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# Money and Thinking: Reminders of Money Trigger Abstract Construal and Shape Consumer Judgments

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The idea of money reminds consumers of personal strength and resources. Such cues have been found to increase the level of mental construal. Consequently, it was hypothesized and found in five experiments that reminders of money trigger abstract (vs. concrete) mental construals. Participants were primed with money or money-unrelated concepts. Money primes caused a preference for abstract over concrete action identifications (experiment 1), instigated the formation of broader categories (experiment 2), and facilitated the identification of global (vs. local) aspects of visual patterns (experiment 3). This effect extended to consumer judgments: money primes caused a focus on central (vs. peripheral) aspects of products (experiment 4) and increased the influence of quality of parent brands in evaluations of brand extensions. Priming with a little money (experiment 3) or expenditures (experiment 5) did not trigger abstract construals, indicating that the association between money and resources drives the effect.

Whether or not the proverb “money makes the world go around” is true, money is undoubtedly a central concept in modern consumer societies. Virtually every day, consumers encounter money or symbols of money. They earn, save, spend, or possibly lose money. They physically touch and handle bills and coins. They are reminded of money by proverbs (e.g., “a penny saved is a penny earned”), songs (e.g., *Money, Money, Money*), or novel and movie titles (e.g., *The Color of Money*). Given the impor-

tance and the conspicuous nature of money in our lives in general and in economic and consumer contexts in particular, we consider it worthwhile to investigate the psychological implications such reminders of money may have. In the present research, we propose that the mental activation of money affects people’s level of construal (experiments 1–3), and we investigate respective implications for consumer judgments (experiments 4–5).

Generally speaking, money can be regarded as a symbol that is linked to many types of resources, such as security, status, power, confidence, and freedom (Goldberg and Lewis 1978; Matthews 1991). For instance, money is strongly associated with the appraisal of confidence that one can successfully deal with challenges in one’s environment: “money provides a feeling of confidence that problems can be solved and needs can be met” (Zhou, Vohs, and Baumeister 2009). Likewise, money is associated with a “heightened sense of autonomy” (Liu, Smeesters, and Vohs 2012) and the ability to satisfy autonomy needs (Dewitte 2006). Accordingly it was found, for instance, that mere thoughts of money make people feel stronger as compared with participants in control conditions (Zhou et al. 2009). Further, participants primed with the concept of money asked for less help with a difficult task (Vohs, Mead, and Goode 2006) and experienced less social distress and physical pain (Zhou et al. 2009) than participants of a control group. In sum, various evidence

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suggests that the mere reminder of the concept of money may relatively automatically signal that affordances in one's environment can be met and in turn elicits behavioral consequences.

In different situations and with different consumers, however, money is associated either with personal strength or with costs and threats. For instance, the financial situation of a consumer might possibly influence what thoughts are triggered by money. When money is short, one must think carefully about what to buy and what not to buy, and thoughts of money may rather trigger weakness instead of confidence. Accordingly, Zhou et al. (2009) found that recollections of having spent money make people feel weaker as compared with participants in control conditions. In other words, depending on what associations money triggers, reminders of money can cause consumers to feel strong or weak.

Crucially for the present research, perceiving oneself as being able to master one's environment or not should also have cognitive consequences. In line with the assumption that human cognition and processing style is adaptively tuned to meet the situational requirements (Smith and Semin 2004, 2007), problematic environments or obstacles in goal pursuit foster more detail-oriented, bottom-up processing and low-level construal, whereas benign situations allow for more abstract, top-down processing and high-level construal (e.g., Schwarz 2002; Wegner and Vallacher 1986). For example, when all goes well, one can focus on global goals of behavior, but when a situation seems overtaxing, people tend to mentally "downshift a gear" and construe actions and events on a more concrete level, focusing on the specific details and contextual information of a situation (Vallacher and Wegner 1985, 1987, 1989; Wegner and Vallacher 1986). The behavior of making coffee, for instance, may be construed concretely as grinding coffee, putting grounds into the machine, pressing the switch of the machine, and so on. These steps in the behavioral chain represent the concrete means of how to make the coffee. Alternatively, making coffee may be represented abstractly as "getting a hot drink" or "getting energized," which corresponds to the general gist of the behavior and conveys a more general understanding of the behavior. Such abstract construals usually refer to the goal or the end state of the behavior (by indicating why a behavior is performed) rather than to its specific means. They are more likely when the situational environment holds no threat for goal accomplishment (Vallacher and Wegner 1985, 1987, 1989; Wegner and Vallacher 1986).

Of course, not only actions can be construed abstractly versus concretely; representations of people (including the self), objects, consumer products and events, as well, may vary in their level of construal, which has important implications for consumer judgments and decision making (Liberman and Trope 2008; Trope and Liberman 2003, 2010; for reviews in the consumer area, see Eyal, Liberman, and Trope 2009; Trope, Liberman, and Wakslak 2007). In any case, signals of a benign environment as compared to a challenging one foster more global, high-level construals,

because in face of threat or failure more attention to detail is needed to master the situation. On the basis of this notion, we assume that reminders of resources that help to overcome potential challenges also trigger more global and less detail-oriented processing.

It should be noted that even very subtle cues in the environment that are merely associated with relatively safe versus threatening situations change the appraisal of the situations and have an effect on construal level (Friedman and Förster 2010). Such environmental cues can be colors and faces signaling safety versus danger, or simple motor actions associated with approach versus avoidance. The color red (vs. gray), for instance, causes people to focus more on concrete details instead of global stimuli as a whole (Maier, Elliot, and Lichtenfeld 2008). Similarly, Burger and Bless (2011) found that smileys versus frownies differentially affected the abstractness level on which a political decision situation is represented and thus influenced the relevance of abstract idealistic concerns versus concrete pragmatic concerns in political decision making. Importantly, the level of construal changed in response to such appraisal cues even without eliciting conscious experiences. Since certain environmental cues influence construal level without coactivating conscious emotional experiences, such cues have also been called "implicit" (Friedman and Förster 2010).

In the present research, we tested whether reminders of money serve as implicit cues that influence levels of mental construal, as well as related consumer judgments and decisions. Since money and wealth act as an implicit signal that affordances can be met and because such a signal triggers more abstract construals, we propose that the mental activation of money (particularly, a great deal of money), compared to activation of other equally ubiquitous concepts, facilitates abstract construals of actions and objects.

