associated with a particular payment form.

Procedure and Design. Participants arrived at the lab and were informed that they would be taking part in a two-part study involving problem solving and evaluating three different charities. Upon entering the lab, participants were given \$7 (in the form of a \$5 bill and two \$1 dollar bills) as payment for their participation in the study plus either an additional \$5 cash or a \$5 voucher, which they were told explicitly would be given to one of three charities of their choice during the second part of the experiment on behalf of the school. Having participants donate money that was not theirs reduced concerns that wealth effects or transaction costs were driving the relationship between the pain of payment and post-transaction connection.

Following the completion of the unrelated filler task, participants were told that they would have a chance to donate the \$5 cash/voucher to one of three charities: Cancer Research Institute, Earthworks (an environmental organization), or Elizabeth Glaser Pediatric AIDS Foundation. All charities are real and recently received an "A" rating from an annual charity review (<http://www.charitywatch.org/toprated.html>); thus they did not differ in terms of quality or effectiveness. Individuals were then given three clasp envelopes with a one-page description pasted on the front for each charity. The description for each charity was provided in order to ensure that the information was similar across choices (see the online appendix for descriptions).

Participants were instructed to donate to their preferred charity by placing their \$5 cash/voucher into the associated envelope. They could not give any more (or less) than \$5 and could not split the money up between one or more charities. The participants were then given a questionnaire asking them about their feelings toward the charity. The questionnaire measured the participant's post-transaction psychological connection and positivity (see below for details).

After completing the questionnaire, individuals were given a small ribbon lapel pin as a token of appreciation

from the charity organization. The ribbon lapel pins were identical in shape and size but varied by color. A purple lapel pin corresponded to a donation to the Cancer Research Institute, a green lapel pin corresponded to a donation to Earthworks, and a red lapel pin corresponded to the Elizabeth Glaser Pediatric AIDS Foundation.

One week after the experiment, all participants were emailed a follow-up questionnaire. The email again thanked the participants for their participation. Participants were also informed that the charity (which remained unspecified so that everyone could receive the same email) had a few follow-up questions. This follow-up questionnaire included our behavioral measures of commitment.

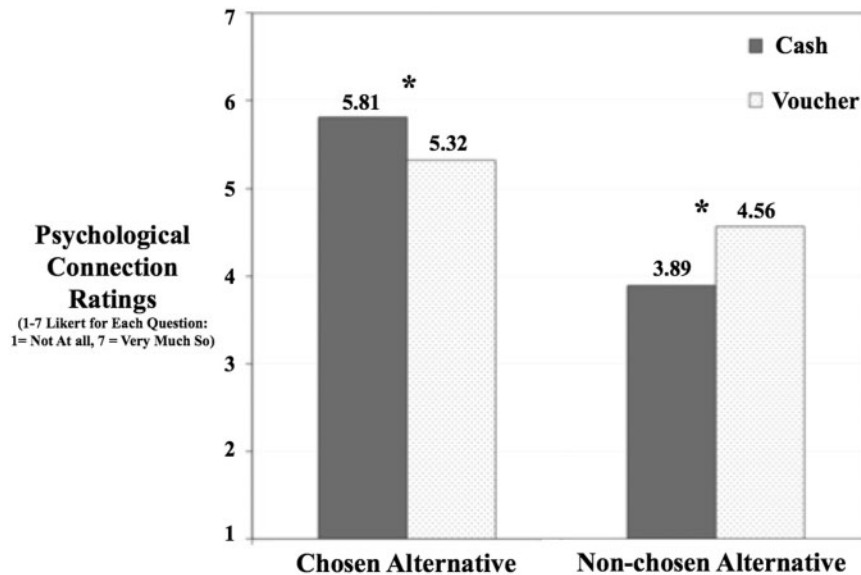
Measures. There are two sets of measures in this study. The psychological variables were measured in the post-donation questionnaire; the behavioral variables were measured in the follow-up questionnaire that participants received one week after the experiment.

The post-donation questionnaire measured several items using 7 point scales (1 = Strongly disagree; 7 = Strongly agree). First, the participants described their Psychological Connection with a 3 item scale. The scale items asked about the participant's connection to the charity's values and mission, their estimated likelihood of recommending the charity to a friend, and their estimated likelihood of donating in the future to the charity (Cronbach $\alpha = .93$). We consider the questions that refer to an "estimated likelihood" to be measures of psychological, rather than behavioral, connection because even the most sincere intentions do not always translate into actual behaviors. Second, the participants described the Positivity of the charity with a 4 item scale. The items on this scale asked participants about the charity's competence, genuineness, efficiency, and whether it will fulfill its goals (Cronbach $\alpha = .933$). We measured the positivity rating of each charity to rule out the alternative explanation of a halo effect regarding the participant's chosen charity (Nisbett and Wilson 1977). These two scales exhibited discriminant validity as per Fornell and Larcker's (1981) test: the average variance extracted (AVE) for the two latent constructs (AVE for commitment = 0.75; AVE for positivity = 0.70) is greater than the variance shared by those latent constructs (Shared variance = 0.48). Participants completed these two scales three times, once for each of the three charities.

The follow-up questionnaire asked about the participant's post-experiment behavior. To measure post-transaction behavioral connection, we asked participants if they wore their lapel pin during the last week (Binary outcome: Yes/No) and how many days they wore the pin (1 = 1 day, 2 = 2–3 days, 3 = 4–5 days, 4 = 6+ days). Unrelated to the present research, we also asked the participants if they thought the charity should continue giving out ribbon pins to donors (Binary outcome: Yes/No).

