

Money and Relationships: When and Why Thinking About Money Leads People
to Approach Others

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Abstract

Monetary reminders have been shown to discourage people from affiliating with others. We proposed such an effect can be reversed when others are instrumental to people's goals. Results from four experiments converged to support our proposition. We found that thinking about money increased people's focus on the instrumentality aspects of others (Experiment 1). In a goal pursuit context, monetary reminders increased people's tendency to approach others who were instrumental to achieving their goals (Experiment 2). The effect of money prime on approaching others was dismissed or reversed when people were highly competent in achieving the goal themselves (Experiment 3) and when the instrumentality of others was ambiguous (Experiment 4). Moreover, these effects were driven by the perceived instrumentality of others (Experiments 2–4). Taken together, our findings suggest that thinking about money leads to an instrumentality orientation in social interactions, which changes how people view relationships and how they interact with others.

Keywords: money, instrumentality, market-pricing mindset, interpersonal relationship

Money and Relationships: When and Why Thinking About Money

Leads People to Approach Others

Money has a ubiquitous presence in modern commercial societies, shaping the way people view themselves and influencing how they behave. It is unsurprising that money is linked to various positive psychological outcomes. Having more money is found to be associated with more frequent positive emotions and less frequent negative emotions than having less money (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2006), and spending money on others can promote people's happiness (Dunn, Aknin, & Norton, 2008). However, many recent studies have been in line with the notion that "money is the root of all evil." The desire for money can be in conflict with communal values (Burroughs & Rindfleisch, 2002) and relates negatively to relationship quality (Kasser & Ryan, 2001). Disagreement on how to spend money is a predictor of diminished marital well-being (Rick, Small, & Finkel, 2010).

More relevant to this research, even the mere thought of money can cause sweeping changes in interpersonal beliefs and behaviors (Vohs, Mead, & Goode, 2006, 2008). For instance, thinking about money decreases helping behaviors (Pfeffer & DeVoe, 2009; Vohs et al., 2006, 2008), interferes with empathy toward others (Molinsky, Grant, & Margolis, 2012), and increases unethical behaviors (Kouchaki, Smith-Crowe, Brief, & Sousa, 2013). To explain the effects of money at intrapersonal and interpersonal levels, researchers have proposed that money acts as a universal medium of exchange in a global economy. The mere reminder of money will activate a market-pricing mode, which is a relational mode wherein people use calculations of costs and benefits to organize social interactions such that people consider what they may receive from a given relationship (Vohs et al., 2006, 2008).

Relationships can be demanding. To maintain a relationship, people need to continually invest their time, energy, and resources into it (Rusbult, Olsen, Davis, & Hannon, 2004). However, interpersonal relationships can also be beneficial to people and critical for

their personal goal pursuits. For example, affiliating with others has been seen as an innate biological drive, a basic human need, along with sustenance and shelter (Baumeister & Leary, 1995). Social support benefits individuals in their goal pursuits (Cohen, & Wills, 1985; Zimet, Dahlem, Zimet, & Farley, 1988) by providing emotional, material, and informational aids. Further, interpersonal relationships enhance self-regulation, which is essential for goal attainment (Fitzsimons & Finkel, 2011). Clearly, interpersonal relationships could facilitate goal pursuit in many situations.

Therefore, it is puzzling that previous research has repeatedly found that people restrain themselves from approaching others when thinking about money. For instance, compared to participants primed with the concept of time, participants primed with the concept of money spent more time working (e.g., reading or working on a computer) than socializing (e.g., chatting on the phone; see Mogilner, 2010). Similarly, Vohs et al. (2006, 2008) found that reminders of the concept of money cause a preference for solitary activities (e.g., taking four cooking lessons by oneself) over social activities (e.g., having dinner with four friends) and increase physical distances between people.