**H1:** Reminders of (a great deal of) money facilitate global, abstract mental construals.

We tested this hypothesis with a series of studies, borrowing various experimental paradigms used in previous research. The first set of studies (experiments 1–3) focuses on the effect of money priming on mental construals in general. Specifically, we tested whether money priming increases the level of action identification, construal of categories, and perceptual tuning. Two further studies (experiments 4 and 5) address downstream implications for judgments that are central in consumer contexts. Specifically, we investigate the effect of money priming on the importance of central as compared to peripheral features in the evaluation of a consumer product (experiment 4) and on the evaluation of brand extensions (experiment 5).

In many cases, reminders of money instigate an appraisal of confidence and strength because money in general is associated with wealth and strength. However, as mentioned above, there are exceptions. That is, depending on the context or on individual differences, money can have a completely different meaning. When thoughts about money remind consumers of unpaid bills or their insufficient financial

resources, for instance, money primes would indicate that needs cannot be met and rather signal problems and challenges. Thus, the meaning of money should be an important moderator of the money-priming effect proposed above. Depending on how money is framed, different associations are activated (either with personal strength or with costs and threats), and consequently, different levels of construal may result. If reminders of money refer to expenditures, such as prices or costs, instead of resources, they may not be effective in causing abstract construals or even trigger concrete (instead of abstract) construals. Likewise, thinking about a little money may not be sufficient in triggering abstract construals.

**H2:** The meaning of the money prime moderates the effect proposed above (hypothesis 1). That is, reminders of expenditure or a little money should trigger more concrete mental representations compared to reminders of money in general.

Such a moderation effect would additionally support the idea that the possible effects of money cues on mental representations are driven by money's implicit signal. We tested this framing prediction in two of the present studies, both for the basic effect (experiment 3) and for consumer judgments (experiment 5).

Importantly, as in previous research on money priming (Vohs et al. 2006; Zhou et al. 2009; see also Vohs, Mead, and Goode 2008), in the present research we treat "money" as a particular economic concept—the idea of money—and not as property. Thus, we do not address the effects of actually possessing money, as has been investigated in research on happiness or spending (Aaker, Rudd, and Mogilner, forthcoming; Mogilner 2010; Srivastava, Locke, and Bartol 2001). In the present research, we investigate whether the mere activation of the concept of money (i.e., thoughts of money) affects consumers' mental construals and judgments.

## MONEY AND ABSTRACT MENTAL CONSTRUALS

Experiments 1–3 addressed the effect of money priming on three indicators of abstract mental construals. Specifically, we tested whether the activation of money instigates a more abstract, high-level construal of actions (experiment 1), whether money priming causes the construal of broader categories (experiment 2), and whether it facilitates more global (vs. local) perceptions (experiment 3). In experiments 1 and 2, associations of money with abundance of resources were primed (i.e., a great deal of money). In experiment 3, both a great deal of money and a little money were primed.

### Experiment 1: Money and Action Identification

In experiment 1, the concept of money (i.e., a great deal of money and wealth) was primed with a sentence-descrambling task (Srull and Wyer 1979). Subsequently, the behavioral identification form (BIF; Vallacher and Wegner 1989)

was administered, which measures the abstractness level on which actions are identified. We proposed that the level of action identification would be higher (i.e., more abstract) for participants in a money-primed condition than for participants in a money-neutral control condition.

*Method.* Sixty-four students of various departments (26 female, 38 male) were randomly assigned (and counterbalanced for gender) to one of two conditions in a single-factor (money priming vs. control group) between-subjects design. Age ranged from 15 to 48 years ( $M = 25.56$ ,  $SD = 5.88$ ). Participants were approached in the university cafeteria at the University of Basel and asked to fill out a questionnaire in exchange for a candy bar. After collecting some demographic data, the priming task was introduced as an international study to test playful methods for learning a language, ostensibly administered for an institute in a different city. Participants were provided with 30 word sets, each consisting of five words. The participants were asked to descramble each set by crossing out one word and writing down a grammatically correct sentence with the remaining four words. In the experimental condition, 20 of the 30 sentences included a word that was associated with a great deal of money or resources (e.g., wealth, expensive, rich, money, cashbox, treasure, bank notes, millionaire, earning, jewels, paying, coins, discounts, price, and credit card). In the control condition, we substituted these words with money-unrelated words (e.g., Italy, loud, thin, industrious, shutter, garden, ozone value, friend, singing, cans, ordering, kiss, gifts, apology, and break). Funneled debriefing at the end of the experiment revealed that no participant was suspicious about the purpose of the priming task.

After the priming task, participants worked on the BIF (Vallacher and Wegner 1989). This test provides participants with 24 actions (e.g., reading; see table 1) and two alternative descriptions of each action. One of the alternatives always offers a description that emphasizes the concrete means by which the action is performed (e.g., following the lines of print). The other alternative is always more abstract and emphasizes the end for which the action is performed (e.g., gaining knowledge). For each action, participants were asked to choose the description that expressed the action better than the other. The proportion of abstract choices served as the measure of abstract thinking. The entire study took about 15 minutes.

*Results and Discussion.* For each participant, we calculated the proportion of abstract action identifications. These proportion scores were submitted to an  $F$ -test with priming as independent variable. As predicted, participants who had been primed with the concept of money had stronger preferences for the abstract action identification ( $M = .53$ ,  $SD = 0.16$ ) than participants in the control group ( $M = .45$ ,  $SD = 0.16$ ;  $F(1, 62) = 4.041$ ,  $p < .05$ ,  $\eta_p^2 = .061$ ).

Table 1 provides additional information about the distribution of choices per item. The finding provides initial support of our hypothesis that reminders of money cause participants to form more abstract construals—in this case, of

**TABLE 1**  
 NUMBER OF PARTICIPANTS WHO PREFERRED THE ABSTRACT ACTION IDENTIFICATION AS A  
 FUNCTION OF PRIMING (EXPERIMENT 1)