FIGURE 4

PSYCHOLOGICAL CONNECTION RATINGS FOR CHOSEN ALTERNATIVE AND NONCHOSEN ALTERNATIVES AS A FUNCTION OF PAYMENT FORM: STUDY 2



Results

Post-Donation Questionnaire. First, looking at Psychological Connection, we found that individuals who donated to charity using \$5 cash felt significantly more psychological connection to their chosen charity than participants who donated using a \$5 Voucher ($M_{\text{cash}} = 5.81$, $SD_{\text{cash}} = 0.88$, $M_{\text{voucher}} = 5.32$, $SD_{\text{voucher}} = 1.29$, $t(81.0) = 2.15$, $p = .034$). We also found that individuals who donated using \$5 Cash felt significantly less committed to their nonchosen alternatives (using the average of the two nonchosen alternatives) than those who donated to charity using a \$5 Voucher ($M_{\text{cash}} = 3.89$, $SD_{\text{cash}} = 1.10$, $M_{\text{voucher}} = 4.56$, $SD_{\text{voucher}} = 1.27$, $t(90.2) = -2.77$, $p = .007$; see Figure 4). Second, we used the Positivity measure to investigate whether payment form influences post-transaction Psychological Connection, rather than producing a more generalized halo effect. Unlike the Psychological Connection measure, we found no evidence that individuals who donated via cash viewed their chosen charity more positively than those who donated by voucher ($M_{\text{cash}} = 5.86$, $SD_{\text{cash}} = 0.85$, $M_{\text{voucher}} = 5.76$, $SD_{\text{voucher}} = 1.11$, $t(86.3) = .46$, $p = .64$). Payment form also did not significantly influence positivity measures for the nonchosen alternatives ($M_{\text{cash}} = 5.28$, $SD_{\text{cash}} = 0.92$, $M_{\text{voucher}} = 5.36$, $SD_{\text{voucher}} = 1.06$, $t(90.3) = -.403$, $p = .69$).

Post-Transaction Behavioral Commitment (i.e., Wearing a Lapel Pin). Of the initial 94 participants, 68 responded to the email survey ($n_{\text{cash}} = 39$, $n_{\text{voucher}} = 29$). Consistent

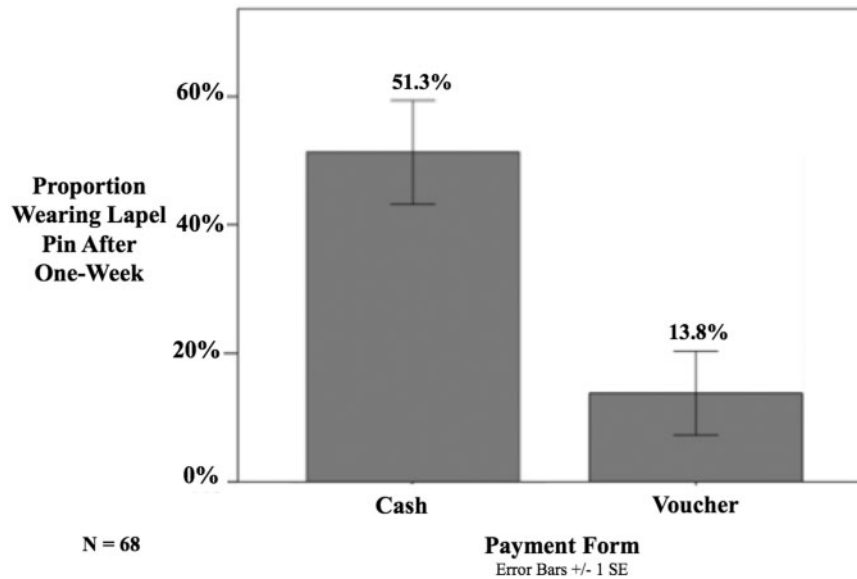
with our hypothesis, individuals who donated by cash instead of voucher were both significantly more likely to report wearing the lapel pin after one week ($\chi^2(1) = 8.66$, $p = .003$; $M_{\text{cash}} = 51.3\%$, $M_{\text{voucher}} = 13.8\%$) and reported wearing the lapel pin more frequently ($M_{\text{cash}} = 1.31$, $SD_{\text{cash}} = 1.64$, $M_{\text{voucher}} = 0.48$, $SD_{\text{voucher}} = 1.27$, $t(65.8) = 2.33$, $p = .023$; see Figure 5). Finally, a mediation analysis suggests that increased Psychological Connection toward the chosen alternatives mediated the effect of payment method on the post-transaction behavioral commitment measure (direct effect = 0.23, $SE = 0.12$, $z = 1.84$, $p = 0.065$; indirect effect = 0.15, $SE = 0.07$, $z = 2.13$, $p = 0.033$). This result suggests that payment form influenced post-transaction psychological connection, which then influenced the likelihood to demonstrate post-transaction behavioral commitment via publicly signaling support for the charity.

Discussion of Study 2

The results of study 2 suggest that a more transparent payment form (cash) increases the degree of connection to the chosen alternative beyond that associated with a less transparent form (voucher), even when people pay with someone else’s money. Furthermore, paying with cash increased the propensity to signal their connection publicly and decreased the psychological connection toward the nonchosen alternatives. Study 2 also ruled out two potential alternative explanations for the relationship between

FIGURE 5

PROPORTION WEARING A LAPEL PIN AFTER ONE WEEK AS A FUNCTION OF PAYMENT FORM: STUDY 2



payment form and post-transaction connection. First, since participants were donating someone else's money, wealth effects or transaction costs are not driving the relationship between pain of payment and post-transaction connection. Second, given that payment form did not lead to significant differences between positivity measures, the pain of payment effects cannot be attributed to a halo effect.

One of the limitations of study 2 is that we did not measure pain of payment, the mediating variable that could better reveal whether the participants in the Cash condition were more committed because they experienced more pain. This is a limitation because the participants in study 2 were spending someone else's money and, therefore, may not have experienced as much pain as people who spend their own money. We thank the anonymous reviewers for pointing out this oversight. Thus we do not have direct evidence for the role of pain of payment in this study, and our conclusions regarding the process therefore must be more speculative for study 2. However, we do have direct evidence for the role of pain of payment in both study 1 and study 3.