If money activates a peculiar market-pricing mode of relating to others based on cost–benefit calculations (Vohs et al., 2006; 2008), money-primed people should focus more on the calculation of the inputs and outputs of a relationship and be more strategic in interpersonal interactions rather than continuing to push people away. Thus, the present investigation aimed to further address the effect of monetary reminders on people’s strategies for interacting with others. We proposed that perceived instrumentality regarding goal pursuits would influence whether or not money-primed individuals would approach a social target. In particular, we hypothesized that thoughts of money would enhance people’s tendency to approach individuals whom they perceived as instrumental for achieving their goals.

Instrumentality and Goal Pursuit

Instrumentality refers to the usefulness vis-à-vis an active goal. Human beings have evolved to use tools to facilitate the completion of their goals. Accordingly, a tool is valued when it is useful for the completion of a certain goal and devalued when not. In many cases people tend to evaluate and approach an object based on its instrumentality. For example, instrumental (goal-relevant) objects were rated as more positive than less useful (goal-irrelevant) ones, and the same objects were evaluated more positively when they were useful than when useless (Ferguson & Bargh, 2004; Ferguson, Hassin, & Bargh, 2007; Fishbach, Shah, & Kruglanski, 2004).

Similarly, people's responses to a social target vary as a function of the target's instrumentality. In fulfilling one's goal, other people could be regarded as instrumental or not depending on whether they foster or hinder goal pursuit. For example, for a person striving to lose weight, a friend who talks the person into exercising is instrumental in terms of his or her action in facilitating goal attainment, whereas another friend who interferes with a diet plan (e.g., by persuading the person to eat high-calorie foods) would be noninstrumental. In fact, instrumentality is found to be one fundamental dimension of people's perceptions (Fitzsimons & Shah, 2009), which has important implications for people's actions in interpersonal contexts. Generally speaking, people are more willing to approach an instrumental social target when their personal goal is made salient. For example, in an instrumental relationship (compared to a communal relationship, which values relationships with others as "an end in itself"), people are more attracted to a target who could reciprocate their benefits (Clark & Mills, 1979). Moreover, people adjust their cognition and behavior in close relationships according to the close others' instrumentality; specifically, people value close others more positively and approach them more readily when the close others are instrumental to an active goal (Fitzsimons & Fishbach, 2010; Fitzsimons & Shah, 2008). From this line of research, it is obvious that people are inclined to approach others who are

instrumental to their goals.

Money and People's Affiliation with Others

It is reasonable to expect money to foster a person's tendency to approach others, as long as others are instrumental to the person's active goals. Capitalism is rooted deeply in modern materialistic culture, and in order to maintain the system, it relies on consumption behaviors to make profits. Specifically, a capitalist system encompasses three active parts: consumer, labor, and producer, making concerted efforts to profit to the maximum extent (Kasser, Cohn, Kanner, & Ryan, 2007). Therefore, money, as the most conspicuous form of capital, should heighten people's inclination to make the most profit from investments. For example, when people invest money rather than time in a purchase, they demand unambiguous satisfaction from the consumption (Okada & Hoch, 2004), indicating a focus on maximizing utility.

With this heightened striving for value maximization, people who are primed with the construct of money endorse a particular mindset on interpersonal relationships, which is the market-pricing mindset (Vohs et al., 2006, 2008). According to Fiske (1991, 1992), one of the fundamental ways of relating to others socially is the market-pricing mode. People in this market-pricing mode emphasize cost-benefit analyses in their social relationships, and they usually reduce all the relevant relationship features under consideration to simple utility metrics so that diverse factors can be compared with each other directly. Therefore, people in a market-pricing mode tend to view relationships in transaction terms with inputs and expected outputs (Vohs et al., 2008). It is thus predictable that money would make people build relationships with others mainly on the basis of the calculation of what they could get from a relationship for a given amount of cost. Instrumental people would be more desirable in transaction terms since they could provide more outputs with a given amount of inputs than noninstrumental people. Therefore, it should be expected that money-primed people

would value and approach those who could help them to accomplish their personal goals.