Behavioral identification form item	Priming	
	Money ( <i>n</i> = 32)	Control ( <i>n</i> = 32)
Making a list: getting organized vs. writing things down	13	12
Reading a book: gaining knowledge vs. following lines of print	28	26
Washing clothes: removing odors from clothes vs. putting clothes into the machine	24	21
Picking an apple: getting something to eat vs. pulling an apple off a branch	8	8
Chopping down a tree: getting firewood vs. wielding an axe	13	5
Measuring a room for carpeting: getting ready to remodel vs. using a yardstick	21	19
Cleaning the house: restore cleanliness vs. vacuuming the floor	21	13
Painting the room: making the room look fresh vs. applying brush strokes	19	17
Paying the rent: maintaining a place to live vs. paying the bill	5	4
Caring for houseplants: making the room look nice vs. watering plants	5	4
Locking a door: securing the house vs. putting a key in the lock	24	17
Voting: influencing the election vs. marking a ballot	19	17
Climbing a tree: getting a good view vs. holding on to branches	21	18
Filling out a personality test: revealing what you're like vs. answering questions	5	5
Brushing teeth: preventing tooth decay vs. moving a brush around one's mouth	29	19
Taking a test: showing one's knowledge vs. answering questions	14	15
Greeting someone: showing friendliness vs. saying hello	11	10
Resisting temptation: showing moral courage vs. saying "no"	16	12
Eating: getting nutrition vs. chewing and swallowing	29	25
Growing a garden: getting fresh vegetables vs. planting seeds	16	11
Driving by car: traveling to a destination vs. steering and changing gears	21	23
Having cavity filled: protecting the teeth vs. going to the dentist	10	6
Talking to a child: teaching a child something vs. using simple words	14	15
Pushing a doorbell: seeing if someone is home vs. pressing a button	23	24

events. Note that most words included in the descrambling task were related to abundance of money or wealth. As a consequence, thoughts about money as a resource were primed, acting as implicit signal that affordances can be met, which in turn may have triggered more abstract construals.

## Experiment 2: Money and Category Breadth

Experiment 2 extended the findings of experiment 1 by a different manipulation and a different measure of construal, namely, the inclusiveness or breadth of categories. When events are represented abstractly, consumers construe the event in terms of global categories. That is, they build fewer and broader categories when asked to classify diverse objects into as many categories as they deem appropriate (Liberman, Sagristano, and Trope 2002, study 1). Accordingly, we assumed that participants who had been primed with money would build larger and fewer categories of diverse objects of a list than participants in a control group when asked to classify the objects into self-chosen categories.

*Method.* Forty-one students of various majors were approached in the university cafeteria at the University of Basel and took part in this study in exchange for a coffee voucher. They were randomly assigned to one of the two conditions (priming: money vs. control). Two participants were excluded from the analyses because they failed to solve the task correctly (i.e., they failed to classify three or more

words). The ages of the remaining 39 participants (25 female, 14 male) ranged between 19 and 29 years ( $M = 23.18$ ,  $SD = 2.96$ ). As dependent measure we counted the number of categories into which participants classified the objects.

Participants were introduced to a study on organizing leisure activities and were asked to imagine that they were going on a camping trip over the weekend. They received a list of 37 camping-related objects. In the money condition, this list contained six objects that were related to money (i.e., purse, credit card, cash, traveler's checks, coins, and valuables). In the control group the money-related items were replaced by articles of clothing (i.e., shirts, sweater, coat, socks, pants, and underwear). The other 31 objects were unrelated to money in both conditions (i.e., tent, sneakers, soap, brush, matches, gloves, bathing suit, fishing pole, hat, snorkel, raft, dog, boots, chocolate, blanket, flashlight, sunglasses, shoes, knife, cigarettes, rope, bread, pillow, canteen, ax, toothbrush, beer, sleeping bag, insect repellent, potato chips, and shovel). Participants were asked to place the items that belonged together into groups by writing them on the right of the list and circling them. They were instructed to classify every item into nonoverlapping groups. To control for the possibility that the activation of money may elicit positive mood, which in turn leads to more global thinking (Gasper and Clore 2002), we also assessed mood by two items that were to be answered on 7-point scales that ranged from "very bad" to "very good," and from "very

sad" to "very happy," respectively. The entire study took about 10 minutes.

*Results and Discussion.* Assuming that applying broader, more abstract categorization would result in fewer categories, the number of categories was used as the dependent variable. Consistent with our prediction, a *t*-test for independent samples (priming: money vs. control) revealed that people used significantly fewer categories to classify the objects when the list contained money-related items ( $M = 7.50$ ,  $SD = 1.70$ ) than when the list did not contain money-related items ( $M = 8.95$ ,  $SD = 1.96$ ;  $t(37) = 2.468$ ,  $p = .018$ ,  $\eta_p^2 = .14$ ). Mood was not affected by priming ( $p > .17$ ).

The finding that items were classified into fewer and broader categories when money-related items were in the list is consistent with our hypothesis that money facilitates abstract mental construals. When primed with money, participants construed the camping event in terms of relatively high level, more inclusive categories compared with the control condition.

Note that using clothing articles as control items establishes a rather conservative test of our hypothesis: money items are clearly distinct from the other items, but clothing articles are not (i.e., they possibly share a category with hat and bathing suit). Therefore, *ceteris paribus*, we would expect participants to build fewer categories in the control condition if money would not trigger abstract representations. On the other hand, one might argue that participants started breaking down the large clothing category into finer units as they realized how large the clothing category was, resulting in more categories in the control condition, which is an alternative explanation of the result in this study. Although the alternative explanation is possible in principle, in combination with the finding of experiment 1, an interpretation favoring money as trigger of abstract construals seems more likely. Nevertheless, to rule out this explanation, we tested the effect with a different manipulation and a different (i.e., response time-based) measure of construal level in experiment 3.

### Experiment 3: Money and Perceptual Processing

In experiments 1 and 2, we measured abstract construals on a conceptual level (i.e., by level of action identification and by breadth of categories). In experiment 3, we sought to replicate the finding with a perceptual dependent variable. We used a letter task by Navon (1977) to measure whether participants focus more on global aspects of figures versus specific aspects of figures when primed with money. In this task (see also Förster et al. 2006), participants are presented with a series of composite stimuli, each comprising a single large letter composed of small letters. Participants were asked to respond as quickly as possible to a target letter (e.g., *H*) that appeared either at the global level (e.g., an *H* composed of small *L*'s) or at the local level (e.g., an *L* composed of small *H*'s). If thoughts of money trigger abstract thinking, participants primed with money should be

faster in responding to global targets than to local targets, compared to the control group.

Additionally, we primed a little money in this experiment in order to test our second hypothesis. We assumed that participants primed with a little money should show weaker priming effects than participants primed with a lot of money because a little money does not automatically signal that affordances in one's environment can be met. Moreover, we included two different control conditions to rule out the possibility that the effect of money priming on abstract construals was due to specific control conditions in the previous experiments.

