Pain of Payment and the Moral Tax: the Neural Basis of the Credit Card Effect

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Credit cards are believed to heighten the willingness to pay for products by alleviating the pain of payment during purchase. We evaluated this hypothesis at a neural level in an fMRI shopping task. Our findings revealed that payment methods were associated with distinct neural processes distinguishing purchase from non-purchase.

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EXTENDED ABSTRACT

When people shop while using credit cards, they generally tend to loosen their restraints on spending relative to using cash. One reason as to why people may spend more when using credit cards is that the payment method may blunt the negative subjective feeling people experience when giving up hard earned dollars. In other words, credit cards may diminish the pain of payment relative to using cash.

Yet, little evidence has been offered in support of this mechanism, in part due to methodological limitations. Only a few attempts to measure differences in the pain of payment between payment methods have been reported in the literature (Shah et al. 2015; Thomas, Desai, and Seenivasan 2011). While results from these experimental studies are consistent with the pain of paying hypothesis, the self-reported measures of pain of payment pose interpretive challenges. Because previous research has established that paying with credit card leads people to place less attention on cost attributes (Chatterjee and Rose 2012) and that paying with credit impairs recall of cost information (Soman 2001), higher self-reported displeasure of paying in cash conditions may simply reflect the relative ease with which negative cost information came to mind rather than the actual pain of paying associated with the transaction. We applied fMRI methods to directly observe changes in neural activity during the purchase decision and thus overcome the many limitations inherent in self-report measurements.

To investigate how payment methods influence these neural mechanisms involved in making purchase decisions, we scanned human subjects (n = 27) using fMRI while they viewed products and made shopping decisions. The shopping task was designed to simulate a retail shopping experience where participants browsed through different products. We first collected a database of over 22,000 top selling products on Amazon.com, hierarchically organized into categories. Prior to entering the scanner participants indicated the departments they were most interested in shopping within. For each participant, half of the products shown were randomly determined to be available with credit card only while half were available with cash only. Participants browsed products in sequence, and for each item they were asked whether they were interested in purchasing it. If so, the product was added to the participant’s shopping basket, and if not, no additions were made to the basket. After participants indicated whether or not they wanted to buy, they were shown a confirmation page and then signed off on their decision. At the end of the study, participants were asked to pay out-of-pocket using the specified payment method for one randomly selected trial.

We examined how neural activation in each a priori determined region of interest (ROI) differed between purchase and non-purchase decisions. ROI anatomical coordinates were chosen using meta-analytical studies (Bartra, McGuire, and Kable 2013; Kelly et al. 2012). When participants were shopping with credit, we observed that their purchase decisions were distinguished from non-purchase decisions by activity in reward networks, including the striatum and ventromedial prefrontal cortex (VMPFC). When participants were making purchase decisions using cash, we observed a price-dependent pattern of activity distinguishing purchase trials from non-purchase trials. Under low prices, purchase decisions were associated with heightened activity in the striatum and VMPFC. Purchases of high-price items when using cash were more strongly associated with lowered right anterior insula cortex (rAIC) activity.

These findings imply that credit cards change the evaluative criteria consumers use when making a purchase decision. Consumers may be asking simply “do I like it?” rather than stopping to question “is it worth it?” when they decide whether or not to buy (Karmarkar, Shiv, and Knutson 2015). In addition, we found that shopping with credit did not lead to exaggerated deactivation in the rAIC, inconsistent with the idea that credit cards lower the pain experienced during a transaction. Instead, credit cards appeared to generally facilitate greater reward sensitivity, rendering consumers less sensitive to price information. Overall, our findings advance theoretical accounts of the mechanisms by which payment methods influence spending behavior.

REFERENCES