STUDY 3: ONLINE EXPERIMENT MANIPULATING FORM AND MAGNITUDE

In study 3, we examine whether post-transaction connection is driven by an effect specific to payment form or,

rather, as we theorized, by any variable that increases the pain of payment. Specifically, study 3 tests whether post-transaction connection increases when pain of payment is manipulated via either changes in payment form (as in the previous two studies) or changes in payment magnitude. Because we previously argued that post-transaction connection is related to pain of payment, we hypothesize that paying with cash (vs. a debit card) and paying more money (\$20 vs. \$10) will both increase the pain of paying, thereby increasing the psychological connection to a chosen alternative.

Method

Participants. We recruited 189 paid volunteers (42.3% female) using Amazon's Mechanical Turk online-survey sampling site to participate in this between-subjects experiment. All participants were over the age of 18 and citizens of the United States.

Experimental Manipulation. This study had a 2 (payment form: cash or Visa debit card) \times 2 (payment magnitude: \$20 or \$10) between-subjects design. Participants were given a scenario where they chose a pair of headphones to use for a business trip. They were then randomly assigned to one of four payment conditions describing what form was used and the amount of money that he or she paid for the headphone purchase: \$20 using cash, \$20 using a Visa debit card, \$10 using cash, or \$10 using a Visa debit card.

Procedure and Design. All participants were told to imagine that they would be purchasing a new pair of headphones to use on an upcoming business trip; they then went through a detailed vignette styled like a picture book. Participants were presented with information on three pairs of identically priced headphones with different features. They chose one pair to purchase. Participants were then told to imagine bringing their chosen pair of headphones to the checkout counter to pay for the purchase. At this point, participants were randomly assigned to one of the four payment conditions: \$20 using cash, \$20 using a Visa debit card, \$10 using cash, or \$10 using a Visa debit card. Participants in different experimental conditions saw an image showing the form of payment and amount of money associated with their experimental condition. All participants were then asked, "How painful was paying for the headphones (i.e., how painful was giving up your money)?" (1 = Not at all painful; 5 = Very painful). After answering this question, all participants clicked through the same picture book vignette, where they were told that they used their headphones while running errands prior to their trip, while they were in the airport and during the flight as they were heading to their business trip, and when they returned home from their business trip. At the conclusion of the vignette, participants completed a purchase experience questionnaire regarding their headphones. The purchase experience questionnaire measured the participant's post-transaction psychological connection.

Dependent Variable. In addition to the pain measure described earlier (the proposed mediator), participants rated how emotionally attached they were to their headphones (1 = Not at all attached; 5 = Very attached) and how likely they were to recommend the headphones to a family member or friend (1 = Very unlikely; 7 = Very likely). We created a measure of Psychological Connection by standardizing and then averaging the responses from the two items ($r = .43, p < .001$).

Results

We analyzed the data in two stages. We investigated whether the experimental manipulations had the predicted effect on the dependent variable of Psychological Connection, whether the manipulation affected the Pain of Payment mediator, and whether Pain of Payment mediates the experimental manipulation's effect on the dependent variable.

Effects on Psychological Connection. The experimental manipulations of payment form and payment magnitude both significantly influenced Psychological Connection. Regarding payment form, individuals who imagined paying with cash reported significantly higher Psychological Connection than participants who paid with plastic, regardless of payment magnitude ($M_{\text{cash}} = 0.16, SD_{\text{cash}} = 0.84,$

$M_{\text{plastic}} = -0.15, SD_{\text{plastic}} = 0.84, F(1, 185) = 4.50, p = .009$). These effects are consistent with our hypothesis and replicate the results from the first two experiments. Regarding payment magnitude, individuals who imagined paying more money (\$20), regardless of payment form, reported significantly higher levels of psychological connection than participants who paid less money ($M_{\$20} = 0.22, SD_{\$20} = 0.95, M_{\$10} = -0.23, SD_{\$10} = 0.66, F(1, 185) = 14.98, p < .001$). The interaction effect of payment form and payment magnitude on Psychological Connection was not significant, $F(1, 185) = 1.59, p = .12$; $M_{\text{cash}/\$20} = 0.28, M_{\text{plastic}/\$20} = 0.15, M_{\text{cash}/\$10} = 0.02, M_{\text{plastic}/\$10} = -0.48$).

Effect on Pain of Payment. Before testing for mediation, we assessed whether the experimental manipulation influenced the participant's subjective Pain of Payment ratings. As predicted, participants who paid by cash reported more pain than individuals who paid by plastic ($M_{\text{cash}} = 1.98, SD_{\text{cash}} = 1.07, M_{\text{plastic}} = 1.56, SD_{\text{plastic}} = .73, F(1, 185) = 12.1, p < .001$). Also, consistent with classic economic theory, participants who paid more money self-reported experiencing more pain than individuals who paid less money ($M_{\$20} = 2.13, SD_{\$20} = 1.00, M_{\$10} = 1.37, SD_{\$10} = .66, F(1, 185) = 39.2, p < .001$). As with Psychological Connection, the interaction between payment form and payment magnitude did not have a significant effect on Pain of Payment, $F(1, 185) = 1.33, p = .25$; $M_{\text{cash}/\$20} = 2.41, M_{\text{plastic}/\$20} = 1.86, M_{\text{cash}/\$10} = 1.51, M_{\text{plastic}/\$10} = 1.23$).