*Method.* Fifty-six undergraduate psychology students from the University of Basel (47 female, 9 male) took part in a study on "reaction times" in exchange for course credit. Age ranged from 18 to 26 years ( $M = 20.75$ ,  $SD = 1.46$ ). Participants were randomly assigned to one of the four priming conditions (i.e., priming with pictures of bank notes, small coins, flowers, or no priming). As mentioned above, we used two control groups (i.e., a flower-picture group and a no-priming group) in order to rule out the possibility that the effect in experiments 1 and 2 could be attributed to the specific control group in these studies instead of to the money-priming group. Additionally, using pictures of flowers that are evaluated as positive as pictures of money could rule out a positivity effect as explanation of our findings.

On individual monitors, participants went through six practice trials without any pictures and then 48 experimental trials. Each experimental trial began with a fixation cross ("+"), which appeared for 500 milliseconds in the center of the screen. Next, a photograph appeared on the screen for 4 seconds. Depending on the experimental condition, this photograph showed bank notes, small coins, or flowers. For a fourth group of participants no pictures were presented. In the three picture conditions we used a set of four different pictures (i.e., four different photographs of bank notes, four different photographs of small coins, or four different photographs of flowers), from which one was randomly selected for each trial. After the picture, another 500-millisecond fixation cross appeared, directly followed by a letter stimulus that was displayed until the participant responded. If there was no response within 3 seconds, the next trial began. The intertrial interval was 2 seconds.

The letter stimuli were large letters composed of smaller letters (e.g., a large *H* composed of small *L*'s, or a large *F* composed of small *H*'s). Participants were instructed to indicate as quickly as possible whether the whole stimulus contained the letter *T* or the letter *H*, independently of whether this letter appeared as a large or as a small letter. Participants did this by pressing a respectively marked key (*T* or *H*) on the keyboard. Each stimulus contained either a *T* or an *H* but never both letters. Global targets were those in which the decision-relevant letters (i.e., a *T* or an *H*) were composed of smaller irrelevant letters (i.e., *L*'s or *F*'s). Local targets were those in which an irrelevant letter (i.e., an *L* or an *F*) was composed of smaller relevant letters (i.e., *T*'s or *H*'s). Faster responses to global than local targets indi-

cated a global (i.e., abstract) focus, whereas faster responses to local than global targets indicated a local (i.e., concrete) focus. Twenty-four local and 24 global targets were presented across six blocks, each of which included the four possible global and the four possible local combinations from the letters *TIH* and *LIF* in random order. Additionally, as in experiment 2, participants' moods were measured.

**Results and Discussion.** Response times to the letters were logarithmically transformed. Trials with incorrect responses (3.58% of all trials) and trials in which the response time was more than 3 standard deviations from the mean for that stimulus (1.04% of all trials) were excluded from the analyses because extreme outliers could possibly bias the pattern of results (Fazio 1990). The number of exclusions did not vary by condition. We averaged each participant's response times for each target type (global vs. local) across blocks, target letters (*T* and *H*), and irrelevant letters (*L* and *F*).

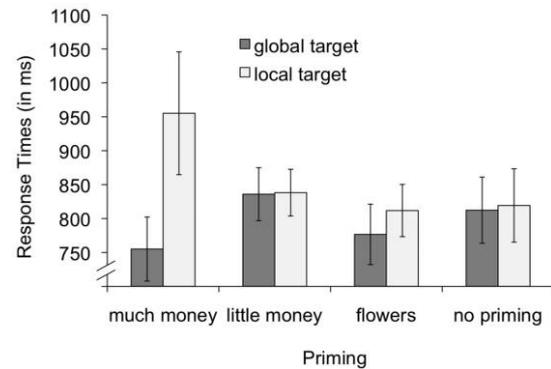
A 4 (priming: a great deal of money vs. a little money vs. flowers vs. no priming)  $\times$  2 (target type: local vs. global) ANOVA with repeated measurement on the second factor revealed a main effect of the target type ( $F(1, 52) = 6.728$ ,  $p = .012$ ,  $\eta_p^2 = .115$ ), indicating that participants responded faster to global targets ( $M = 794.99$  ms,  $SD = 176.69$  ms) than to local targets ( $M = 856.13$  ms,  $SD = 221.42$  ms). This effect, however, was qualified by a significant interaction between target type and priming ( $F(3, 52) = 2.995$ ,  $p = .039$ ,  $\eta_p^2 = .147$ ; see fig. 1). The advantage of global targets over local targets occurred particularly when participants saw photographs of a great deal of money (i.e., bank notes;  $M_{\text{global}} = 755$  ms,  $SD = 177$  vs.  $M_{\text{local}} = 955$  ms,  $SD = 339$ ;  $F(1, 13) = 5.912$ ,  $p = .030$ ,  $\eta_p^2 = .313$ , for the simple effect). Participants responded not significantly faster to global than to local targets when they saw photographs of a little money (i.e., small coins;  $M_{\text{global}} = 836$  ms,  $SD = 146$  vs.  $M_{\text{local}} = 838$  ms,  $SD = 129$ ;  $F < 1$ , NS), of flowers ( $M_{\text{global}} = 777$  ms,  $SD = 167$  vs.  $M_{\text{local}} = 812$  ms,  $SD = 144$ ;  $F(1, 13) = 1.470$ , NS), or when they saw no pictures between the letter trials ( $M_{\text{global}} = 812$  ms,  $SD = 183$  vs.  $M_{\text{local}} = 819$  ms,  $SD = 202$ ;  $F < 1$ , NS).

The effects remained significant when analyzing the data with a 4 (priming: a great deal of money vs. a little money vs. flowers vs. no priming)  $\times$  2 (target type: local vs. global)  $\times$  2 (target letter: *H* vs. *T*)  $\times$  2 (irrelevant letter: *F* vs. *L*)  $\times$  6 (blocks) ANOVA with repeated measurements on all but the first factor, and including all reaction times (i.e., also extreme reaction times and reaction times for incorrect responses;  $F(1, 52) = 6.146$ ,  $p = .016$ ,  $\eta_p^2 = .106$  for the main effect of target type;  $F(3, 52) = 3.004$ ,  $p = .039$ ,  $\eta_p^2 = .148$  for the interaction between target type and priming). As in experiment 2, mood was not affected by the manipulation ( $F < 1$ , NS).

