LEONARD LEE, MICHELLE P. LEE, MARCO BERTINI, GAL ZAUBERMAN, and DAN ARIELY*

Consumers often make product choices that involve the consideration of money and time. Building on dual-process models, the authors propose that these two basic resources activate qualitatively different modes of processing: while money is processed analytically, time is processed more affectively. Importantly, this distinction then influences the stability of consumer preferences. An initial set of three experiments demonstrates that, compared with a control condition free of the consideration of either resource, money consideration generates significantly more violations of transitivity in product choice, while time consideration has no such impact. The next three experiments use multiple approaches to demonstrate the role of different processing modes associated with money versus time consideration in this result. Finally, two additional experiments test ways in which the cognitive noise associated with the analytical processing that money consideration triggers could be reduced, resulting in more consistent preferences.

Keywords: money, time, consumer choice, preference consistency, dual-process models

Money, Time, and the Stability of Consumer Preferences

Consumers often make product decisions that involve the consideration of money and time. There is little contention that these two basic resources have different effects on a variety of judgments and behaviors. For example, people are more susceptible to the sunk-cost fallacy when they consider past investments in money than in time (Soman 2001). Compared with the present, they perceive themselves to have less slack (i.e., less availability) in money than in time in the future and, therefore, tend to discount money less than time (Zauberman and Lynch 2005). In addition, people are willing to take fewer risks when making investments in money than when making investments in time (Okada and Hoch 2004), but they are more risk seeking when making risky decisions involving losses of money than losses of time (Leclerc, Schmitt, and Dubé 1995). Notably, focusing on money instead of time could even make people less ethical, more hardworking, and less socially active (Gino and Mogilner 2014; Mogilner 2010).

In this research, we investigate the distinction between money and time from a different perspective. Specifically, we examine the possibility that money and time also differ fundamentally in the type of processing mode they evoke and, thus, their resultant effects on preference stability. Building on prior work on dual-process models (Epstein 1994), we propose that the consideration of money brings about a processing mode that is more analytical whereas the consideration of time brings about a processing mode that is more affective. Consequently, focusing on these basic resources has important implications for product choice, specifically with respect to the stability of consumer preferences.

MONEY AND TIME ELICIT DIFFERENT PROCESSING MODES

The notion that decision making comprises two distinct modes of processing with different characteristics is well accepted in many branches of psychology (Chaiken and

*Leonard Lee is Associate Professor of Marketing and Dean's Chair, NUS Business School, National University of Singapore (e-mail: leonard.lee@nus.edu.sg). Michelle P. Lee is Associate Professor of Marketing, Lee Kong Chian School of Business, Singapore Management University (e-mail: michlee@smu.edu.sg). Marco Bertini is Associate Professor of Marketing Management, ESADE (e-mail: marco.bertini@esade.edu). Gal Zauberman is Professor of Marketing and Psychology, the Wharton School, University of Pennsylvania (e-mail: gal@wharton.upenn.edu). Dan Ariely is the James B. Duke Professor of Psychology and Behavioral Economics, Fuqua School of Business, Duke University (e-mail: dandan@duke.edu). The authors thank Eric Bradlow, John Lynch, Scott Neslin, Oded Netzer, Michel Tuan Pham, and Nader Tavassoli for helpful comments, as well as Daniel Mochon and Jessica Kwong for research assistance. Ravi Dhar served as associate editor for this article.

ISSN: 0022-2437 (print), 1547-7193 (electronic)

Journal of Marketing Research
Vol. LII (April 2015), 184–199

Trope 1999; Dhar and Gorlin 2013; Evans 2008). In this research, we focus on two specific modes of processing—analytical and affective—and build on a substantial body of work by Epstein and colleagues on the cognitive–experiential self-theory (CEST; Epstein 1994; Epstein et al. 1992; Epstein and Pacini 1999; Kirkpatrick and Epstein 1992). This stream of research expounds two information-processing modes: an analytical or rational mode that operates according to the rules of logic and an affective or experiential mode that elicits more feeling-based responses. While the analytical mode of processing relies on logical reasoning characterized as piecemeal and dispassionate, the affective mode of processing is intimately associated with feelings characterized as holistic and emotional (Epstein et al. 1992, p. 336).

A wide array of other models distinguish two modes of processing, albeit with different perspectives and emphases across models. These models have variously used terms such as "hot" versus "cold," "automatic" versus "controlled," "implicit" versus "explicit," "System 1" versus "System 2," "hedonic" versus "informational," "reflexive" versus "reflective," and "associative" versus "rule-based" to distinguish their focal processing modes, and some amount of overlap naturally exists among these models (Bargh 1997; Gawronski and Bodenhausen 2011; Kahneman and Frederick 2002; Lieberman et al. 2002; Metcalfe and Mischel 1999; Shiv and Fedorikhin 1999; Sloman 1996; Zajonc 1980; Zauberman, Diehl, and Ariely 2006). Our purpose in this work is not to test the merits of these numerous models, nor to show the concomitant presence of all associated characteristics when a particular processing mode is in operation. Instead, drawing on Epstein's (1994) dichotomy, we propose and demonstrate that the analytical mode of processing is evoked (i.e., focusing on costs and benefits and using more piecemeal assessments) when money considerations are involved in a decision and the affective mode is evoked (i.e., focusing on pleasure and enjoyment and more holistic assessments) when time considerations are involved.[1]

Several findings in the growing literature on money–time distinctions provide support for our main proposition. For example, merely posing a question about money or time activates different motivations that can influence the intention to donate money to a charity (Liu and Aaker 2008). Money is arguably the most common medium for economic exchange, and thinking about money tends to prompt a value-maximizing goal and considerations of economic value. In contrast, the consideration of time leads people to focus on emotional meaning and well-being and, along with that, a greater willingness to engage in prosocial behavior. Moreover, prompting people to consider money spent rather than time spent on a product is less likely to trigger a focus on the experience of using the product and a sense of personal connection to it (Mogilner and Aaker 2009). In the same vein, priming individuals to think about money versus time leads to less focus on happiness and, consequently, lower willingness to pursue activities that result in greater subjective well-being (Mogilner 2010). More recently, priming individuals to think about money has also been shown to activate a more piecemeal, attribute-based evaluation strategy, while priming individuals to think about time activates a more holistic, alternative-based evaluation strategy (Su and Gao 2014). While these studies focus on different constructs and behavioral consequences, they all share a common basis: they allude to a mode of processing that is more analytical and less affective in nature when money rather than time is considered and in which logic rather than affect takes center stage.[2]

DUAL PROCESSING AND PREFERENCE CONSISTENCY

The primary goal of our experiments is to test our hypothesis that money consideration and time consideration evoke different modes of processing in a product-choice context. Prior findings from the money–time literature investigate how leading people to think about money or time (through implicit priming or explicit instructions) has downstream effects on behaviors such as charitable giving, product attitudes, and social engagement. In contrast to these studies, our interest lies in examining a common product-choice context in which product options have either a money or a time component, among other attributes. However, rather than studying what specific choices consumers make as a function of money or time, we are interested in how these two resources differentially influence the consistency of product preferences.

Several reasons motivate the choice of preference consistency as the primary dependent measure. Prior research suggests that analytical and affective processing can result in different degrees of preference consistency. In particular, Lee, Amir, and Ariely (2009) find that when a stimulus evokes greater affect, such as when it is presented pictorially or in color, preference consistency improves. Inducing greater trust in one's feelings when making a decision similarly leads to greater preference consistency. In a related set of studies, Pham et al. (2001) show that participants demonstrate greater consistency in a variety of assessments when they make feeling-based rather than reason-based judgments. These findings stem from the premise that affective processing tends to be more holistic (Epstein and Pacini 1999) and that focusing on the gist of a target stimulus ensures that a more consistent manner of assessment is brought to bear. This stands in contrast to analytical processing, which tends to be piecemeal and entails a more inconsistent weighting of information (Nordgren and Dijksterhuis 2009), generating "cognitive noise" that can adversely affect preference stability (Lee, Amir, and Ariely 2009).

In light of these findings, if money consideration indeed evokes analytical processing and time consideration evokes affective processing, one would expect less consistent pref-

[1]We adopt the terms "analytical" and "affective" to describe our two focal processing modes instead of Epstein's (1994) original labels ("rational" and "experiential") for greater descriptive precision and to avoid potential confusion, given that these terms have loaded meanings across disciplines (e.g., in the behavioral economics literature, "rational" describes the normality of decision outcomes according to classical economic theory in addition to a particular decision process.)

[2]In a pilot study, we found preliminary support for the notion that money is associated with more analytical processing and that time is associated with greater affective processing. Specifically, participants who were primed to think about money (1) were more likely to consider costs and benefits over pleasure and enjoyment and (2) were more likely to rely on piecemeal assessments rather than holistic processing in an ostensibly unrelated product-evaluation task.

erences in the case of money. Thus, the dependent measure of preference consistency can serve as a means to test the hypothesized difference in processing modes.

More generally, the notion of stable consumer preferences has broad relevance and theoretical significance in economics and psychology (Bem 1972; Festinger 1957; Lee, Amir, and Ariely 2009; Mas-Colell, Whinston, and Green 1995; Payne, Bettman, and Johnson 1988). From a psychometric perspective, consistency represents the upper bound for validity in any measurement, therefore setting a limit on decision quality (Nunnally and Bernstein 1994). From a more practical perspective, various marketing applications (e.g., new product development, market research, customer relationship management) implicitly assume that preferences are consistent over time in inferring consumers' future behavior from past or intended behavior. Together, these various perspectives highlight the theoretical and practical importance of understanding the antecedents of preference consistency.

We structure the remainder of the article as follows. The next two sections provide an overview of our experiments and describe the experimental paradigm we adopt in most of our experiments. We then report in detail the design and results of each experiment. We conclude with a general discussion in which we highlight the differences between our findings and related work in the literature, discuss practical implications, and suggest future research questions.