Mediation Analysis. We assessed whether Pain of Payment mediates the relationships between the two manipulated variables—Pay by Cash and Payment Magnitude—and Psychological Connection. We used structural equation models and bootstrap analysis to test the significance of the mediation (Zhao et al. 2010). A 1000-draw bootstrap suggested that Pain of Payment significantly mediates both the effect of Pay by Cash on Psychological Connection (Indirect effect of paying by cash = 0.10, SE = 0.04, $z = 2.62, p = .009$; direct effect = 0.21, SE = 0.12, $z = 1.76, p = .078$) and the effect of Payment Magnitude (Indirect effect of increased payment magnitude = 0.17, SE = 0.05, $z = 3.25, p < .001$; direct effect = 0.28, SE = 0.14, $z = 2.06, p = .040$). Using the language of Zhao et al. (2010), there is evidence of an "indirect-only mediation" for the relationship between Payment Form, Pain of Paying, and Psychological Connection and a relationship of "complementary mediation" between Payment Magnitude, Pain of Paying, and Psychological Connection.

Discussion of Study 3

The results of study 3 replicate and extend the results of the previous studies in three ways. First, we provide

additional evidence that the relationship between payment form and post-transaction psychological connection is mediated by feelings of subjective pain. Second, we find that manipulating payment form and payment magnitude have a similar effect on ratings of pain and post-transaction psychological connection. These results suggest that manipulating the pain of payment—either through payment form or payment magnitude—increases post-transaction psychological connection. Thus the effect on post-transaction connection is not unique to payment form.

Study 3 also shares some of the limitations of study 1 and study 2. Specifically, all of these studies looked at relatively low-value purchases and relatively short time-horizons. The participants in study 1 purchased a \$2 mug and were surveyed a few hours later; the participants in study 2 donated \$5 to charity and were surveyed a week later; the participants in study 3 imagined paying for headphones and were asked about their psychological connection approximately 10 minutes later. The goal of study 4 is to provide real-world evidence that people who pay with a more painful form of money tend to exhibit longer term connection and commitment, demonstrated by their likelihood to make a repeat transaction.

STUDY 4: ARCHIVAL DONATION DATA ANALYSIS

Study 4 investigates the relationship between how alumni pay for a charitable donation to their alma mater and their probability of making future donations. Specifically, we use an archival data set of alumni donations to assess whether increasing the pain of payment by paying with a more painful form of payment or by paying more money in year t is associated with an increased probability of donating again in year $t + 1$. Alumni donations provide a suitable context for testing our hypothesis about the relationship between pain of payment and post-transaction connection because making a repeat donation is a clear measure of behavioral commitment to one's organization.

Data and Variables

The alumni donations database includes information about all of the donations alumni contributed to a top-ranked business school between 2005 and 2013. Across these nine years, 9482 alumni had 71,110 opportunities to make a yearly donation to their alma mater and made a total of 35,113 donations. The total number of donation opportunities is 71,110 rather than 85,338 (9482 alumni \times 9 donation years) because alumni do not enter the database until after they graduate.

Alumni Information. The data set includes information about alumni who donated to their business school. The dummy variable Male equals 1 if the donor is male,

Graduating Class indicates the year that the donor graduated from the university, and the dummy variable Attends Reunions indicates whether the alumnus(a) attended any of the school's reunions. We include this reunion information in our analysis as a control variable because previous research suggests that people who attend reunions are more likely to donate to their university (Netzer, Lattin, and Srinivasan 2008).

Donation Opportunity Information. The data set also includes information about what the 9482 alumni did during the 71,110 opportunities they had to make a yearly donation. For each donation opportunity, we use a dummy variable Donated in Year t to indicate whether or not the alumnus(a) made a donation during that fiscal year, the logarithm plus one of the total Donation Value the alumnus(a) contributed during that year, and a series of dummy variables to indicate the Donation Year. The outcome variable is Future Donation, a dummy variable that indicates whether the donor made a donation in year $t + 1$.

Importantly, we also have information about how the donors paid for each donation. In this data set, the more painful form of donation payment is paying by check, whereas the less painful form is paying by debit or credit card (Soman 2003). Although this database does not distinguish whether a debit or credit card (i.e., plastic) was used to make a particular card donation, prior research suggests that both types of card payments are relatively low-pain forms of payment in comparison to checks (Soman 2003). A small percentage of the donations were also made using other nontraditional payment forms (e.g., wire transfer, stock gifts, etc.).

Analytical Strategy. We had to make a series of decisions about how to best test our hypotheses. To be as transparent as possible, we discuss all of the analytical strategies we considered and why we eventually settled on our chosen alternative.

The initial analytical strategy considered was to study how more painful forms of payment influence future donation behavior with panel analysis. Panel analysis would allow us to assess the relationship between within-person variations in payment forms and variations in future donation behavior while also controlling for any individual differences that may create between-person differences in the predictor or outcome variable (Hagenaars 1990; Kessler and Greenberg 1981). Unfortunately, the archival data are not amenable to this analytical strategy. Our review of the data revealed that most alumni always used the same payment form—greatly reducing the power of our analysis—and the few alumni who switched tended to make their early donations with checks and then switch to some form of plastic for their later donations. This trend suggests that any changes in payment form decision may be a proxy for a third unmeasured variable that may also be related to donation behavior. Thus with a restricted sample and

TABLE 1
: DESCRIPTIVE STATISTICS FOR DONOR AND DONATION CHARACTERISTICS: STUDY 4

	All alumni	Alumni who use plastic	Alumni who use checks
Donor characteristics			
Male	73%	74%	72%
Graduating class	1999.5	2002.4	1993.8
Attends reunions	18%	20%	13%
Donor uses checks	34%	0%	100%
Donation characteristics			
Log(donation value + 1)	2.23	2.34	2.02
Donates in year $t + 1$	36%	35%	36%
Donates in year $t + 1$ after donating in year t	59%	57%	62%
Donates in year $t + 1$ after not donating in year t	21%	22%	19%

endogeneity concerns, we concluded that the data were not amenable to studying whether within-person changes in payment form cause changes in future donation behavior. However, with causality established by the experiments in studies 1, 2, and 3, we felt that the archival data could still provide a real-world replication of the relationship between payment form and post-transaction behavioral commitment.