The results of experiment 3 are consistent with the hypothesis that reminders of money trigger abstract mental construals as indicated by the facilitated processing of global targets. Priming with a little money had no such effect, which is a first indication that a little money is not sufficient to signal that affordances in one's environment can be met. Actually,

FIGURE 1

AVERAGE RESPONSE TIMES (IN MILLISECONDS) AS A FUNCTION OF PRIMING AND GLOBAL VERSUS LOCAL TRIALS (EXPERIMENT 3)



NOTE.—Error bars indicate  $\pm 1$  SE.

coins may even remind people of daily expenses—such as buying a can of soda or paying for bus fare, which are related to expenditures. Following this, we investigated the effect of more direct expenditure primes in experiment 5 (i.e., price tags). In sum, the findings of experiments 1–3 demonstrate that reminders of (a sufficient amount of) money trigger abstract construals both conceptually and perceptually.

## CONSEQUENCES OF MONEY PRIMING FOR CONSUMER JUDGMENTS

Although money as a very common economic concept is interesting per se, thinking about money may even have downstream effects in consumer contexts. In experiments 4 and 5, we therefore administered two different dependent variables that are directly relevant in a broad spectrum of consumer judgments and purchase decisions. We chose two very diverse variables (i.e., feature weighting in product evaluations, and evaluations of brand extensions) in order to demonstrate the broad generalizability of the money-priming effect and to show that money priming has implications in different consumer-related areas.

### Experiment 4: Money and Feature Weighting in Evaluations

Trope and Liberman (2000) suggested that the level of mental construal affects choice and preferences. More specifically, an abstract mental construal enhances the importance of primary, central features of a product relative to its secondary, peripheral features. In experiment 4, we tested whether reminders of money would comparably increase the impact of central aspects (i.e., the sound) compared with peripheral aspects (i.e., the clock) of a product (i.e., a radio).

In line with our hypothesis that money priming triggers abstract construals, money priming should lead to a stronger preference for products with favorable central and unfavorable peripheral features over products with favorable peripheral and unfavorable central features, compared to control groups.

**Method.** One hundred thirty-seven participants (92 female, 45 male) were recruited online via a weblist and within the University of Heidelberg to take part in a study on consumer judgments. The sample mainly consisted of students ( $n = 132$ ), and the age ranged from 18 to 54 years ( $M = 22.96$ ,  $SD = 5.61$ ). Participants were randomly assigned to a  $3$  (prime type: money vs. music-control vs. shopping-control)  $\times 2$  (feature valence: central feature-positive/peripheral feature-negative vs. central feature-negative/peripheral feature-positive) between-participants design.

Participants first responded to demographic questions. They were then exposed to one of three questions that served as primes at the beginning of the study. In the money-prime condition, participants were presented with a picture of credit cards and a picture of cash. Additionally, to more strongly activate the concept of money, participants were asked to indicate which of the two options they preferred as the medium of exchange. In the music-control condition, participants were exposed to a picture of a radio and a picture of CDs. Participants in this control condition were asked to indicate which of the two they preferred when listening to music. This control condition was intended as a very strict test of the money-prime effect because, if anything, the music-control condition should highlight the importance of the central feature (i.e., the sound quality of a radio) and should thus point in the same direction as the money prime. Additionally, we included a second control condition in which

participants were exposed to the picture of a grocery store and the picture of a laptop. These participants were asked to indicate whether they preferred going shopping online or in stores. This second control condition had the potential of activating a consumption context without a direct reference to money.

After being exposed to the primes, participants were asked to imagine the purchase of a radio, comparable to the procedure by Trope and Liberman (2000, study 3). Participants read one of two versions of this scenario in which either the central feature was positive and the peripheral feature negative, or vice versa. The central feature-positive/peripheral feature-negative version read as follows:

Imagine the following situation: You want to buy a radio, a simple one to listen to music and news when you get up and during breakfast. When you return with your new radio, it fits where you wanted it to and has excellent sound. However, the built-in clock is pretty useless. The display is so small that you can't even read the time when you are right next to it.

The central feature-negative/peripheral feature-positive version read as follows:

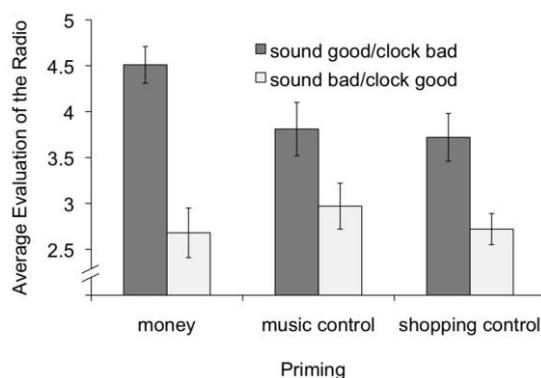
Imagine the following situation: You want to buy a radio, a simple one to listen to music and news when you get up and during breakfast. When you return with your new radio, the sound is very bad in the place you wanted to put it. For good reception, only an inconvenient place remains. However, the built-in clock is pretty useful. The display is pretty large, so you can read the time from anywhere in the kitchen.

Directly afterward, participants indicated their evaluation of the purchase on four 7-point scales (Cronbach's  $\alpha = 0.88$ ). We used two items asking for satisfaction (i.e., "with this purchase I would be very satisfied" and "with this purchase I would be very happy"), one item asking for regret ("I would regret this purchase"), and one item asking for the subjective value concerning the purchase ("what I would have spent for this radio now seems like a lot to me"). On average, participants spent close to 2 minutes working on the experiment ( $M = 1.93$  minutes,  $SD = 0.79$  minutes).

**Results and Discussion.** The mean evaluations were submitted to a two-factor ANOVA with the factors "prime type" (money vs. music-control vs. shopping-control) and "feature valence" (primary feature-positive/secondary feature-negative vs. primary feature-negative/secondary feature-positive). The analysis revealed a main effect of feature valence, indicating a preference for the radio with the positive central feature (i.e., the good sound;  $M = 4.02$ ,  $SD = 1.12$ ) as compared to the radio with the negative central feature ( $M = 2.80$ ,  $SD = 1.11$ ,  $F(1, 131) = 38.70$ ,  $p < .001$ ,  $\eta_p^2 = .23$ ). Additionally, this main effect was qualified by a marginally significant interaction between prime type and feature valence ( $F(2, 76) = 3.18$ ,  $p = .092$ ,  $\eta_p^2 = .04$ ), indicating that the feature valence had a different impact in different conditions. As visible in figure 2, feature valence had a stronger impact on evaluations when participants had been exposed to pictures of money than when they had been

FIGURE 2

AVERAGE PRODUCT EVALUATION AS A FUNCTION OF THE FEATURE VALENCE AND PRIMING (EXPERIMENT 4)