OVERVIEW OF THE EXPERIMENTS

To examine the different processing modes that money consideration and time consideration activate and their ensuing impact on preference consistency, we conducted eight experiments. The first block of experiments (1–3) tests the basic hypothesis that money consideration in product choice leads to more inconsistent preferences than time consideration. Across these experiments, we establish the robustness of the effect using different stimuli and experimental procedures while attempting to rule out competing explanations. The second block of experiments (4–6) examines the underlying mechanism that accounts for this difference in preference consistency—namely, that the consideration of money results in greater analytical processing and the consideration of time in greater affective processing. The final block of experiments (7–8) investigates a possible reason for why monetary information, when processed analytically, causes preferences to be inconsistent (relative to time). We suggest that because price plays different roles across contexts (e.g., price as a signal of quality vs. price as an expense) and because the mapping between price and utility is consequently imprecise, the greater analytical processing that money consideration triggers generates greater cognitive noise and leads to greater preference inconsistency.

EMPIRICAL APPROACH

Across all eight experiments, we used the same two-stage binary choice paradigm adapted from Lee, Amir, and Ariely (2009): In the *learning* stage, participants were shown a set of product options with each option described by several product attributes, including a money-related and/or a time-related attribute. They were given as much time as they wanted to examine the products. Subsequently, in the *decision* stage, participants saw all pairwise combinations of these options presented sequentially and in a random order. For each pair, they had to choose the option they preferred. Participants were told at the beginning of the experiment before studying any of the options that they would have to make these choices in the second stage.

We measured preference (in)consistency through violations of transitivity. Transitivity indicates the extent to which a decision maker exhibits a set of well-defined, coherent preferences (Mas-Colell, Whinston, and Green 1995). Specifically, for any three products a, b, and c, transitivity implies that if $a \rightarrow b$ and $b \rightarrow c$, then $a \rightarrow c$, where $\rightarrow$ denotes preference. Conversely, transitivity is violated if $a \rightarrow b$ and $b \rightarrow c$, yet $c \rightarrow a$. By counting the total number of violations per participant (Kendall and Babington Smith 1940), we obtain an individual-level measure of (in)consistency that we can compare across experimental conditions. That is, the greater the number of transitivity violations a decision maker commits, the more intransitive his or her preferences are.

TESTING THE BASIC EFFECT

Experiment 1: Choosing International Flights—An Initial Test

Objective and method. We designed Experiment 1 to test whether people exhibit greater preference consistency when making product choices that involve the consideration of money or time. In this experiment, 166 students from a university in the United States were asked to imagine that they were purchasing an international round-trip ticket for an upcoming trip to Asia. Using the experimental paradigm described in the previous section, we instructed participants to examine a set of nine flight options and then choose their preferred option in each of 36 pairs. We determined the degree of preference consistency for each participant by computing the number of transitivity violations present in these choices.

Participants were randomly assigned to one of three conditions—control, money, and time. In all three conditions, each flight option was represented by a service rating (1–5 stars) and an in-flight entertainment rating (1–5 stars); however, in addition to these two attributes, participants in the money condition were given the fare of each flight option, while participants in the time condition were given the average one-way flight duration of each flight option. The airfares ranged from $1,150 to $1,553, while the flight duration of the nine options ranged from 19 hours and 10 minutes (1,150 minutes) to 25 hours and 53 minutes (1,553 minutes).

If we indeed observe different degrees of preference consistency across conditions, an alternative explanation is that some participants may experience greater difficulty when making their decisions and thus are more prone to decision uncertainty and choice fluctuation. To examine this possibility, we asked participants to rate how easy or difficult they perceived the choice task to be after they had made their choices (1 = "very easy," and 7 = "very difficult"). In addition, we captured a more objective measure of decision difficulty—the amount of time each participant took to complete the choice task.

Results. A comparison of the number of intransitivity cycles using analysis of variance (ANOVA) revealed differ-

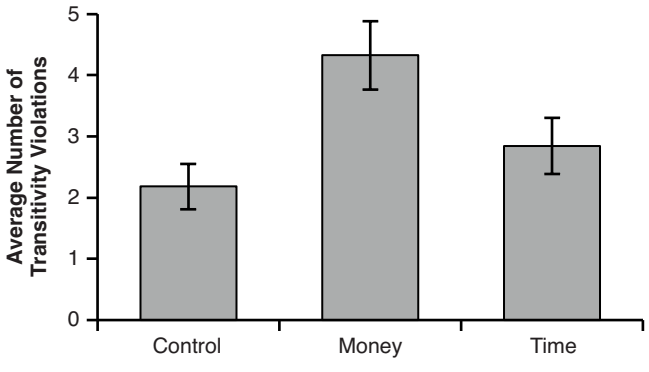
ent degrees of transitivity violations across the three conditions ($F(2, 163) = 5.31$, $p = .006$) (see Figure 1). Planned contrasts further showed that participants in the money condition committed significantly more transitivity violations ($M_m = 4.33$, SD = 4.05) than participants in either the time condition ($M_t = 2.85$, SD = 3.54; $t(163) = 2.24$, $p = .027$) or the control condition ($M_c = 2.18$, SD = 2.76; $t(163) = 3.19$, $p = .002$). Participants in the time and control conditions, however, did not differ statistically in the number of transitivity violations they made ($p = .309$).[3]

Participants in the money condition ($M_m = 158.09$ seconds, SD = 79.26 seconds) and the time condition ($M_t = 154.55$ seconds, SD = 69.91 seconds) took significantly more time to make their choices than those in the control condition ($M_c = 99.95$ seconds, SD = 48.63 seconds; both $p < .001$; overall ANOVA, $F(1, 163) = 13.03$, $p < .001$; post hoc comparisons based on Fisher's least square difference test). In addition, participants in the money ($M_m = 3.35$, SD = 1.45) and time ($M_t = 3.27$, SD = 1.64) conditions rated the choice task to be marginally more difficult than those in the control condition ($M_c = 2.76$, SD = 1.56; $p = .055$ and $p = .084$, respectively; overall ANOVA: $F(1, 163) = 2.27$ $p = .107$). These differences are not surprising given that participants in the control condition had fewer attributes to assess. Importantly, despite making different numbers of intransitivity errors on average, participants in the money and time conditions did not differ in how long they took to make their choices (mean difference = 3.44 seconds, critical difference = 25.16 seconds, $p = .788$) or how easy/difficult they perceived the choice task to be (mean difference = .08, critical difference = .59, $p = .801$). Controlling for either variable in the main intransitivity-cycle analysis also did not alter the main substantive results (both $p < .038$).

Discussion. The results of Experiment 1 provide initial evidence that product choices are less consistent when money is involved in the evaluation of product attributes than when time is involved. Moreover, both the objective decision time measures and the subjective choice difficulty ratings indicate that the observed differences in preference consistency across the three conditions cannot be fully accounted for by any objective or perceived differences in the difficulty of the choice task.

[3]To account for potential overdispersion in the count data (Gardner, Mulvey, and Shaw 1995), we also analyzed the transitivity data using negative binomial regressions in all the experiments. These analyses did not produce qualitatively different results from the ones using t-tests and ANOVAs that we report herein. Furthermore, while we have assumed equal variances across conditions in all our contrast analyses, assuming unequal variances did not change the qualitative conclusions of our findings either.

Figure 1
COMPARISON OF TRANSITIVITY VIOLATIONS (EXPERIMENT 1)



Notes: Error bars denote standard errors.

Experiment 2: Choosing Software Packages—A Replication

Objective and method. Our goal in Experiment 2 was to replicate the difference in preference consistency found in Experiment 1 using an alternative approach to manipulate the consideration of money or time in product choice. Specifically, unlike Experiment 1, participants across all conditions in this experiment were shown all four attributes, and whether the attribute values varied or remained constant across options depended on the condition to which participants were assigned. The intent was to present participants with the same set of attributes across conditions and, at the same time, induce participants to place less weight on the attribute that did not help differentiate the options. In addition, in this experiment, we used a different set of choice stimuli and included more questions to measure participants' perception of the task.

A total of 78 English-speaking students from a university in Singapore were asked to imagine that they had to purchase software to create photo essays for an important school project. They were first shown a set of nine software options described by four attributes (software features [1–5 stars], software quality [1–5 stars], setup time, and price) and asked to examine the assortment, one option at a time. They were then presented with pairs of software options and had to choose their preferred option in each pair.

As in Experiment 1, this experiment included three conditions: participants were randomly assigned to the control condition, the money condition, or the time condition. In the control condition, only the features and quality ratings differed across software options, while setup time and price were held constant; in the money condition, setup time was held constant, while all other attributes varied across options; and in the time condition, price was held constant, while all other attributes varied across options. In this experiment, we also wanted to control for the nominal magnitudes of software price and setup time. Thus, we used the same nominal values for both setup time and price; the prices of the nine software options ranged from $5 to $45 at increasing intervals of $5, while the setup time ranged from 5 minutes to 45 minutes at increasing intervals of 5 minutes.

After making their product choices, participants rated how easy or difficult they perceived the choice task to be (1 = "very easy," and 7 = "very difficult"). In addition, we asked them to rate how similar or different they thought the software options were from one another (1 = "very similar," and 7 = "very different"), as well as how informative they found the attribute information (1 = "not at all informative," and 7 = "very informative"). We included these measures so that we could examine whether perceived variability in software options or perceived informativeness of attribute information might serve as an alternative account for any preference consistency differences across conditions. Finally, as

in Experiment 1, we recorded the time taken to complete the choice task.

Results. Consistent with the basic result pattern found in Experiment 1, participants in the money condition (M_m = 5.96, SD = 5.97) committed significantly more transitivity violations than participants in the control condition (M_c = 2.92, SD = 3.46; t(75) = 2.50, p = .015) and time condition (M_t = 3.59, SD = 3.14; t(75) = 1.97, p = .053; overall ANOVA: F(2, 75) = 3.44, p = .037). As before, participants in the time condition and the control condition did not differ in the number of transitivity violations they committed (p = .576).

Again, similar to the results of Experiment 1, there was an overall significant difference in the amount of time participants took to make their choices across conditions (F(2, 75) = 5.64, p = .005). Specifically, decision times were significantly longer in the money condition (M_m = 171.28 seconds, SD = 62.58 seconds) and the time condition (M_t = 173.94 seconds, SD = 71.60 seconds) than in the control condition (M_c = 122.35 seconds, SD = 51.06 seconds; both ps < .008). In contrast, participants in the money and time conditions did not differ in how long they took to decide (p = .879). Unlike the results of Experiment 1, participants across conditions did not differ statistically in their perceived difficulty of the choice task (F(2, 75) = .21, p = .814).