We test our hypotheses by comparing the future donation behaviors of the 2057 alumni who make all of their donations via check to the 4041 alumni who make all of their donations via plastic. Because every donation is nested within an alumnus, these analyses required a multi-level model. Specifically, the model must assess whether a characteristic of the alumni—that is, whether they pay by cash or card—influences the loyalty created by making a donation while also accounting for the interdependence inherent in the data. How to best model this interdependence is not a trivial question because different communities of scholars recommend different approaches to multilevel data. Econometricians often put extensive thought into how to properly model the interdependence among the error terms, to improve the robustness of the estimators, and to correct potential issues of endogeneity. Scholars from this tradition would most likely recommend that we test our hypotheses with fixed-effect models; they would only recommend random effects when a Hausman-style test (Hausman 1978) confirms that the random effects are uncorrelated with the predictors (Mundlak 1978). Statisticians, in contrast, are more likely to use “mixed-effects” models that use random effects to model interdependence and fixed-effects parameters to estimate the relationships between the predictors and the outcome (Gelman and Hill 2006). In this tradition, the decision to model interdependence with random rather than fixed effects is often based on whether the people in the data can be considered a suitably random sample of a larger population of interest (Pinheiro and Bates 2000). Interdependence

between the predictors and the random effects is not necessarily a limitation of mixed-effects models. Instead, one of the features of these models is that they allow researchers to estimate the effects of predictors that both do and do not vary within-person.

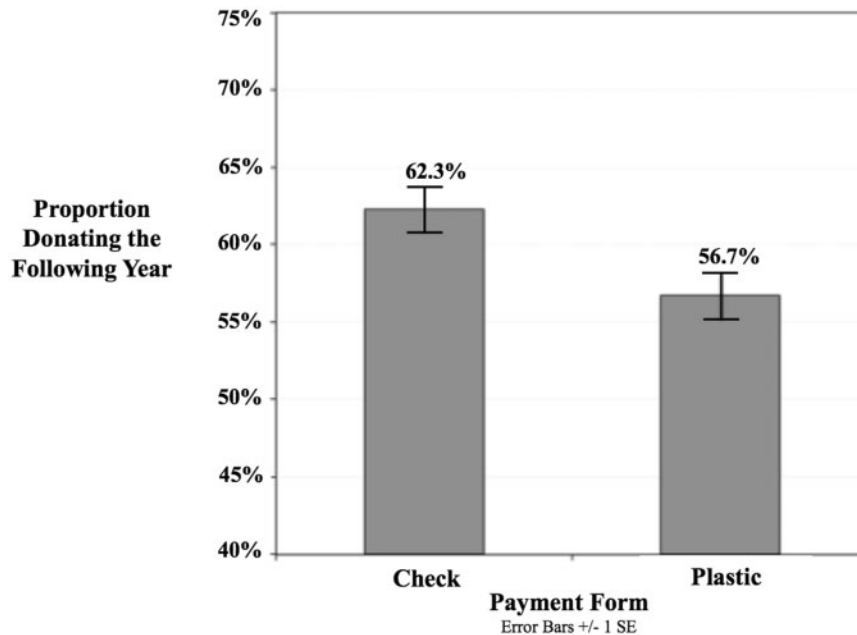
Given these differences, we decided to use a mixed-effects model for three reasons. First, we would like to model how the individual-level characteristics of the donors influence donation behavior because these associations will replicate the findings of previous studies. Second, we would like to use our sample of data to make inferences about the larger population of alumni at similar institutions, rather than restrict our estimate to the population at hand. Third, we are not interested in trying to establish causality with these data, the primary focus of most econometrics approaches. However, we acknowledge that other researchers may strongly prefer a fixed-effects approach. Therefore, we also test whether fixed-effects models produce similar results to those from the mixed-effects model.

Results

Table 1 shows the descriptive statistics for the alumni who donate via check and via plastic. In addition to highlighting some of the differences between these groups of alumni—for example, the alumni who use checks tend to be older and less likely to attend reunions—these descriptive statistics are consistent with both prior research on pain of payment and our hypotheses. We see that the pain of payment reduces the likelihood of initiating a donation: compared to donors who use plastic, donors who use checks to make donations are less likely to start making donations in year $t + 1$ if they have not made a donation in year t (Plastic probability = 21.6%, Check probability = 18.9%, Chi-square(1) = 23.1, $p < .001$). Consistent with our hypothesis, the descriptive statistics also suggest that more painful forms of payment have a positive effect on future financial commitment. Figure 6 reflects the

FIGURE 6

PROPORTION DONATING THE FOLLOWING YEAR AS A FUNCTION OF PAYMENT FORM: STUDY 4



percentage of people donating in year $t + 1$ after donating via check or card in year t . Alumni who donate by check in year t are significantly more likely to donate in year $t + 1$ (Check probability = 62.3%) than those who donate by plastic (Plastic probability = 56.7%, Chi-square(1) = 47.3, $p < .001$), suggesting that people who choose to pay with a more painful form of payment tend to also be more financially committed in the following year.

We formally test our hypothesis with a mixed-effects logistic regression model. In this model, the outcome variable is whether the donor made a donation in year $t + 1$. The predictor variables are then organized in terms of their level of analysis. At the level of the donation opportunity—that is, level 1 variables in the language of hierarchical linear modeling (Raudenbush and Bryk 2002)—we include information about whether the donor Donated in year t , the total Donation value, and the dummy variables indicating the Donation year. The donor level—that is, level 2—predictors describe whether the donor is Male, whether he or she Attends reunions, and most importantly, whether the donor consistently donates via check or card, as measured with the dummy variable Donor uses checks (1 if check used, 0 if card used). We then test our hypothesis by studying the cross-level interaction between the level 1 variable Donated in year t and the level 2 variable, Donor uses checks. Our hypothesis predicts that this cross-level interaction term will be positive and significant.