NOTE.—The scale ranged from 1 to 7; higher values indicate better, more favorable evaluations ( $\pm 1$  SE).

exposed to music-related or shopping-related pictures. In order to directly test our hypothesis of the predicted money-priming effect, we compared the difference between the two feature-valence conditions in the money-prime condition with the difference in the control conditions, using a planned contrast (see Rosnow and Rosenthal 1989). The contrast weights were set at +0.5 for the central feature-positive and at -0.5 for the central feature-negative conditions for the two control groups, and at -1 for the central feature-positive and +1 for the central feature-negative conditions for the money-prime group. The analysis revealed that the relative preference for the good sound/bad clock radio over the bad sound/good clock radio was larger in the money-prime condition than in the control conditions ( $F(5, 136) = 9.20, p < .001$ ). This accentuating effect of money priming is also visible in the effect size of the feature-valence manipulation being largest after a money prime ( $M_{\text{sound good/clock bad}} = 4.51, SD = 0.95$  vs.  $M_{\text{sound bad/clock good}} = 2.68, SD = 1.23; F(1, 42) = 30.83, p < .001, \eta_p^2 = .42$ ) as compared to the music-related control conditions ( $M_{\text{sound good/clock bad}} = 3.81, SD = 1.32$  vs.  $M_{\text{sound bad/clock good}} = 2.97, SD = 1.25; F(1, 45) = 4.96, p < .05, \eta_p^2 = .10$ ) or shopping-related control conditions ( $M_{\text{sound good/clock bad}} = 3.72, SD = 1.23$  vs.  $M_{\text{sound bad/clock good}} = 2.72, SD = 0.83; F(1, 44) = 10.44, p < .05, \eta_p^2 = .19$ ). The main effect of the prime type was not significant ( $F(2, 131) = 1.22, NS$ ).

These findings support the hypothesis that the money prime, relative to the control primes, increased the impact of relevant, central information, which can be expected when participants represent products more abstractly. It may be argued that the money prime in experiment 4 (i.e., money and credit card pictures with the question, "what do you prefer as the medium of exchange?") is related more to expenditures rather than to money. However, we think that this is rather unlikely for the following reasons: (1) the question did not directly refer to losing money and (2) the question makes salient that one *gets* something for money ("exchange") at the same time. However, to test the difference of money versus expenditure primes more directly, we primed these concepts less ambiguously in experiment 5.

### Experiment 5: Money and the Evaluation of Brand Extensions

So far our studies have shown that money priming elicits more abstract construals, with consequences for weighting of product features (experiment 4). In experiment 5, we test whether money priming influences the evaluation of brand extensions. Previous research has demonstrated that abstract representations foster assimilation of target and context stimuli (Förster, Liberman, and Kuschel 2008). Building on the inclusion/exclusion model (Bless and Schwarz 2010; Schwarz and Bless 1992) that suggests that inclusion of target and context in one category leads to assimilation, whereas exclusion leads to contrast, Förster and colleagues (2008) argued that abstract (vs. concrete) mental construals facilitate inclusion and thereby assimilation. Accordingly, abstract

construals promote inclusion of a brand extension into the parent brand and thus assimilation of the evaluations of extension and parent brand (Lu and Nayakankuppam 2010).

On the basis of this finding and our previous studies, we proposed that reminders of money increase assimilation of a brand extension to the brand beliefs compared to a control condition. Moreover, according to hypothesis 2, we also proposed that primes of costs or prices would instigate comparably more concrete construals and therefore lead to less assimilation than reminders of money in general. To test our assumption, we presented fictitious extensions for brands with a favorable or an unfavorable image regarding quality. Either pictures of money, prices, or neutral objects were presented. We expected that brand extensions were rated more favorably on quality dimensions when they pertain to a high-quality brand than when they pertain to a low-quality brand. The difference is particularly pronounced when money had been primed but is less pronounced when prices or neutral objects had been primed.

*Method.* Ninety participants (51 female, 39 male; age range: 18–40 years,  $M = 22.96, SD = 3.70$ ) were recruited in the university cafeteria at the University of Basel and were randomly assigned to a 3 (prime type: money vs. control vs. prices)  $\times$  2 (brochure control factor: brochure A vs. brochure B; see the next paragraph) between-participants design. Quality of parent brand was manipulated within participants.

Two ad versions were created for each of six product categories. In one version the product was presented as an extension of a high-quality brand and in the other version as an extension of a low-quality brand. The two ad versions only differed in the brand name and depicted brand logo (e.g., Kia vs. Mercedes). Each version was assigned to one of two brochures (see table 2). In one brochure (brochure A) the extension products—gourmet magazine, perfume, and electronic notepad—were presented as extensions of high-quality brands, and the other extension products—camping vans, videophones, and drinking glasses—were presented as extensions of low-quality brands. The reverse was realized in the second brochure (brochure B). Participants received either brochure A or B, which constituted a control factor in our design. The high-quality versus low-quality brands had been selected according to a pretest. The order of the categories was held constant for all participants (see table 2).

Participants were asked to rate each extension on several 7-point rating scales for expected quality. The rated dimensions differed depending on the product category (see table 2 for the respective scales). The left page in the booklet presented the ad. The respective rating scales were printed on the right page. The instructions on the first page were headed by the title "Consumer Study," and next to the title either money bills, price tags, or geometrical figures were printed in color. The same depictions of money bills, price tags, or geometrical figures were repeated on top of each page containing the rating scales.

Each participant received one of the two brochures containing the manipulation, stimuli, and rating scales. After

**TABLE 2**  
OVERVIEW OF THE MATERIALS USED IN EXPERIMENT 5

Category of		Control factor		Quality measures (1 = disagree; 7 = agree)
		Brochure A: high-quality brands 1, 3, 5; low-quality brands 2, 4, 6	Brochure B: low-quality brands 1, 3, 5; high-quality brands 2, 4, 6	
Brand extension	Parent band			
Gourmet magazine	Newspapers	High: NZZ	Low: Blick	The restaurant reviews are reliable. The magazine features rather sophisticated recipes. The magazine caters to an up-market audience.
Camping vans	Cars	Low: Kia	High: Mercedes	The camping van is luxurious. The camping van is technically mature. The camping van is high in quality.
Perfume	Fashion labels	High: H&M	Low: Orsay	The perfume smells obtrusively (reverse coding). The perfume has a pleasant scent.
Videophone	Internet providers	Low: Cablecom	High: BlueWin	The phone is technologically mature. The phone guarantees problem-free functioning. The phone guarantees good service.
Electronic notepad	Writing instruments	High: Montblanc	Low: Pelikan	The phone is highly reliable. The notepad is of high quality. The notepad is made of precious materials. The notepad has an attractive design.
Drinking glasses	Bottled water	Low: Bonaqua	High: San Pellegrino	The glasses are made of first-class material. The glasses look elegant. The glasses look stylish. The glasses have a classy design.