Furthermore, there was no significant difference across conditions in the perceived informativeness of attribute information (M_c = 3.92, SD = 1.70; M_m = 3.44, SD = 1.53; M_t = 4.11, SD = 1.55; F(2, 75) = 1.21, p = .303) or the perceived variability of the nine software options (M_c = 4.50, SD = 1.48; M_m = 4.08, SD = 1.29; M_t = 4.30, SD = 1.14; F(2, 75) = .66, p = .520).

Discussion. In summary, this experiment replicated the findings in Experiment 1 using a different product category and a different approach to manipulate the focus on money versus time during product choice, demonstrating again that preferences formed on the basis of money considerations are less consistent than those formed on the basis of temporal considerations. The results of the various additional measures further indicate that the transitivity results cannot be fully explained by any differences in perceived or experienced difficulty of the decision task or by any differences in perceived variability or attribute informativeness of the software options across conditions.

While we have tried to rule out differences in decision difficulty as a potential alternative explanation using these various additional measures, two other possibilities remain. First, participants may have perceived greater ambiguity in the value of time (Okada and Hoch 2004), and consequently, they may have simplified the decision process by reducing the importance of the time attribute or disregarding the time attribute altogether, thereby leading to more consistent preferences. Alternatively, participants may have simply cared less when the choice options involved money than when they involved time (although not likely given the participant population of college students), leading them to take the task less seriously and, consequently, to make more random errors.

The lack of a significant difference in decision time and subjective choice difficulty in Experiments 1 and 2 casts doubt on these accounts. Furthermore, we analyzed and compared the specific choices participants made across conditions in both experiments by comparing participants' Kendall scores for each product—that is, the number of times they selected the product over the others (Cook and Kress 1992); the results indicated that participants had different product preferences across conditions (and between any pair of conditions) in both experiments (all ps < .001), further suggesting that participants in neither the money condition nor the time condition were simply ignoring the given money or time information when making their decisions. Nonetheless, in the following experiment, we address these concerns more fully by examining the decision weights that participants placed on the money and time attributes relative to other attributes.

Experiment 3: Decision Weights and an Alternative Measure of Preference Consistency

Objectives and method. We designed Experiment 3 with three objectives in mind. First, we wanted to examine whether the observed differences in preference consistency between the money and time conditions are caused by participants in one condition weighing the focal resource (money or time) significantly more than participants in the other condition. We accomplished this in two ways: (1) directly, by having participants rate (after the choice task) how important each attribute was to their choice decisions, and (2) indirectly, by imputing participants' decision weights on the focal attributes based on their choices and comparing these weights across conditions.

Second, to lend greater confidence to our choice of transitivity as a measure of preference consistency, we attempted to replicate the basic effect using an additional dependent measure. Specifically, we had participants rate the nine product options on the basis of how much they liked them and then computed the rank-order correlation between the ratings-imputed ranks and choice-imputed ranks. We then compared this rank-order correlation across conditions.

Third, we wanted to further test the robustness of our basic effect by using a different set of product stimuli. One might argue that the flights and software stimuli we used in the previous experiments are rather impoverished. Therefore, we employed richer product descriptions for options in a different product category: vacation resorts. Along with several numerical attributes (food rating [1–5 stars], activities rating [1–5 stars], price, duration of stay), each vacation resort was also represented by a name, a color picture, and a short qualitative description.

A total of 139 respondents from Amazon.com's Mechanical Turk (MTurk) participated in this experiment for a fee. Three respondents indicated in a postexperiment questionnaire that they had participated in a similar study before, and one respondent took an unusually long time to complete the choice task (more than three standard deviations above the mean). We excluded these respondents from the analysis, giving us an effective sample size of 135.[4]

Using the experimental paradigm described in the "Overview of the Experiments" section, we instructed partici-

[4]The main pattern of results remained statistically significant at the p = .05 level when we included these participants. Unless otherwise stated, the same applies to the other experiments in which respondents were excluded from the data analysis.

pants to imagine that they were planning a vacation during the upcoming summer and to carefully study nine vacation resorts. We used the same approach as in Experiment 2 to manipulate attention on money versus time. Participants were randomly assigned to one of three conditions: in the money condition, duration was held constant at the average duration of seven days, but price varied across resort options ($1,094–$3,890); in the time condition, price was held constant at the average amount of $2,400, but duration varied across resort options (3–11 days); and in the control condition, both price and duration were held constant across options.

Next, participants were presented with all possible pairs of options and were asked to choose their preferred option in each pair. After making their choices, in addition to rating perceived choice-task difficulty and product-options variability, participants were asked to rate on separate seven-point scales (1 = "not at all important," and 7 = "very important") how important each of the attributes (food, activities, price, and duration) was to them when they made their choices. Finally, participants were shown the nine options again and were asked to rate how much they liked each option on a 0–100 sliding scale (with larger numbers corresponding to greater liking). As in the two previous experiments, we also measured the amount of time participants took to complete the choice task.

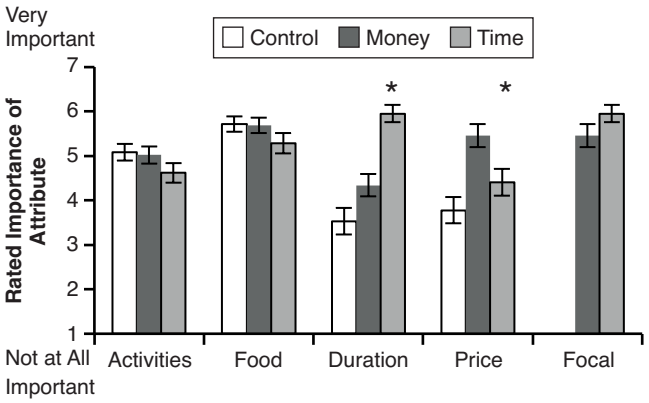
Results: preference consistency and control measures. The basic effect was again replicated; participants in the money condition (M_m = 4.32, SD = 6.07) committed significantly more transitivity violations than participants in the control condition (M_c = 2.57, SD = 2.89; t(132) = 2.03, p = .044) or time condition (M_t = 2.07, SD = 2.60; t(132) = 2.52, p = .011; overall ANOVA: F(2, 132) = 3.55, p = .031). In contrast, participants in the time and control conditions did not differ in the number of transitivity violations they committed (p = .567).

We imputed participants' preference orders for the nine options on the basis of their actual choices and postchoice ratings for how much they liked each option. We then computed the rank-order correlation for the preference orders from these two methods and compared them across conditions. Overall, we observed a significant difference in rank-order correlations across the three conditions (F(2, 132) = 4.19, p = .017). Planned contrasts further revealed that participants in the money condition had significantly lower rank-order correlations (M_m = .64, SD = .36) than participants in the time condition (M_t = .79, SD = .21; t(132) = 2.76, p = .007) or control condition (M_c = .75, SD = .20; t(132) = 2.15, p = .033). However, the time and control conditions did not differ significantly in rank-order correlations (p = .480). Thus, this analysis revealed a pattern of results that mirrored the transitivity results. Importantly, lending support to the notion that these alternative measures of preference consistency pertain to the same construct, there was a significant negative correlation between the number of intransitivity errors that participants made in the choice task and their rank-order correlations (r = –.65, p < .001): the more consistent participants were in their imputed rankings (choice-based and ratings-based), the more transitive their choices were.

Comparing the decision times across conditions revealed an overall marginally significant difference (F(2, 132) = 2.34, p = .101), with participants in both the money condition (M_m = 195.28 seconds, SD = 98.02 seconds) and the time condition (M_t = 194.47 seconds, SD = 63.23 seconds) taking more time to make their choices than participants in the control condition (M_c = 164.42 seconds, SD = 70.99 seconds; both p < .072). However, participants in the money condition and the time condition did not differ in the amount of time they took to decide (p = .962). Furthermore, participants across the three conditions did not differ statistically in how difficult they perceived the choice task to be (F(2, 132) = .36, p = .698) or how similar they perceived the different options to be (F(2, 132) = .61, p = .543). Again, these results indicate that neither objective nor subjective decision difficulty can fully account for the main preference consistency results.

Results: subjective decision weights. As we expected, and validating the money/time consideration manipulation, participants in the money condition and time condition placed more weight on duration and price, respectively, when making their choices (see Figure 2). Self-reported decision weights on price were significantly different across conditions (F(2, 132) = 8.95, p < .001), with participants in the money condition placing more weight on price in their decisions (M_m = 5.46, SD = 1.75) than participants in both the time condition (M_t = 4.41, SD = 1.94; t(132) = 2.53, p = .013) and the control condition (M_c = 3.78, SD = 2.05; t(132) = 4.21, p < .001). Likewise, there was an overall significant difference in self-reported decision weights on duration across conditions (F(2, 132) = 22.80, p < .001), with participants in the time condition placing more weight on duration in their decisions (M_t = 5.95, SD = 1.27) than participants in both the money condition (M_m = 4.34, SD = 1.66; p < .001) and the control condition (M_c = 3.53, SD = 2.08; p < .001). However, there was no significant difference in the importance weights participants placed on food (F(2, 132) = 1.48, p = .232) or activities (F(2, 132) = 1.51, p = .225) across conditions. Importantly, the importance weight placed on the focal attribute (i.e., the importance weight placed on price for participants in the money condition

Figure 2
COMPARISON OF SELF-REPORTED ATTRIBUTE WEIGHTS IN VACATION DECISIONS (EXPERIMENT 3)



Notes: Error bars denote standard errors, and the asterisk indicates significant differences across conditions (p < .001). The rightmost "Focal" bar refers to duration in the time condition and price in the money condition.

and the importance weight placed on duration for participants in the time condition) was not statistically different (t(84) = 1.51, p = .135), indicating that participants in the money and time conditions weighed their respective focal-resource attribute similarly.[5] We also note that the main transitivity results remained significant after controlling for the variance of participants' decision weights across attributes (F(2, 131) = 3.26, p = .042). An examination of the distribution of decision weights across conditions shows that the variance of participants' decisions weights also did not differ significantly across conditions (F(2, 132) = 1.88, p = .157).