Table 2 shows the results of the multilevel logistic regression models we use to investigate our hypothesis.

Model 1A regresses the binary variable of future donations against all predictor variables except the variables related to the year's donation behavior. As expected, we find that people are significantly more likely to donate when they are reunion attendees ($b = 0.41$, $SE = 0.06$, $z = 9.73$, $p < .001$). We find that donation likelihood varied across the years. This baseline model also reveals no difference in future donation likelihood between donors who use checks and donors who use plastic ($b = 0.01$, $SE = 0.05$, $z = 0.10$, $p = .91$).

Model 1B adds the dummy variable Donation made in year t into the regression model. As expected, we find that making a donation in year t increases the donor's likelihood of donating again in year $t + 1$ ($b = 0.96$, $SE = 0.03$, $z = 29.87$, $p < .001$).

Model 1C incorporates the cross-level interaction term that we use to test our hypothesis. Consistent with our hypothesis, the cross-level interaction effect ($b = 0.25$, $SE = 0.06$, $z = 4.31$, $p < .001$) indicates that donors who make a donation in year t are more likely to make a donation in year $t + 1$ when the donor donates with checks rather than with plastic. To ensure the robustness of our results, model 1D and model 1E include the same predictor variables as model 1B and 1C, respectively, but also include the value of the donor's donations during the fiscal year. In both models, donors who donate more money in a given year are more likely to make a donation in the following year (model 1D: $b = 0.17$, $SE = 0.02$, $z = 10.19$, $p < .001$; model 1E: $b = 0.18$, $SE = 0.02$, $z = 10.59$,

TABLE 2
MIXED-EFFECTS MODEL RESULTS: STUDY 4

	Model 1A	Model 1B	Model 1C	Model 1D	Model 1E
Intercept	-3.04*** (0.26)	8.29*** (0.23)	7.31*** (0.23)	8.00*** (0.23)	6.80*** (0.23)
Donor-level variables					
Male	0.02 (0.06)	0.01 (0.04)	0.01 (0.04)	0.00 (0.04)	0.00 (0.04)
Graduating class	0.0013*** (0.0001)	-0.0047*** (0.0001)	-0.0041*** (0.0001)	-0.0045*** (0.0001)	-0.0039*** (0.0001)
Attends reunions	0.41*** (0.06)	0.36*** (0.05)	0.36*** (0.05)	0.32*** (0.05)	0.32*** (0.05)
Donor uses checks	0.01 (0.05)	-0.01 (0.04)	-0.12* (0.05)	0.00 (0.04)	-0.13** (0.05)
Donation-level variables					
Donation year $t = 2006$	-0.16** (0.06)	-0.07 (0.05)	-0.07 (0.05)	-0.08 (0.05)	-0.08 (0.05)
Donation year $t = 2007$	-0.20*** (0.06)	-0.08 (0.05)	-0.08 (0.05)	-0.09 (0.05)	-0.09 (0.05)
Donation year $t = 2008$	-0.47*** (0.06)	-0.32*** (0.05)	-0.32*** (0.05)	-0.33*** (0.05)	-0.33*** (0.05)
Donation year $t = 2009$	-0.50*** (0.05)	-0.30*** (0.05)	-0.30*** (0.05)	-0.29*** (0.05)	-0.29*** (0.05)
Donation year $t = 2010$	-0.37*** (0.05)	-0.16** (0.05)	-0.15** (0.05)	-0.15** (0.05)	-0.14** (0.05)
Donation year $t = 2011$	-0.37*** (0.05)	-0.19*** (0.05)	-0.18*** (0.05)	-0.18*** (0.05)	-0.17** (0.05)
Donation year $t = 2012$	-0.45*** (0.05)	-0.26*** (0.05)	-0.25*** (0.05)	-0.26*** (0.05)	-0.25*** (0.05)
Donation made in year t		0.96*** (0.03)	0.87*** (0.04)	0.12 (0.09)	-0.03 (0.09)
Log(donation value + 1)				0.17*** (0.02)	0.18*** (0.02)
Cross-level interaction					
Donation made in year t * donor uses checks			0.25*** (0.06)		0.30*** (0.06)
AIC	42315.8	41281.5	41262.0	41155.9	41126.5
BIC	42426.6	41400.9	41389.8	41283.8	41262.9

NOTE.—* $p < .05$, ** $p < .01$, *** $p < .001$.

$p < .001$). Controlling for the donation value does not change the direction or significance of the cross-level interaction effect, the primary result of interest ($b = 0.30$, $SE = 0.06$, $z = 5.19$, $p < .001$).

As discussed earlier, we also tested our hypotheses using the fixed-effects approach preferred by econometricians. These models are not able to estimate the simple effects of donor-level variables such as whether the donor is Male, whether he or she Attends reunions, and whether the Donor uses checks; all of the variance that could be explained by these donor-level variables is already accounted for by the model's fixed effects. The models can, however, estimate the effects of the donation-level variables and, most importantly, the cross-level interaction relevant to our hypotheses.

Table 3 shows the results of the fixed-effect models. As in the previous analyses, we find support for our hypothesis using models that both do and do not include the size of the donation. Model 2C does not include a donation size control. Following a donation in year t , the results of this

model suggest that check-using donors are significantly more likely to make a year $t + 1$ donation than card-using donors (Donation in year $t \times$ Donor uses checks: $b = 0.13$, $SE = 0.06$, $p = .041$). We find the same pattern of results in model 2E, the model that includes the donation size control. Controlling for the size of the donation, we again find that check-using donors are more likely than card-using donors to follow up a donation with a second donation (Donation in year $t \times$ Donor uses checks: $b = 0.15$, $SE = 0.06$, $p = .016$). It is worth noting that making a larger donation in year t (i.e., increasing the payment magnitude of the donation) is also associated with an increased likelihood of donating in the following year, which is consistent with our hypotheses and prior evidence from study 3.