NOTE.—The products were presented in order from top to bottom.

rating the product extensions, participants also rated the respective parent brands (1 = negative, 7 = positive) as a manipulation check.

## Results and Discussion

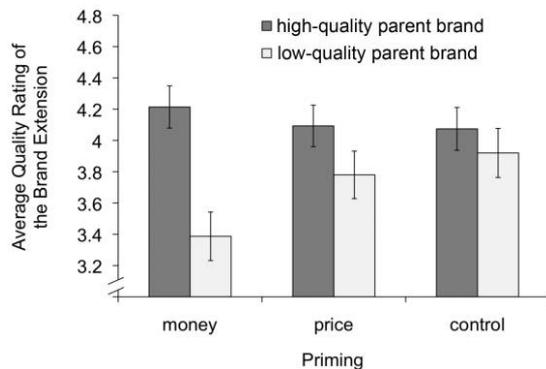
*Manipulation Check.* One participant did not complete the brand ratings, leaving 89 participants in this analysis. In order to check whether the brand-quality manipulation was successful, the ratings of the respective parent brands were averaged and analyzed in a 2 (brand quality: high vs. low)  $\times$  2 (brochure control factor: A vs. B) factorial ANOVA with the first factor as within-participants factor and the second factor as between-participants factor. Only the main effect of brand quality was highly significant ( $F(1, 86) = 180.549, p < .001, \eta_p^2 = .677$ ); high-quality brands were evaluated more positively than low-quality brands ( $M = 5.13, SD = 0.87$  vs.  $M = 3.61, SD = 0.94$ ). This effect was independent of the brochure control factor ( $F < 1$ ).

Separate analyses for each priming condition also revealed that the manipulation of brand quality was equally successful in all three priming conditions (all  $p < .001$ ).

*Evaluation of Brand Extensions.* Ratings for each extension were averaged into one score (Cronbach's  $\alpha$  between .61 and .81). These compound scores were then analyzed in a mixed-factors ANOVA with prime and brochure control factor as between-participant factors and brand quality as within-participant factor. The three-way interaction was not significant ( $F < 1$ ). Overall, extensions from high-quality brands were rated as superior in quality ( $M = 4.13, SD = 0.73$ ) than extensions from low-quality brands ( $M = 3.69, SD = 0.87; F(1, 84) = 17.114, p = .001, \eta_p^2 = .169$ ). As expected, this main effect of brand quality was qualified by the primes ( $F(2, 84) = 3.703, p = .029, \eta_p^2 = .081$ ; see fig. 3). Participants who were primed with money evaluated extensions from high-quality brands more positively and those of low-quality brands more negatively compared to

FIGURE 3

AVERAGE QUALITY RATING AS A FUNCTION OF QUALITY OF PARENT BRAND AND PRIMING (EXPERIMENT 5)



NOTE.—The scale ranged from 1 to 7; higher values indicate more favorable ratings ( $\pm 1$  SE).

participants primed with price ( $F(1, 57) = 4.184, p < .045, \eta_p^2 = .068$  for the two-way interaction) and compared to a control group ( $F(1, 55) = 8.164, p < .006, \eta_p^2 = .129$  for the two-way interaction). Further analysis showed that brand quality only had a large and significant effect for money priming (all  $M = 4.21$  vs.  $3.39$ ; all  $SD = 0.65$  and  $.76$ ;  $F(1, 28) = 36.796, p < .001, \eta_p^2 = .568$ ) but not for price priming (all  $M = 4.09$  vs.  $3.78$ ; all  $SD = 0.83$  and  $0.85$ ;  $F(1, 29) = 2.406, p > .13$ ) or the control group (all  $M = 4.07$  vs.  $3.92$ ; all  $SD = 0.71$  and  $0.93$ ;  $F < 1$ ). The difference between the average evaluations of the low-quality brand extensions and the high-quality brand extensions did not differ between the two brochures ( $F < 1$  for the brand quality by brochure interaction).

The results demonstrate that participants were more likely to base their evaluation of the brand extensions on their beliefs about the parent brand when participants had been primed with money than when they had been primed with price or neutral objects. The same product was rated more favorably when it was presented as an extension from a brand enjoying a positive image compared to a brand with a less positive image. Presumably, being reminded of money triggered abstract construals of the stimuli as shown in experiments 1–3. This in turn promoted inclusion of the extension into the mental representation of the brand and thereby allowed the transfer of (positive or negative) brand beliefs (Bless and Greifeneder 2009). Reminders of price, in contrast, presumably instigated a rather concrete representation that undermined reliance on the brand image.

## GENERAL DISCUSSION

Across five experiments, we tested the hypothesis that the activation of the concept money—compared with the acti-

vation of equally prevalent control concepts—triggers abstract mental construals. The findings of experiments 1–3 demonstrated that participants who were primed with money identified behaviors on a higher level of abstractness, were more inclusive in their categorization, and processed visual stimuli on a more global level than participants of respective control groups. Experiments 4 and 5 addressed the relevance of money priming for consumer related judgments and choices. In experiment 4, participants who were asked a question that directly involved money weighted relevant and central product information higher than participants who were asked questions that were unrelated to money. Experiment 5 showed that money priming led to assimilation effects in the evaluation of brand extensions.

Interestingly, the effect of money priming on abstract mental construals was eliminated when participants were primed with a little money (experiment 3). This finding indicates that a certain amount of money needs to be primed in order to create the effect. Apparently, a little money is not sufficient as a cue that signals resources to meet challenges. Experiment 5 provided further support for this hypothesis by showing that the way in which money is framed makes a difference; participants who were primed with prices assimilated less to the parent brand than participants who were primed with money.

Using a variety of abstractness measures as well as multiple methods of priming the concept of money, we found consistent evidence that merely activating money changed people's mental representations. In contrast to money, various equally prevalent control primes, such as flowers, clothes, music, geometric figures, and a mixture of diverse concepts, did not have comparable effects. In addition, price primes triggered comparably more concrete mental representations than money primes.