Results: choice-imputed decision weights. To obtain further evidence that our preference consistency results cannot simply be accounted for by a difference in decision weights placed on the focal attribute between participants in the money condition and those in the time condition, we analyzed participants' imputed decision weights on the various attributes based on their actual choices (for methodological details of the analysis, see the Appendix). The analysis revealed that participants in the money and time conditions did not differ significantly in their imputed relative weights on the focal attribute (t(72) = –1.20, p = .233). Furthermore, the main preference consistency result—that participants in the money condition committed more transitivity violations than those in the time condition—remained significant after controlling for the imputed relative standardized weight (focal attribute/food) on the focal attribute (t(71) = 2.21, p =. 030).

Discussion. Taken together, the results of this experiment provide further support for the robustness of the main preference consistency effect by (1) replicating the effect using an alternative measure of preference consistency, (2) demonstrating that it generalizes to more enriched product stimuli with pictorial and verbal descriptive information, and (3) ruling out an alternative account that suggests that the decision weights placed on the focal attribute may have been different between the money and the time conditions, through analyzing participants' self-reported decision weights as well as their imputed weights derived from the actual choices that they made. We also did not find evidence for greater use of heuristic processing with considerations of time than of money in the choice task (cf. Saini and Monga 2008).

Experiments 1–3 demonstrate the basic finding that money consideration results in less preference consistency than time consideration. As we discussed previously, prior work suggests that thinking about money (vs. time) leads to greater analytical processing and less focus on more affective constructs. At the same time, analytical processing leads to lower preference consistency than affective processing. Taken together, these findings suggest that the critical difference between considering product options that include a price attribute and options with a time attribute may lie in the distinct processing modes that these resources evoke spontaneously. We test this proposition in the next three experiments.

EXAMINING THE UNDERLYING PROCESS

Experiment 4: The Ratio-Bias Paradigm

Objective and method. In Experiment 4, we sought evidence for the different modes of processing that we propose to accompany considerations of money and time. Specifically, we employed a popular paradigm in the literature to distinguish analytical and affective processing, namely, the ratio-bias paradigm (Avnet, Pham, and Stephen 2012; Denes-Raj and Epstein 1994; Kirkpatrick and Epstein 1992). As we discussed, analytical processing involves logical reasoning and is more piecemeal in nature; individuals operating in this mode are more likely to rely on probabilities or ratios. In contrast, affective processing is associated with more feeling-based or holistic processing; individuals operating in this mode respond more readily to frequencies rather than probabilities (Denes-Raj, Epstein, and Cole 1995; Epstein 1994; Pacini and Epstein 1999). The ratio-bias paradigm was developed on the basis of these specific defining associations.

The logic of Experiment 4 is as follows: if greater analytical (vs. affective) processing indeed characterizes how monetary information is processed compared with time information, we should be able to detect spillover effects of that processing mode on a subsequent task: the choice task used in the ratio-bias paradigm.

A total of 131 respondents from MTurk participated in this study for a customary fee. Three respondents indicated in a postexperiment questionnaire that they had participated in a similar study before, two respondents indicated that they were color-blind (thus preventing them from completing the ratio-bias task), and one respondent took an unusually long time (more than three standard deviations above the mean) to complete the task. We excluded these respondents from the analysis, giving us an effective sample size of 125.

We used the same vacation resorts stimuli and manipulation as in Experiment 3. Participants were randomly assigned to one of three conditions—control, money, and time—to complete the two-stage binary choice task. After making their choices, participants were asked to play a hypothetical game of chance in the guise of a purportedly unrelated study in which they had to choose between two bowls that contained a mix of red and white jelly beans (Avnet, Pham, and Stephen 2012; Denes-Raj and Epstein 1994). One jelly bean would then be picked at random from the chosen bowl. If a red jelly bean was picked, they would earn a $5 reward; if a white jelly bean was picked, they would not earn anything. We designed the task such that one bowl contained 1 red jelly bean and 11 white jelly beans (small bowl), while the other contained 6 red jelly beans and 80 white jelly beans (large bowl). The larger bowl, while containing more jelly beans overall, features a smaller probability of picking a red jelly bean (approximately a 7.0% chance) compared with the small bowl (approximately an 8.3% chance). Epstein and others (e.g., Avnet, Pham, and Stephen 2012; Denes-Raj and Epstein 1994) demonstrate in studies using this paradigm that individuals who approach the problem with an analytical mindset draw on knowledge of ratios and proba-

[5]Analyzing participants' standardized weights revealed the same pattern of results: there was no significant difference in the standardized importance weight placed on the focal attribute—that is, between the standardized importance weight placed on duration for participants in the *time* condition (M_t = .33, SD = .64) and the standardized importance weight placed on price for participants in the *money* condition (M_m = .36, SD = .64; t(84) = .15, p = .878).

bilities to conclude that the small bowl is the superior choice, whereas people whose choices are guided more by affect tend to focus on frequencies and choose instead the large bowl. Thus, we reason that if participants completed the resort choice task by relying more on analytical processing, this processing mode would spill over to the jelly bean task and would show up as a tendency to choose the smaller bowl.

Results and discussion. Participants in the money condition (M_m = 3.29, SD = 3.66) committed significantly more transitivity violations than participants in the control (M_c = 1.86, SD = 2.83; t(122), p = .037) and time (M_t = 1.43, SD = 2.44; t(122), p = .005; overall ANOVA: F(2, 122) = 4.49, p = .013) conditions. In contrast, participants in the time condition and the control condition did not differ in the number of transitivity violations they committed (p = .539). These results replicate the findings of Experiments 1–3.

Importantly, as we predicted, participants in the money condition were significantly less likely (20.4%) to choose the larger bowl of jelly beans than those in both the control (47.2%; z = 2.62, p = .009) and time (40.0%; z = 2.02, p = .043) conditions. The proportions in the time and control conditions did not differ (p = .527). Thus, participants in the money condition evidently relied more on analytical processing to arrive at their choices than participants in the other two conditions. Together, these results suggest that choices that involve money consideration and choices that involve time consideration activate qualitatively different modes of processing, resulting in different degrees of preference consistency.

Experiment 5: Processing Modes and Effect Mediation

Objective and method. In Experiment 5, we provide further evidence for the link between the different processing modes that money and time activate and preference consistency by means of a mediation test and by using an alternative experimental procedure. Specifically, instead of inducing considerations of money versus time by varying the product attributes in a choice task, we primed participants to think about money or time in an ostensibly unrelated survey before the choice task.

We recruited a total of 198 students at a university in Singapore to participate in this experiment in exchange for course credit. Three participants took an unusually short time to complete the experiment (more than three standard deviations below the mean), and three participants showed no variation in their responses to the postchoice survey. We excluded these participants from the analysis, giving us an effective sample size of 192.[6]

Participants were randomly assigned to the money or time condition. We used the same flight stimuli as in Experiment 1, except that in this study, we kept the attributes (service rating [1–5 stars], in-flight entertainment rating [1–5 stars], flight duration, and airfare) identical across conditions and instead primed the salience of the money or time attribute using a separate task. Participants first completed a survey on "recreational activities": in the money (time) condition, participants were asked to indicate the type of recreational activities they typically engaged in, the average amount of money (time) per week they spent on these activities, the average amount of money (time) per week they thought the typical individual spent on these activities, and any thoughts they might have pertaining to the money (time) they spent on these activities. Next, in a purportedly unrelated task, participants completed the two-stage binary flight choice task. We expect that the greater salience of money versus time considerations that the first survey primed would carry over to the choice task.

After participants completed the choice task, they were asked to complete a short survey in which they rated the perceived difficulty of the choice task, perceived variability of the flight options, and perceived informativeness of the given product attributes. More importantly, participants indicated how much they relied on their feelings versus logical considerations when choosing (1 = "feelings only," and 7 = "logical considerations only"), thus enabling us to tap into different processing modes activated in the choice task. At the end of the study, as a final exploratory question to determine whether participants could intuit how (in)consistent their choices were, we briefly explained the concept of transitivity and then asked them to rate how transitive they thought their choices were (1 = "not at all transitive," and 7 = "very transitive").

Results. Consistent with the results in the earlier experiments, participants in the money condition (M_m = 8.97, SD = 7.28) committed significantly more transitivity violations than those in the time condition (M_t = 6.90, SD = 6.26; t(190) = 2.06, p = .037). Participants in the money condition (M_m = 5.09, SD = 1.36) also reported relying relatively less on feelings than on logical considerations while making their decisions compared with participants in the time condition (M_t = 4.64, SD = 1.33; t(190) = 2.34, p = .020).

More important, this differential reliance on logical considerations versus feelings fully mediated the effect of priming money versus time on preference consistency. Preacher and Hayes's (2008) SPSS macro with 5,000 bootstrapped samples revealed indirect-only mediation (Zhao, Lynch, and Chen 2010). Controlling for resource priming, we found that reliance on logical considerations over feelings was positively associated with the number of transitivity violations (B = .76, t(189) = 2.09, p = .038). Controlling for reliance on logical considerations over feelings, we found that the direct effect of resource priming (time = 0, money = 1) on the number of transitivity violations failed to reach significance (B = 1.72, t(189) = 1.74, p = .083). The indirect path (B = .35) had a 95% confidence interval that did not include 0 (.04, .93).

Neither the total amount of time that participants took to choose (M_m = 216.77 seconds, SD = 111.24 seconds vs. M_t = 200.94 seconds, SD = 112.06 seconds; t(189) = .98, p = .327) nor the perceived difficulty of the choice task (M_m = 3.84, SD = 1.56 vs. M_t = 4.16, SD = 1.51; t(190) = 1.46, p = .147) was significantly different across conditions. Similarly, we did not find any significant differences on the measures of perceived variability of flight options (M_m = 4.04, SD = 1.39 vs. M_t = 4.20, SD = 1.40; t(190) = .80, p = .424) or perceived informativeness of attribute information (M_m = 4.85, SD = 1.54 vs. M_t = 4.59, SD = 1.49; t(190) =

[6]The main pattern of results remained significant at the p = .05 level after including the three participants who showed no variation in their responses. However, the main preference consistency finding became nonsignificant after including the three participants who took an unusually short time to complete the experiment (p = .134).

1.20, $p = .234$). Notably, the participants' perceptions of (in)transitivity did not differ between the two conditions ($M_m = 4.11$, SD = 1.32 vs. $M_t = 4.12$, SD = 1.45; t(190) = .02, $p = .981$), even though their choices showed otherwise.