Discussion of Study 4

Study 4 extends the experimental findings from the first three studies by providing a real-world replication of the relationship between payment form, payment magnitude

TABLE 3
FIXED-EFFECTS MODEL RESULTS: STUDY 4

	Model 2A	Model 2B	Model 2C	Model 2D	Model 2E
Donation-level variables					
Donation year $t = 2006$	-0.17*** (0.06)	-0.17*** (0.06)	-0.17*** (0.06)	-0.18*** (0.06)	-0.18*** (0.06)
Donation year $t = 2007$	-0.22*** (0.06)	-0.22*** (0.06)	-0.22*** (0.06)	-0.22*** (0.06)	-0.22*** (0.06)
Donation year $t = 2008$	-0.53*** (0.06)	-0.52*** (0.06)	-0.52*** (0.06)	-0.53*** (0.06)	-0.53*** (0.06)
Donation year $t = 2009$	-0.59*** (0.06)	-0.57*** (0.06)	-0.57*** (0.06)	-0.57*** (0.06)	-0.57*** (0.06)
Donation year $t = 2010$	-0.47*** (0.06)	-0.45*** (0.06)	-0.45*** (0.06)	-0.45*** (0.06)	-0.45*** (0.06)
Donation year $t = 2011$	-0.50*** (0.06)	-0.48*** (0.06)	-0.48*** (0.06)	-0.48*** (0.06)	-0.48*** (0.06)
Donation year $t = 2012$	-0.63*** (0.06)	-0.61*** (0.06)	-0.61*** (0.06)	-0.62*** (0.06)	-0.61*** (0.06)
Donation made in year t		0.13*** (0.03)	0.08*** (0.04)	-0.23* (0.11)	-0.32* (0.12)
Log(donation value + 1)				0.07*** (0.02)	0.08*** (0.02)
Cross-level interaction					
Donation made in year t * donor uses checks			0.13* (0.06)		0.15* (0.06)
AIC	20683.2	20667.9	20665.7	20658.3	20654.5
BIC	20742.8	20736.1	20742.4	20735.0	20739.7

NOTE.—* $p < .05$, ** $p < .01$, *** $p < .001$.

and behavioral commitment via repeat donation likelihood. Compared to people who use a less painful form of payment (i.e., card), we found that people who use a more painful form of payment (i.e., check) show increased post-transaction connection through greater financial commitment and loyalty over time. It is important to note that in any given year check-using donors are less likely to donate in comparison to plastic-using donors. However, after check-using donors choose to make a donation, their commitment to the organization increases in subsequent years (as measured by future willingness to donate) in comparison to plastic-using donors, who are less likely to make a repeat donation. The results suggest that the pain of payment may have an economic upside: while more pain of payment may deter initial donation likelihood, after making a donation, more pain of payment may help instill the loyalty and financial commitment that charitable organizations depend on over time.

GENERAL DISCUSSION

In the 1970s, consumers could choose between about five payment forms for most transactions, with cash the dominant choice (Foster et al. 2013). However, the financial landscape has changed dramatically. In today's marketplace, there are more than twenty potential methods of payment (Foster et al. 2013), many of which are psychologically detached from the economic experience of

immediately spending money and thus are less psychologically painful to use. As society continues its evolution toward a "cashless economy," it is important to understand whether the way we pay influences how much we value and feel psychologically connected to what we spend our resources on, and how likely we are to remain product and brand loyal. In this article, we sought to fill a gap in current research by examining whether payment form can influence post-transaction connection. Across field, lab, online, and archival studies and across a variety of purchase contexts (i.e., purchasing a mug or headphones as well as donating to a charity or to one's alma mater), we demonstrated that the pain of paying significantly influences post-transaction psychological and behavioral connection in a persistent and pervasive manner.

In study 1, we used a field experiment selling mugs to show that paying by cash, a more painful form of payment, increases the psychological connection to the mug. In study 1, we also found that the pain of paying fully mediates the relationship between payment form used for purchase and psychological connection. In study 2, we demonstrated that donating to a charity using a more painful form of payment (\$5 cash vs. \$5 voucher) increases the psychological connection and subsequent behavioral connection (i.e., wearing the lapel pin) to the chosen alternative, while decreasing psychological connection to the nonchosen alternatives. Study 2 also ruled out two potential confounds. First, individuals were asked to choose a charity to which they would donate \$5 cash (voucher) using someone else's money,

ruling out the possibility that wealth and income effects are driving the results. Second, study 2 ruled out the possibility that a positivity bias, or halo effects, could be driving the results. By measuring both general positivity ratings as well as psychological connection, we demonstrated that paying by a more painful form increases only psychological and subsequent behavioral connection measures. In study 3, we showed that increasing the pain of payment either through payment form or payment magnitude (\$10 vs. \$20) can increase psychological connection, demonstrating that this effect is not due simply to a payment form effect, but rather due to this broader pain of paying construct. Finally, in study 4, we replicated our results using archival donation data. We found that paying by check (a more painful form of payment) in comparison to a debit/credit card in year t increases the likelihood of making a donation in the following year by 9.9% (i.e., 62.3% vs. 56.7%) in year $t + 1$. Thus study 4 demonstrated the robustness of our results on long-term behavioral commitment.

From a theoretical perspective, these findings lend support to the notion that the pain of payment affects not only decision making during the purchase context, but also how much value and commitment are experienced post-purchase. Our findings suggest that this psychological pain of paying can influence how much individuals value their chosen product, how connected they feel to it, and how committed they are over time. Although increasing the pain of payment may decrease purchasing initially, as study 4 and prior work indicates, our work highlights the potential downstream benefits of increasing the psychological pain of payment for both organizations and individuals. Individuals are more financially, psychologically, and behaviorally committed to an organization and value products more when they pay with a more painful form of payment. While Kamleitner and Erki (2013) showed correlational evidence that payment form can affect feelings of ownership of an object, our work is the first to show a causal relationship between payment form and psychological commitment to an organization and between payment form and downstream psychological and behavioral connection.