This latter finding is particularly interesting because it suggests that the effect of money priming on the level of construal may be moderated by several factors. Depending on the context or on individual differences, money can have different meanings. That is, thoughts of money can be associated with personal strength or with costs and threats in different situations and across different consumers. It is very likely that such different representations of money change the effects. For instance, the financial situation of a participant might possibly influence what thoughts are triggered by money. When money is short, on the one hand, one must think carefully about what to buy and what not to buy; thoughts of money may rather trigger weakness instead of confidence and thus may not be able to induce abstract mental construals. Wealth and luxury, on the other hand, is related to abstract thinking (Hansen and Wänke 2011). Future research may further explore the effects of the different associations money may provoke.

Interestingly, recent research found that consumer preferences are less consistent when prices are included in product decisions (Lee, Bertini, and Ariely 2010). Reminders of the “pain of paying” may lead consumers to represent the products more concretely, resulting in greater preference

inconsistencies (which are related to concrete construals; Ledgerwood, Trope, and Liberman 2010). According to our findings, we would predict that money and wealth primes (instead of price primes) would cause more consistent product decisions. Accordingly, Lee and colleagues did not find inconsistent preferences after price priming for consumers who regard high prices as a quality feature and who thus are not reminded of “pain of paying” after price priming (Lee et al. 2010, experiment 5b).

Our finding that reminders of (plenty of) money facilitate abstract mental construals may also contribute to understanding the effects of money priming on self-sufficiency (Vohs et al. 2006) and an increased focus on the self (Reutner and Wänke, forthcoming). Previous research has shown that abstract construals increase perceived social distance (Liberman and Förster 2009). Thus, money priming may increase a perception of social distance by triggering abstract construals, which may partly contribute to the effect that money priming causes participants to distance themselves from other people by taking a self-sufficient orientation, sitting farther away from others, and caring more about themselves than about others. Alternatively, because the idea of money reminds people of sufficient resources to master their environment (Boucher and Kofos 2012; Zhou et al. 2009) and because greater resources reduce the need to rely on other people, reminders of money may lead to greater self-sufficiency. In principle, both processes can occur in parallel. Future research may further explore why money priming increases self-sufficiency.

We did not find that money priming affected participants' mood, which indicates that reminders of money may not have activated conscious affective experience. Although our studies were not primarily intended to test mood as a mediator of effects of money priming, for several reasons our results do not provide evidence in favor of conscious feelings as a possible account. First, in some of our studies, participants in the control condition were also provided with stimuli that may enhance mood, such as the expectation of a camping trip in experiment 2, or pictures of flowers in experiment 3. Second, as mentioned above, mood was measured in many of our experiments. The results showed that mood was not affected by priming money. Finally, when controlling for mood as a covariate in those experiments in which mood was measured, the effect of money priming on abstract construal remained unchanged.

At present, research on abstract versus concrete mental construals is accumulating at a fast rate (e.g., Eyal et al. 2009; Hansen and Trope, forthcoming; Hansen and Wänke 2010; Liberman and Trope 2008; Liberman, Trope, and Stephan 2007; Trope and Liberman 2003, 2010; Trope et al. 2007). The present research adds money as one consumption-related factor that triggers abstract construals. In combination, recent research findings and the effects of money priming leads us to believe that there may be other outcomes that money can elicit. For instance, abstract thinking has been demonstrated to increase self-control (Fujita et al. 2006). Participants who had been primed with a high-

level, abstract construal orientation squeezed a handgrip (ostensibly to receive self-relevant information) for a longer duration than participants who had been primed with a low-level construal orientation. Given that money priming facilitates abstract construals, it might be possible that money priming also enhances the ability to practice self-control. Support for this idea comes from studies demonstrating that the concept of money can buffer ego-depletion effects: typically, participants who complete an initial task that depletes self-control resources show lower self-control in a second task that also requires self-control. This effect, however, disappears when people are reminded of money, suggesting that money priming enhances self-control resources (Boucher and Kofos 2012).

Impatience is related to self-control in consumer contexts. It has been shown that consumers prefer smaller but sooner rewards over larger but later rewards, especially when the rewards are temporally proximal (Frederick, Loewenstein, and O'Donoghue 2002; Thaler 1981). For example, consumers prefer one apple today over two apples tomorrow, but they prefer two apples in 31 days over one apple in 30 days (Malkoc and Zauberan 2006; Thaler 1981). That is, preference reverses as the delayed choice draws nearer (i.e., the “present bias”). Interestingly, because the present bias is partly driven by a more concrete and more contextual representation of near decisions, an abstract processing mind-set evoked in an unrelated task decreases the extent of contextual thinking and thus attenuates the present bias in subsequent decisions (Malkoc, Zauberan, and Bettman 2010). As reminders of money facilitate abstract information processing, merely thinking of money in a previous situation might also reduce the extent of present bias in subsequent decisions. One may argue that much of the evidence about temporal discounting and the present bias comes from decisions involving money. Here, additional money priming may not have an effect. However, money priming in a previous task might be sufficient to reduce the present bias for decisions that involve resources other than money.

The present findings demonstrate that money primes affect consumers' evaluation of products on the basis of product descriptions. Additionally, previous research has shown that increasing the experiential contact with a product triggers more concrete mental construals of a product and increases preferences for products with positive peripheral features, such as products that are easy to use relative to those that are more desirable but difficult to use (Hamilton and Thompson 2007). Because sometimes consumers do not focus enough on peripheral features (relative to central features) when making a product choice, they are often dissatisfied when they use the product later (Hamilton and Thompson 2007). If primes of money lead to even more abstract representations of a product in a choice situation, they may accentuate this gap in consumers' preferences and contribute to less-satisfying product experiences later. In contrast, when thinking about money during product experience, more central features (which were also important

in the choice situation) may be part of the representation of the product, thereby reducing the preference gap.

It has been found that the temporal distance of the attitude of an object systematically influences the strength of particular persuasive appeals (Fujita et al. 2008). Similarly, we suggest that money priming causes people to preferentially attend to arguments that advertise products with its primary features (i.e., those that focus on aspects of desirability of the object, such as taste or quality) compared to arguments that advertise products with its secondary features (i.e., those that focus on aspects of feasibility, such as availability). Thus, advertisements that feature desirability-related arguments should be more effective than feasibility-related arguments when consumers are reminded of money.

These and other hypotheses should be tested in further research. Given that money and symbols of money are omnipresent and conspicuous in our daily consumer environment, it is important to note their psychological implications. The current research adds a piece to this research topic, which we are only beginning to explore.

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