Discussion. Overall, the results of Experiment 5 provide further support for the different processing modes that the consideration of money and time activates. We find that the differential reliance on logical reasoning versus feelings plays a mediating role in accounting for the less consistent preferences found with money consideration. Furthermore, we continued to rule out several alternative accounts (e.g., choice difficulty, perceived variability of options, attribute informativeness of choice options), while suggesting that individuals may not be cognizant of the degree of (in)transitivity of their choices.

Experiment 6: Mere Consideration of Money Versus Experience

Objective and method. In Experiment 6, we sought further support for the prediction that the difference in preference consistency observed in the money and time conditions is caused by the activation of different processing modes. If money consideration impairs preference consistency because it activates greater analytical processing, then prompting participants to think about prices should lead to less consistent choices than prompting them to think about the experiential, more affective aspects of consuming the products.

A total of 174 students recruited at two universities in the United States were first shown the pictures of 10 T-shirts differing in color and design. They were then asked to make 45 separate choices, one for each possible pair of T-shirts. However, instead of providing participants with a money or time attribute in the product descriptions as in the earlier experiments, we gave them specific instructions that directed their decision process. Participants were randomly assigned to one of three conditions. In the money condition, we asked participants to consider "how much each T-shirt would cost" when choosing between T-shirts. In the experience condition, participants considered instead "how it would feel to wear each T-shirt." A pretest (n = 34) verified that both factors are similarly important in T-shirt decisions ($p = .466$) and should therefore generate comparable decision difficulty. The control condition contained no additional instructions.

Results and discussion. A one-way ANOVA with three levels revealed a significant difference in transitivity violations across conditions ($F(2, 171) = 3.04$, $p = .051$). Planned contrasts further revealed that participants in the money condition ($M_m = 2.63$, SD = 3.50) committed more transitivity violations than those in the experience ($M_e = 1.49$, SD = 2.36; t(171), $p = .034$) and control ($M_c = 1.50$, SD = 2.58; t(171), $p = .035$) conditions, with no difference between the two latter conditions ($p = .987$). There was, however, no significant difference in decision time across conditions ($p = .154$). Thus, the results support the hypothesis that the consideration of money involves more analytical than affective processing, resulting in less transitive preferences.

Thus far, all the experiments have shown that preferences are less transitive under money consideration than under time consideration. Notably, in every experiment that included a control condition, we found null differences between the time and the control conditions in terms of preference consistency, while the money condition yielded consistently lower relative levels of consistency. In the remaining two experiments, we focus exclusively on examining the mechanism that underlies the lower preference consistency that money consideration generates, departing from comparing between money consideration and time consideration.

EXAMINING THE PREFERENCE INCONSISTENCY IN MONEY CONSIDERATION: THE MULTIPLE INTERPRETATIONS OF PRICE

In Experiments 1–6, we established that the consideration of money during product choice prompts greater analytical processing and less affective processing than the consideration of time, and consequently, the consideration of money results in lower preference consistency than the consideration of time. We posit that analytical processing is piecemeal in nature and involves cognitive elaboration (Epstein 1994; Epstein and Pacini 1999). When this cognitive elaboration involves a concept associated with multiple potential interpretations, the "cognitive noise" that results hurts preference consistency.

Specifically, prior work on price perception suggests that price information is associated with multiple meanings that can be conceptualized as either negative or positive (Erickson and Johansson 1985; Lichtenstein, Ridgway, and Netemeyer 1993). On the one hand, price carries a negative meaning when higher prices deter people from buying (Prelec and Loewenstein 1998; Rick, Cryder, and Loewenstein 2008). This occurs when price is viewed as the sacrifice of acquiring desired goods. From this perspective, consumers are encouraged to reduce spending because they understand that current payments limit future utility from foregone options. On the other hand, price carries a positive meaning when higher prices encourage consumers to buy. This occurs when price serves as an indicator of product quality—the belief that "one gets what one pays for" (Rao and Monroe 1989). Moreover, higher prices may also encourage spending by signaling positive information to the self and others. For example, consumers may spend more to promote a sense of self-worth (Lichtenstein, Netemeyer, and Burton 1990) or to enhance their social standing through displaying wealth and status (Amaldoss and Jain 2005).

Given these different meanings, price is therefore open to different and conflicting interpretations. Accordingly, when consumers evaluate products with price as an attribute, they can interpret price in different ways across decisions or product choice occasions, and therefore, the mapping between price and utility is imprecise (Amir, Ariely, and Carmon 2008; Ariely, Loewenstein, and Prelec 2003). Consequently, the greater analytical processing that money consideration triggers generates greater cognitive noise and lowers preference consistency. Conversely, when the interpretation of price is constrained to a specific meaning and thus reducing the amount of cognitive noise, the negative impact of price on preference consistency should be attenuated. We examine this mechanism in the final two experiments.

Experiment 7: Priming Different Meanings of Price

Objective and method. In Experiment 7, we posit that across choice occasions, people might interpret price in

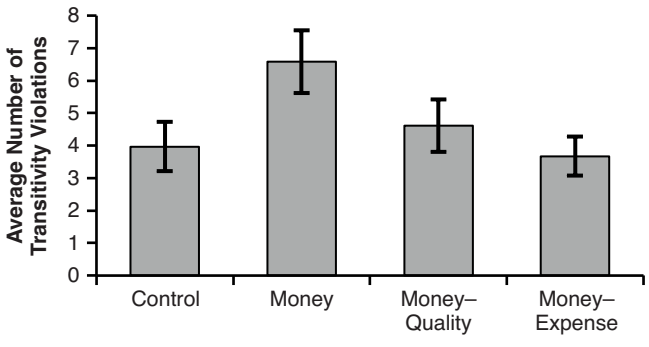
opposing ways that impair preference consistency and that priming a single interpretation of price ameliorates this problem.

We randomly assigned 137 participants recruited at a university in the United States to one of four conditions. In the learning stage, participants saw pictures; prices (from $199.99 to $376.99); and information on brand, model, resolution, zoom, and screen size of ten digital cameras. In the control and money conditions, participants chose the camera they would buy in each of 45 possible pairs. In the money-expense condition, participants were further asked to imagine that given recent expenditures, they hoped to exercise restraint and avoid overspending. In the money-quality condition, participants were told that they were buying an anniversary gift for their parents and, given the occasion, hoped to purchase a camera that their parents could use for many years to come. We expected participants in these two conditions to have more specific interpretations of price and thus to commit fewer violations of transitivity than participants in the money condition. All participants except those in the control condition were shown prices during the decision stage. In addition to the participants' choices, we measured the amount of time participants took to complete the choice task.

Results and discussion. A one-way ANOVA with four levels revealed that the average number of transitivity violations differed across conditions ($F(3, 133) = 2.73$, $p = .047$; see Figure 3). Planned contrasts revealed that participants in the money condition ($M_m = 6.58$, SD = 5.83) again committed more violations than participants in the control condition ($M_c = 3.97$, SD = 4.37; $t(133) = 2.31$, $p = .023$). More important, whereas participants in the money-expense ($M_{me} = 3.68$, SD = 3.49) and in the money-quality ($M_{mq} = 4.62$, SD = 4.72) conditions performed similarly to participants in the control condition ($p = .799$ and $p = .574$; respectively), they committed fewer violations than participants in the money condition ($t(133) = 2.59$, $p = .011$, and $t(133) = 1.75$, $p = .083$, respectively).

With respect to time spent in the decision stage, we found an overall difference across conditions ($F(3, 133) = 3.82$, $p = .012$). Participants in the money ($M_m = 176.3$ seconds, SD = 101.8 seconds; $p = .126$) and money-expense ($M_{me} = 166.1$ seconds, SD = 67.9 seconds; $p = .300$) conditions took comparable amounts of time to complete the choice task as participants in the control condition ($M_c = 143.4$ seconds, SD = 45.7 seconds). Participants in the money-quality condition ($M_{mq} = 215.5$ seconds, SD = 120.7 seconds) took significantly more time to choose than those in the control condition ($p = .001$). Note, however, that the differing degrees of transitivity violations cannot be attributed simply to the different amounts of time (and presumably effort) taken in the various conditions, given the very different patterns of findings for the two measures. In particular, decision time in the money-quality condition was longer than in the control condition, but decision time in the money-expense condition was comparable to that in the control condition; yet the number of transitivity violations in these two treatment conditions did not differ significantly from that in the control condition. In contrast, decision time in the money condition was comparable to that in the control condition, but the number of transitivity violations was significantly higher in the money condition than in the control condition.

Figure 3
COMPARISON OF TRANSITIVITY VIOLATIONS WHEN DIFFERENT CONSUMPTION GOALS ARE PRIMED (EXPERIMENT 7)



Notes: Error bars denote standard errors.

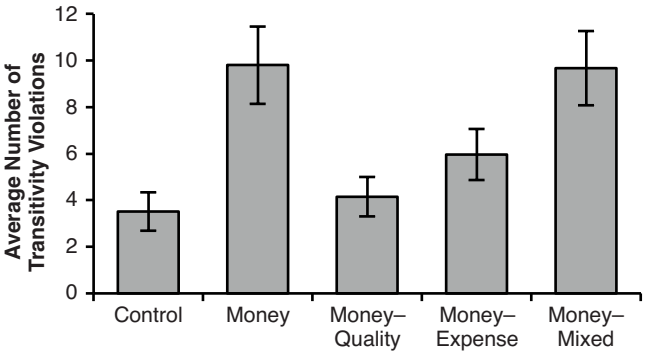
Experiment 8: Prompting Different Meanings of Price

Objective and method. In Experiment 8, we provide further support for the role of multiple interpretations of price in driving preference inconsistency. Instead of inducing participants to adopt a particular interpretation of price by providing them with a goal, we directed some of the participants to pay attention to a particular meaning or to multiple meanings of price, thus making one or more meanings of price more salient.

A total of 192 participants were recruited from MTurk to complete a short task on decision making for a customary fee. We used the same stimuli and choice task as in Experiment 7. Each participant was randomly assigned to one of five conditions. When choosing between pairs of digital cameras, participants in the money-quality condition were asked to consider that "in general, the more expensive a product, the better its quality." Those in the money-expense condition were asked instead to consider that "in general, the more expensive a product, the less money one has to buy other products that one desires." Those in the money-mixed condition were asked to consider both meanings of price: "in general, the more expensive a product, the better its quality, but the less money one has to buy other products that one desires." The control and money conditions were the same as in Experiment 7, such that participants did not receive additional information beyond instructions for the choice task.