In addition to the pain of payment literature, the notion that the pain of payment can influence value and commitment contributes to psychological and behavioral research on how value and commitment are influenced by physical and emotional pain, such as research on cognitive dissonance and self-perception (Bem 1967; Festinger 1957; Gross 1998). Our results suggest that psychological pain can influence value perceptions and subsequent commitment, even when the individual is donating money on behalf of someone else. Although it is beyond the scope of the present article to attempt to discriminate between dissonance and self-perception, we note that experiencing more psychological and behavioral commitment despite donating money on behalf of someone else (study 2) may be more consistent with self-perception. Individuals were not

donating their own money, so there was no reason to believe the donation created dissonant thoughts or a negative drive state that needed to be reconciled through increased psychological connection and behavioral commitment.

One issue that remains unclear is whether increasing the pain of payment will always lead to positive outcomes. Might the effects presented in this article reverse if individuals were forced to part with their money for potentially unfavorable goods such as insurance or taxes? In addition, previous research has found that decreasing the pain of payment has positive effects on the consumer deliberation and purchase process, yet we find that in the long-term, increasing the pain of payment has positive effects on post-transaction psychological and behavioral connection. At what point in time does this shift occur? And furthermore, does this shift occur consciously?

Another interesting question for future work is whether the pain of payment can influence interpersonal commitment. Individuals spend more than 4% of their household budget on gifts for others (Davis 1972; Garner and Wagner 1991) and about a third of their income on goods/experiences used for shared consumption (US Bureau of Labor Statistics 2008). Is it possible that the way people pay for another person can influence the affiliation and connection they feel for that other person? Would it affect how the recipient feels about the relationship? As noted earlier, Kamleitner and Erki (2013) find no role of pain of payment in their results. Future research might examine conceptual differences between ownership and psychological connection to attempt to understand these differences in results for pain of payment.

Implications for Policy

From a consumer welfare perspective, the results from this article suggest that individuals create longer lasting connections and value what they purchase more if they pay using a more painful form of money. Prior research has found that decreasing the pain of payment can lead to overspending. We find that decreasing the pain of payment also leads to less commitment and value even after the purchase has occurred. The implications, when taken together, are that decreasing the pain of payment can not only increase overspending immediately because the costs are not as immediately felt but can also lead to greater product disposal or abandonment, with individuals feeling less satisfied with what they purchase. This is a particularly interesting implication because there has been a 10-fold rise in “product waste” over the last century (e.g., packaging and old products), from 92 pounds of product waste per person in 1905 to 1242 pounds in 2005. Product waste accounted for three fourths of what people throw away (Morse 1908; Spiegelman and Sheehan 2005). Some old products are thrown away because they are broken beyond repair, whereas others have been discarded in favor of a newer

product. Given that the marketplace is moving toward less painful forms of payment, this trend may have contributed to the increase in product waste and product turnover. Therefore, future research might also examine how to increase the perceived pain of payment for less tangible forms of money in order to increase perceptions of value and commitment and potentially reduce product waste.

Technological advancements with regard to payment (e.g., credit/debit card, Google wallet, PayPal, and other mobile and online payments) are ever increasing the psychological distance from payment, making spending less and less painful. Technological innovation can quite foreseeably be used to increase the pain of payment as well. For example, financial planning Web sites such as Mint.com consolidate a consumer's spending patterns across payment devices and can serve as reminders of money spent on an item or product category, thus potentially increasing the psychological pain of payment and value for what was already purchased. While this may decrease consumer spending at the point of purchase, consumers may benefit in the long term by both saving more money and finding more value in/being more committed to what they have already purchased.

Implications for Marketers and Managers

Substantively, this research contributes to our understanding of how different forms of payment can impact sales and customer loyalty. The number of brands in any given product category has increased roughly 10-fold over the last 20 years, making customer retention a top priority (Deloitte 2013). A recent study conducted by Deloitte LLP argues that brand loyalty is in decline. Individuals are more likely to switch brands to get the best deal or the newest technology. Consumers are also less likely to display their brand loyalty or share their favorite brands with others in comparison to five years ago (Mindshare North America 2015). Not surprisingly, many firms are prioritizing customer loyalty and commitment, especially in the increasingly competitive current marketplace.

The present research makes a contribution to the issues surrounding customer loyalty and commitment by furthering our understanding of the psychological impact that payment type can have on (1) how committed individuals feel to products, brands, and organizations and (2) how much they value what they have. The results from our four studies demonstrate the pros and cons of consumers using more painful forms of payment. If a firm is interested in obtaining the highest number of customers without any regard for potential loyalty (e.g., fast-food chains at airports or locations with high tourist traffic), encouraging payment via less painful forms of payment will be best. However, if a firm is more commitment focused and interested in increasing the number of brand loyal customers that it can rely on (e.g., luxury products, high-end or specialty

retailers), increasing the pain of payment may be more beneficial. One way to increase the pain of payment is to encourage cash payments. For example, retailers could nudge patrons to pay with cash, which will encourage patrons to use more painful forms of payment or increase the accessibility of painful forms of money (Chatterjee and Rose 2012).

Some interesting questions for further research for marketers and managers also emerge from this work. Our results indicate that while credit and debit card users may be more likely to purchase an item initially, they are less committed to the product in the long run. Future research could investigate whether the form of payment influences product returns and repurchase rates.

DATA COLLECTION INFORMATION

The first author conducted the field experiment in March 2014. The first author supervised the collection of data for the second study by research assistants at the Fuqua School of Business Behavioral Lab in April 2014. The first author collected data for the online experiment in March 2015 via Amazon's Mechanical Turk. The first author obtained data from the Fuqua School of Business Development office in April 2014. The first and second author jointly analyzed the archival data in April and May 2014.

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