Results. A one-way ANOVA with five levels indicated that participants committed significantly different numbers of transitivity violations across conditions ($F(4, 187) = 5.35$, $p < .001$; see Figure 4). Planned contrasts further revealed that participants in the money condition ($M_m = 9.80$, SD = 10.50) made significantly more transitivity violations than those in the control condition ($M_c = 3.52$, SD = 4.64; $t(187) = 3.26$, $p = .001$). More important, consistent with the argument that money consideration impedes consistent choice behavior because of the different interpretations of price that might be cued in product decisions, participants in the money-mixed condition ($M_{mm} = 9.67$, SD = 10.37) made significantly more transitivity violations than those in the control

Figure 4
COMPARISON OF TRANSITIVITY VIOLATIONS WHEN DIFFERENT INTERPRETATIONS OF PRICE ARE MADE SALIENT (EXPERIMENT 8)



Notes: Error bars denote standard errors.

condition (t(187) = 3.23, p = .001) but a similar number of violations as participants in the money condition (p = .940). Also in support of our argument, participants in both the money-expense (M_{me} = 5.97, SD = 6.32) and the money-quality (M_{mq} = 4.15, SD = 5.73) conditions, who were given one specific way to interpret price, made significantly fewer transitivity violations than participants in the money and money-mixed conditions (all p < .050) but a similar number of violations as participants in the control condition (both ps > .223).

Furthermore, the amount of time participants took to choose was marginally different across conditions (F(4, 187) = 2.30, p = .060). Post hoc comparisons using Fisher's test further revealed that participants in the money condition (M_m = 225.3 seconds, SD = 128.6 seconds) took significantly more time to make their choices than those in the control condition (M_c = 155.0 seconds, SD = 49.8 seconds, p = .005). In contrast, the amount of time participants in the other three conditions took to choose did not differ significantly from the control condition (all ps > .100). Overall, the different patterns of the decision time results and the transitivity results suggest that the amount of time participants took to choose could not fully explain the transitivity findings.

Discussion. In summary, the results of this experiment indicate that while prompting participants to consider multiple meanings of price did not improve preference consistency, prompting them to think about price in a precise manner reduced cognitive noise and led to more consistent preferences. Together with the results of Experiment 7, we have provided evidence that constraining the interpretation of price to a specific meaning, be it indirectly through prompting different consumption goals or directly by focusing consumers' attention on a particular meaning of price, improves preference consistency.

Furthermore, in two other experiments, we found that individuals who either display a high degree of price consciousness (i.e., those who tend to regard price as a cost or sacrifice) or have a dispositional tendency to rely on the price–quality inference when evaluating products (Lichtenstein, Ridgway, and Netemeyer 1993) are less susceptible to the negative influence of money consideration on preference consistency. These studies suggest that there is heterogeneity across people in the degree of specificity attached to the meaning of price, providing convergent support for our hypothesis that it is the inherent ambiguity in the meaning of price (which accompanies the analytical processing of monetary consideration) that underlies the negative impact of money consideration on preference consistency.

GENERAL DISCUSSION

Consumers make a variety of decisions in their everyday lives that involve money and time considerations. A growing body of research points to distinct psychological correlates associated with money and with time. We add to this literature by examining the fundamental modes of processing that the consideration of money and time trigger and a decision context that consumers frequently encounter—namely, choosing between product options where the price or time duration associated with each option is under consideration.

Money is fundamentally an instrument of exchange. The utilitarian use of money involves considerations of value, which evokes greater analytical thinking. In comparison, time is experienced; therefore, time consideration tends to activate related concepts that are experiential or affective in nature. If consumers were explicitly directed to think about money or time, it would be reasonable to expect that qualitatively different modes of processing would be activated and that this would then have different influences on behavior or behavioral intent. What may be less obvious is whether these processing modes would be spontaneously triggered by the mere presentation of product options that have a money- or time-related attribute.

The findings of the experiments presented herein offer convergent evidence that a choice situation involving the consideration of money activates a more analytical mode of processing than a choice situation involving time, which activates instead a more affective mode. This distinction, in turn, affects the consistency of preferences, with the consideration of money resulting in lower preference consistency. This finding is in line with other studies that have shown that analytical processing generates cognitive noise and impairs preference consistency both within (Lee, Amir, and Ariely 2009) and across (Pham et al. 2001) individuals.

Our main interest in this research was to ascertain the relative degree of analytical and affective processing that occurs with the consideration of money and time. We consistently found that the money condition was significantly different from the control condition in terms of preference consistency, while the time condition was not. This suggests that it was processing in the money condition that impaired preference consistency rather than processing in the time condition that improved it. Therefore, in Experiments 7 and 8, we sought to clarify what might be driving this money-inconsistency effect. The results of these two studies provide consistent support for our hypothesized mechanism. Specifically, when individuals evaluate products with price as an attribute, they can interpret price in different ways across decisions because price plays different roles across contexts (e.g., price as a signal of quality or status vs. price as an expense or sacrifice; Erickson and Johansson 1985; Lichtenstein, Ridgway, and Netemeyer 1993), and thus the mapping between price and utility is imprecise (Ariely, Loewenstein, and Prelec 2003; Amir, Ariely, and Carmon

2008). Consequently, the greater analytical processing that money consideration triggers generates greater cognitive noise and leads to greater preference inconsistency. Conversely, when the interpretation of price is constrained to a specific meaning, whether by priming a consumption goal (Experiment 7) or by directing consumers to focus on a particular meaning of price (Experiment 8), the price-utility mapping becomes less noisy, and the negative impact of price on preference consistency is attenuated. We also want to highlight that these results do not indicate that the inherent value of money is necessarily more ambiguous that the inherent value of time per se (cf. Okada and Hoch 2004). Rather, the combination of two factors—the analytical processing that money consideration evokes and the multiple meanings of price—seem to account for the negative impact of money consideration on preference consistency. Accordingly, because time consideration triggers a more affective mode of processing, it does not lead to preference inconsistency.

Furthermore, while our experiments demonstrate that money consideration leads to less transitive choices than time consideration by triggering greater analytical (vs. affective) processing, our objective in this work is not to draw a general conclusion about the relationship between analytical/affective processing and rational or normative behavior. Indeed, our findings show that depending on the choice context and the preference measure, greater analytical processing can result in either more normative behavior (as in the case of Experiment 4 with the ratio-bias paradigm) or, counterintuitively, less normative behavior (as in the assessment of preference consistency in all our experiments).

Related Findings in the Literature on the Ambiguity of Time Versus Money

Contrary to our findings in the present work, one might expect that money consideration will lead to more consistent preferences compared with time consideration. After all, decisions that involve money are encountered on a daily basis. One might therefore also presume that consumers are more adept at processing monetary information and, consequently, are more consistent in their preferences. Indeed, when we asked 33 respondents in a brief survey how prices affect their purchase decisions, the consensus was that prices improve the consistency of choices: M = 4.97 versus 4, on a 1 ("definitely decreases") to 7 ("definitely increases") scale: $t(32) = 3.91$, $p = .001$.[7]

Some research in the time–money literature seems to corroborate this intuition, which runs counter to our empirical evidence. In particular, prior work that has associated time (vs. money) with greater accounting difficulty and lower valuation precision suggests that choices involving time should exhibit less preference consistency (Leclerc, Schmitt, and Dubé 1995; Okada and Hoch 2004). For example, people's expressed monetary equivalent of their time was found to be malleable—specifically, participants reported a significantly higher value when an expenditure of their time led to a positive compared with a negative consumption experience (Okada and Hoch 2004). Zauberman and Lynch (2005) find greater temporal inconsistency for time than money. Because of the greater difficulty in mentally accounting for time, individuals are less susceptible to the sunk-cost effect when the cost is framed in terms of time rather than money (Soman 2001). Saini and Monga (2008), arguing that this greater ambiguity in the value of time renders processing time information more difficult, find a greater reliance on heuristics when people make decisions about time than when they make decisions about money, as they sought to simplify the decision process.

Given these difficulties in grasping the value of time or accounting for it relative to money, why then do we find more consistent preferences when choices involve a time attribute? We believe that there is an important distinction to be made between the context examined in these prior studies and the context in the present set of experiments. In the prior studies, time was conceived as a medium of exchange, and the studies thus required participants, explicitly or implicitly, to place a value on time. As Okada and Hoch (2004, p. 322) note, "We conceptualized time as a medium of exchange in our study, where people acquire something in consideration for performing some activity, rather than the simple passing of minutes and hours in exchange for which one receives nothing, such as unexpected delays at airports (Leclerc et al. 1995)." Similarly, in Soman (2001), decisions were studied in the context of scenarios that involved, for example, working a certain number of hours in return for a concert ticket or participating in hours of market research in return for a one-day cruise. In Saini and Monga (2008), participants considered a trade-off between a greater expense of time in the form of more time spent searching and a more desirable payoff such as finding the cheapest option.

We argue that this particular conceptualization of time is less relevant in the product choice context we examine. In our experiments, time is explicitly presented as one of several attributes of the product options, and by design, there was no systematic correlation between the time attribute and other attributes. For example, in the experiments in which we used flights as product options, a shorter flight time was not necessarily associated with worse service levels or worse in-flight entertainment. If the experimental context were altered such that participants were prompted to treat time as a medium of exchange, it is likely that lower levels of preference consistency will be observed. An examination of this possibility and the conditions under which the various properties of time would manifest seems a worthwhile avenue for further research.

It is also interesting to contrast our findings with those of Saini and Monga (2008). In particular, Saini and Monga find greater heuristic use (i.e., anchoring and choosing the compromise option) when they primed participants to think about time rather than money. Might participants in the time condition in our experiments have also relied on heuristics, which then engendered greater consistency in preferences? We think not, for several reasons. First, prior research suggests that heuristic processing does not necessarily lead to consistent preferences and may even generate less preference stability (Amir and Levav 2008; Gigerenzer 2000; Tversky 1969). Rather, heuristic processing generates consistent preferences if and only if the choice context is stable over time (Payne, Bettman, and Johnson 1993), which was

[7]Among these 33 respondents, 21 (64%) indicated that prices would increase the degree of their choice consistency, 9 (27%) indicated that price would neither increase nor decrease their choice consistency, and only 3 (9%) indicated that price would decrease the degree of their choice consistency.

not the case in our experiments given that participants faced a different pair of options on each choice occasion. Thus, while Saini and Monga's finding, that people are more likely to use heuristics in decisions for which time (vs. money) is invested in exchange for a benefit, is noteworthy, the underlying mechanism for that effect is likely to be different from the mechanism that underlies the current set of studies.

Second, and more broadly, our focus on analytical versus affective processing is conceptually distinct from Saini and Monga's (2008) focus on deliberative versus heuristic processing. While the reliance on affect can operate as a heuristic (Slovic et al. 2007), affect can also influence decision making through other more deliberative mechanisms (Avnet, Pham, and Stephen 2012; Cohen, Pham, and Andrade 2008). As such, reliance on feelings does not necessarily imply greater heuristic use and a faster response time. This is consistent with our empirical results in which we found that people in the time condition did not take significantly less time to make their choices than those in the money condition,[8] unlike the results of Saini and Monga (2008), suggesting that different mechanisms were at play. Indeed, the mechanism underlying their findings is not likely to have involved affect. In particular, the authors used a stronger compromise effect under time consideration as one of two focal demonstrations of greater heuristic use. Prior studies, however, have found that the preference for compromise options is reduced rather than enhanced when there is a greater reliance on affect (Pham and Parker 2009). In a similar vein, Dhar and Gorlin (2013) note that the compromise effect is attenuated under time pressure (Pettibone 2012) and when mental resources are depleted (Pocheptsova et al. 2009), and the effect is in fact the product of deliberative processing. Together, these results further underscore the conceptual distinction between Saini and Monga's study and our research.

Practical Implications

Our experimental findings suggest some potential direct marketing implications. First, marketers may want to consider more carefully whether to focus on price information when designing persuasive marketing messages. For example, a product marketed on the basis of hedonic attributes is likely to benefit little from its advertising if consumers process the message with an incongruous analytical mindset. In this case, marketers may want to refrain from drawing attention to price information to avoid evoking more analytical processing. Second, our results also seem especially pertinent in the current age of "big data," in which companies amass and analyze huge amounts of information about consumers and may rely on consumers' transaction history to predict their future purchases and design offers that would be attractive to them. Arguably, while the underlying assumption of this enterprise is that consumers' preferences are consistent, our results underscore that this assumption may not always be met, as there can be varying degrees of consistency depending on whether consumers adopt a more analytical or affective mindset at the point of purchase.

Finally, consumers' own welfare can be better served if they are aware of the differential impact that focusing on money versus time can have on how they process product information and, in turn, the stability of their evaluations and decisions. That said, it is important to note that we are not claiming that consistent preferences are always the right preferences, nor are we promoting biased (albeit consistent) preferences. Rather, our interest in this work lies in the different processing modes that money and time considerations trigger and their impact on the consistency of preferences.

Further Research

Our studies have uncovered a tendency for people to adopt different modes of processing when choices involve the consideration of money or time, and this tendency occurs spontaneously. In the case of money consideration, the reason for greater analytical processing is likely rooted in the fact that money plays a ubiquitous role in daily transactions, and the routine assessment of value (i.e., the weighing of benefits and costs) in these transactions has fostered a mindset that is analytical in nature. The generality of such a claim warrants further examination. It would be interesting to understand, for example, if there are consumption situations under which money consideration does not evoke analytical processing or if consumer segments exist that, perhaps by virtue of personality dispositions or demographic factors (e.g., income level), do not spontaneously activate an analytical processing mode when faced with a price tag. One such situation may occur when a discount is tied to the price tag, which could induce greater affective processing instead (Aydinli, Bertini, and Lambrecht 2014; Lee and Tsai 2014).

It would also be worthwhile to understand the conditions under which the "default" processing mode, be it analytical or affective, can be consciously overridden. For example, would explicit instructions to consumers to adopt an affective mode when considering money improve preference consistency, and conversely, would explicit instructions to adopt an analytical mode in the case of time hurt preference consistency? There is reason to believe that overriding affective processing would be more difficult to achieve than overriding analytical processing. We base this conjecture on Epstein's (1998) argument that affective processing is often dominant over analytical processing and experienced as more compelling, given that the former is associated with feelings and the latter is dispassionate. Further research could examine the potential existence of this asymmetry and elucidate the nature of the relationship between the two modes.

Our findings focus on the downstream consequence of money versus time considerations on preference consistency. Another potential area for further research may be other consequences of the different processing modes that the consideration of money versus time activates. One such consequence is attitude strength: it is plausible that, compared with the greater analytical processing that money consideration triggers, the greater affective processing that accompanies decisions involving time will lead to product

[8]A different methodological reason could also account in part for this null difference in response time between the time and money conditions in our experiments. Given the multiattribute setup of the pairwise choice task, participants in both conditions might have taken some time to study the given product attributes, and this amount of time might have overshadowed the actual time participants spent making their decisions.

attitudes that are stronger and held with greater confidence. Another promising topic may be the impact of affective (vs. analytical) processing on context effects—in particular, the possibility that holistic thinking and the reliance on feelings would dampen other context effects beyond the compromise effect (Pham and Parker 2009).

Conclusion

Overall, the results of our experiments demonstrate that there are clear process and outcome differences when product choices involve the consideration of money or time. This no doubt erodes the validity of the common adage "time is money." Certainly, one of the most important functions of money is to serve as a standard measure of an object's worth. That is, people use money to represent and compare the utility of otherwise dissimilar objects on a common metric. The ability to draw meaningful comparisons in turn enables the development of preference orderings and therefore contributes to sound decision making. In line with this argument, money makes exchanges more efficient. Yet the argument hinges on the assumption that monetary worth, expressed as a price, is a precise representation of utility. Given the cognitive noise and preference inconsistency that monetary consideration may generate, our research shows that, at the very least, there is room for doubt.

APPENDIX: COMPARISON OF CHOICE-IMPUTED ATTRIBUTE WEIGHTS (EXPERIMENT 3)

In Experiment 3, to analyze whether participants in the money and time conditions placed differential weight on the focal attribute in their actual product choices, we performed the following steps[9]: We began by running separate binary-choice models using logistic regressions for each participant to compute the weights placed on the various attributes. Specifically, we regressed participants' choice of the left option (binary dependent variable) on the standardized differences in the attribute value of food as well as the focal attribute (duration in the time condition, price in the money condition). We omitted the activities attribute from the regression because, by design, the values of this attribute were almost perfectly negatively correlated with the values of the food attribute ($r = -.98$, $p < .001$); this design feature provides inherent trade-offs in attributes across options.

Next, we used a t-test to compare the imputed relative standardized weights on the focal attribute between the time and money condition. We computed relative standardized weights on the focal attribute by dividing the standardized coefficient for duration/price by the standardized coefficient for food from the per-participant logistic regressions (Train 2009). Because participants almost always preferred longer and cheaper vacations, we reversed the signs of the coefficients for price for participants in the money condition to allow for comparability. In addition, analyzing the choices that participants made, we noted that six participants in the money condition and eight participants in the time condition adopted a lexicographic rule when choosing between options—specifically, they always chose the longer or the cheaper vacation. These participants were removed from the analysis since their imputed relative weights on the focal attribute were undefined.[10]

Results of the t-test revealed that participants in the money and time conditions did not differ significantly in their imputed relative weights on the focal attribute ($t(72) = -1.20$, $p = .233$). Furthermore, the main preference consistency result—that participants in the money condition committed more transitivity violations than those in the time condition—remained significant after controlling for the imputed relative standardized weight (focal attribute/food) on the focal attribute ($t(71) = 2.21$, $p = .030$).

[9]We performed the same analysis on the choice data from Experiments 1 and 2, which yielded similar results.

[10]One participant in the money condition and two participants in the time condition always chose the vacation option with the higher food rating in each pair, adopting a different type of lexicographic decision rule. Removing these three participants from the analysis did not change the pattern of results.

REFERENCES

Amaldoss, Wilfred and Sanjay Jain (2005), "Conspicuous Consumption and Sophisticated Thinking," *Management Science*, 51 (10), 1449–66.

Amir, On, Dan Ariely, and Ziv Carmon. (2008), "The Dissociation Between Monetary Assessment and Predicted Utility," *Marketing Science*, 27 (6), 1055–64.

Amir, On and Jonathan Levav (2008), "Choice Construction versus Preference Construction: The Instability of Preferences Learned in Context," *Journal of Marketing Research*, 45(2), 145–158.

Ariely, Dan, George Loewenstein, and Drazen Prelec (2003), "'Coherent Arbitrariness': Stable Demand Curves Without Stable Preferences," *Quarterly Journal of Economics*, 118 (1), 73–105.

Avnet, Tamar, Michel Tuan Pham, and Andrew T. Stephen (2012), "Consumers' Trust in Feelings as Information," *Journal of Consumer Research*, 39 (4), 720–35.

Aydinli, Aylin, Marco Bertini, and Anja Lambrecht (2014), "Price Promotion for Emotional Impact," *Journal of Marketing*, 78 (July), 80–96.

Bargh, John A. (1997), "The Automaticity of Everyday Life," in *The Automaticity of Everyday Life*, Vol. 10, Robert S. Wyer Jr., ed. Mahwah, NJ: Lawrence Erlbaum Associates, 1–61.

Bem, Daryl J. (1972), "Self-Perception Theory," in *Advances in Experimental Social Psychology*, Vol. 6, Leonard Berkowitz, ed. New York: Academic Press, 1–62.

Chaiken, Shelly and Yaacov Trope (1999), *Dual-Process Theories in Social Psychology*. New York: Guilford Press.

Cohen, Joel B., Michel Tuan Pham, and Eduardo B. Andrade (2008), "The Nature and Role of Affect in Consumer Behavior," in *Handbook of Consumer Psychology*, ed. Curtis P. Haugtvedt, Paul Herr, and Frank R. Kardes, Mahwah, NJ: Lawrence Erlbaum Associates, 297–347.

Cook, Wade D. and Moshe Kress (1992), *Ordinal Information and Preference Structures: Decision Models and Applications*. Upper Saddle River, NJ: Prentice Hall.

Denes-Raj, Veronika and Seymour Epstein (1994), "Conflict Between Intuitive and Rational Processing: When People Behave Against Their Better Judgment," *Journal of Personality and Social Psychology*, 66 (5), 819–29.

———, ———, and Jonathan Cole (1995), "The Generality of the Ratio-Bias Phenomenon," *Personality and Social Psychology Bulletin*, 21 (10), 1083–92.

Dhar, Ravi and Margarita Gorlin (2013), "A Dual-System Framework to Understand Preference Construction Processes in Choice," *Journal of Consumer Psychology*, 23 (4), 528–42.

Epstein, Seymour (1994), "Integration of the Cognitive and the Psychodynamic Unconscious," *American Psychologist*, 49 (8), 709–724.

——— (1998), "Cognitive-Experiential Self-Theory: A Dual-Process Personality Theory with Implications for Diagnosis and Psychotherapy," in *Advanced Personality*, David. F. Barone, Michel Hersen, and Vincent B. Van Hasselt, eds. New York: Springer, 211–38.

———, Abigail Lipson, Carolyn Holstein, and Eileen Huh (1992), "Irrational Reactions to Negative Outcomes: Evidence for Two Conceptual Systems," *Journal of Personality and Social Psychology*, 62 (2), 328–39.

——— and Rosemary Pacini (1999), "Some Basic Issues Regarding Dual-Process Theories From the Perspective of Cognitive-Experiential Self-Theory," in *Dual-Process Theories in Social Psychology*, Shelly Chaiken and Yaacov Trope, eds. New York: Guilford Press, 462–82.

Erickson, Gary M. and Johny K. Johansson (1985), "The Role of Price in Multi-Attribute Product Evaluations," *Journal of Consumer Research*, 12 (2), 195–99.

Evans, Jonathan St. B.T. (2008), "Dual-Processing Accounts of Reasoning, Judgment, and Social Cognition," *Annual Review of Psychology*, 59, 255–78.

Festinger, Leon (1957), *A Theory of Cognitive Dissonance*. Evanston, IL: Row, Peterson.

Gardner, William, Edward P. Mulvey, and Esther C. Shaw (1995), "Regression Analyses of Counts and Rates: Poisson, Overdispersed Poisson, and Negative Binomial Models," *Psychological Bulletin*, 118 (3), 392–404.

Gawronski, Bertram and Galen V. Bodenhausen (2011), "The Associative-Propositional Evaluation Model: Theory, Evidence, and Open Questions," *Advances in Experimental Social Psychology*, 44, 59–127.

Gigerenzer, Gerd (2000), *Adaptive Thinking: Rationality in the Real World*. New York: Oxford University Press.

Gino, Francesca and Cassie Mogilner (2014), "Time, Money, and Morality," *Psychological Science*, 25 (2), 414–21.

Kahneman, Daniel and Shane Frederick (2002), "Representativeness Revisited: Attribute Substitution in Intuitive Judgment," in *Heuristics and Biases: The Psychology of Intuitive Judgment*, T. Gilovich, D. Griffin, and D. Kahneman, eds. New York: Cambridge University Press, 49–81.

Kendall, M.G. and B. Babington Smith (1940), "On the Method of Paired Comparisons," *Biometrika*, 31 (3/4), 324–45.

Kirkpatrick, Lee A. and Seymour Epstein (1992), "Cognitive-Experiential Self-Theory and Subjective Probability: Further Evidence for Two Conceptual Systems," *Journal of Personality and Social Psychology*, 63 (4), 534–44.

Leclerc, France, Bernd H. Schmitt, and Laurette Dubé (1995), "Waiting Time and Decision Making: Is Time Like Money?" *Journal of Consumer Research*, 22 (1), 110–19.

Lee, Leonard, On Amir, and Dan Ariely (2009), "In Search of Homo Economicus: Cognitive Noise and the Role of Emotion in Preference Consistency," *Journal of Consumer Research*, 36 (2), 173–87.

——— and Claire I. Tsai (2014), "How Price Promotions Influence Postpurchase Consumption Experience over Time," *Journal of Consumer Research*, 40 (5), 943–59.

Lichtenstein, Donald R., Richard G. Netemeyer, and Scot Burton (1990), "Distinguishing Coupon Proneness from Value Consciousness: An Acquisition-Transaction Utility Theory Perspective," *Journal of Marketing*, 54 (July), 54–67.

———, Nancy M. Ridgway, and Richard G. Netemeyer (1993), "Price Perceptions And Consumer Shopping Behavior: A Field Study," *Journal of Marketing Research*, 30 (May), 234–45.

Lieberman, Matthew D., Ruth Gaunt, Daniel T. Gilbert, and Yaacov Trope (2002), "Reflexion and Reflection: A Social Cognitive Neuroscience Approach to Attributional Inference," in *Advances in Experimental Social Psychology*, Vol. 34, Mark P. Zanna, ed. San Diego: Elsevier, 199–249.

Liu, Wendy and Jennifer Aaker (2008), "The Happiness of Giving: The Time-Ask Effect," *Journal of Consumer Research*, 35 (3), 543–57.

Mas-Colell, Andreu, Michael D. Whinston, and Jerry R. Green (1995), *Microeconomic Theory*. New York: Oxford University Press.

Metcalfe, Janet and Walter Mischel (1999), "A Hot/Cool-System Analysis of Delay of Gratification: Dynamics of Willpower," *Psychological Review*, 106 (1), 3–19.

Mogilner, Cassie (2010), "The Pursuit of Happiness: Time, Money, and Social Connection," *Psychological Science*, 21 (9), 1348–54.

——— and Jennifer Aaker (2009), "The Time vs. Money Effect: Shifting Product Attitudes and Decisions Through Personal Connection," *Journal of Consumer Research*, 36 (2), 277–91.

Nordgren, Loran F. and Ap Dijksterhuis (2009), "The Devil Is in the Deliberation: Thinking Too Much Reduces Preference Consistency," *Journal of Consumer Research*, 36 (1), 39–46.

Nunnally, Jum C. and Ira H. Bernstein (1994), *Psychometric Theory*. New York: McGraw-Hill.

Okada, Erica Mina and Stephen J. Hoch (2004), "Spending Time Versus Spending Money," *Journal of Consumer Research*, 31 (2), 313–23.

Pacini, Rosemary and Seymour Epstein (1999), "The Relation of Rational and Experiential Information Processing Styles to Personality, Basic Beliefs, and the Ratio-Bias Phenomenon," *Journal of Personality and Social Psychology*, 76 (6), 972–87.

Payne, John W., James R. Bettman, and Eric J. Johnson (1988), "Adaptive Strategy Selection in Decision Making," *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 14 (3), 534–52.

———, ———, and ——— (1993), *The Adaptive Decision Maker*. Cambridge, UK: Cambridge University Press.

Pettibone, Jonathan C. (2012), "Testing the Effect of Time Pressure on Asymmetric Dominance and Compromise Decoys in Choice," *Judgment and Decision Making*, 7 (4), 513–23.

Pham, Michel Tuan, Joel B. Cohen, John W. Pracejus, and G. David Hughes (2001), "Affect Monitoring and the Primacy of Feelings in Judgment," *Journal of Consumer Research*, 28 (2), 167–88.

——— and Jeffrey Parker (2009), "The Uncompromising Heart: How the Reliance on Feelings Reduces Preference for Compromise Options," paper presented at the Association for Consumer Research conference, Pittsburg (October).

Pocheptsova, Anastasiya, On Amir, Ravi Dhar, and Roy F. Baumeister (2009), "Deciding Without Resources: Resource Depletion and Choice in Context," *Journal of Marketing Research*, 46 (June), 344–55.

Preacher, Kristopher J. and Andrew F. Hayes (2008), "Asymptotic and Resampling Strategies for Assessing and Comparing Indirect Effects in Multiple Mediator Models," *Behavior Research Methods*, 40 (3), 879–91.

Prelec, Drazen and George Loewenstein (1998), "The Red and the Black: Mental Accounting of Savings and Debt," *Marketing Science*, 17 (1), 4–28.

Rao, Akshay R. and Kent B. Monroe (1989), "The Effect of Price, Brand Name, and Store Name on Buyers' Perceptions of Product Quality: An Integrative Review," *Journal of Marketing Research*, 89 (August), 351–47.

Rick, Scott I., Cynthia E. Cryder, and George Loewenstein (2008), "Tightwads and Spendthrifts," *Journal of Consumer Research*, 34 (6), 767–82.

Saini, Ritesh and Ashwani Monga (2008), "How I Decide Depends on What I Spend: Use of Heuristics Is Greater for Time Than for Money," *Journal of Consumer Research*, 34 (6), 914–22.

Shiv, Baba and Alexander Fedorikhin (1999), "Heart and Mind in Conflict: The Interplay of Affect and Cognition in Consumer Decision Making," *Journal of Consumer Research*, 26 (3), 278–92.

Sloman, Steven A. (1996), "The Empirical Case for Two Systems of Reasoning," *Psychological Bulletin*, 119 (1), 3–22.

Slovic, Paul, Melissa L. Finucane, Ellen Peters, and Donald G. MacGregor (2007), "The Affect Heuristic," *European Journal of Operational Research*, 177 (3), 1333–52.

Soman, Dilip (2001), "The Mental Accounting of Sunk Time Costs: Why Time Is Not Like Money," *Journal of Behavioral Decision Making*, 14 (3), 169–85.

Su, Lei and Leilei Gao (2014), "Strategy Compatibility: The Time Versus Money Effect on Product Evaluation Strategies," *Journal of Consumer Psychology*, 24 (4), 549–56.

Train, Kenneth (2009), *Discrete Choice Models with Simulation*, 2nd ed. New York: Cambridge University Press.

Tversky, Amos (1969), "Intransitivity of Preferences," *Psychological Review*, 76 (1), 31–48.

Zajonc, Robert B. (1980), "Feeling and Thinking: Preferences Need no Inferences," *American Psychologist*, 35 (2), 151–75.

Zauberman, Gal, Kristin Diehl, and Dan Ariely (2006), "Hedonic Versus Informational Evaluations: Task Dependent Preferences for Sequences of Outcomes," *Journal of Behavioral Decision Making*, 19 (3), 191–211.

——— and John G. Lynch Jr. (2005), "Resource Slack and Propensity to Discount Delayed Investments of Time Versus Money," *Journal of Experimental Psychology: General*, 134 (1), 23–37.

Zhao, Xinshu, John G. Lynch Jr., and Qimei Chen (2010), "Reconsidering Baron and Kenny: Myths and Truths About Mediation Analysis," *Journal of Consumer Research*, 37 (2), 197–206.