Past research has provided indirect evidence for our hypothesis. For example, Liu and Aaker (2008) compared people's donations to a charity after being primed with money or time and found that money-primed participants donated less money than time-primed participants. They argued that monetary reminders highlight utility and the need for pursuing the maximization of values; therefore, the reminder of money decreased donations because the utility of donating was ambiguous (Liu & Aaker, 2008). This is consistent with our proposal that money would highlight utility calculations in interpersonal relationships such that people would form relationships based on the calculation of others' usefulness for their personal goals (i.e., instrumentality).

Therefore, a reminder of money activates a market-pricing mode, which facilitates approaching instrumental targets. Drawing on Fiske's (1991, 1992) interpersonal relationship theory and recent research findings on money, we predicted that money would lead people to approach others who would be useful for their personal goals.

Predictions and Overview of the Present Research

What consequences would follow if money increases the approaching of instrumental targets? We made three predictions concerning this question. First, a reminder of the construct of money would make people focus more on the instrumental aspects of a relationship. Given that money-primed participants adopt a market-pricing mindset, building relationships more on the basis of the calculation of what they could get from a relationship, they, therefore, would put more emphasis on the instrumentality of the relationship to their goals rather than other aspects. Second, when a performance goal is activated, money should increase people's approaching of the targets who could facilitate the accomplishment of the goal. In other words, we did not expect that thinking about money would make people approach all possible social targets. Instead, the extent to which money would increase

people's approaching of others should vary as a function of others' usefulness vis-à-vis a goal. Third, the heightened approach of instrumental targets of money-primed people should be driven by others' instrumentality. That is, the perceived instrumentality of others should mediate the effect of money on people's affiliative intention.

We tested our predictions in four studies. Participants were reminded of the concept of money either by viewing money-related images (Experiments 1 and 4) or by working on a scrambled sentence task with money-related sentences (Experiments 2 and 3). Experiment 1 tested whether or not monetary reminders would increase the significance of instrumentality in relationships and whether or not this effect could be accounted for by a market-pricing mindset. Experiments 2 and 3 addressed the effect of money on approach intentions within the context of goal pursuit. Specifically, we situationally activated a performance goal and manipulated social targets' instrumentality through changing targets' task-related attributes (Experiment 2) or participants' perceived competence of their own (Experiment 3). We predicted that money-primed participants would approach social targets with high instrumentality and that this effect would diminish when participants perceived their own high competence in performance of this task. Experiment 4 further examined how money priming would affect a person's intention to approach others when a social target's instrumentality was ambiguous.

Experiment 1

Experiment 1 directly examined whether monetary reminders would change the way people viewed interpersonal relationships and whether this effect was mediated by a market-pricing mindset. Previous research has demonstrated that people in a particular framework of thinking will have enhanced responses toward related stimuli of that framework. For example, people with a sexualized-objectifying perspective of themselves responded positively toward sexually objectifying stimuli (Goldenberg, Cooper, Heflick, Routledge, &

Arndt, 2011). Therefore, in the present study people's market-pricing mode was indexed by their positivity toward market-related words. We predicted participants in the money-priming condition would be more positive toward market-related words than participants in the control condition. In addition, the objectification scale (Gruenfeld, Inesi, Magee, & Galinsky, 2008), which measures the extent to which participants form their relationships with others based on others' instrumentality or utility, was adapted and administered. Since previous research on the priming effect also demonstrated that, when a particular category or set of ideas is activated, people will behave accordingly (e.g., Bargh & Williams, 2006), we thus proposed that money-primed participants would score higher on this scale than participants in the control condition and that such an effect would be driven by the market-pricing mindset.

Method

Past research on the effect of money priming demonstrated a small to medium effect size (e.g., Kouchaki et al., 2013; Whillans & Dunn, 2015). Therefore, we conducted a power analysis with the program *G*Power* (Erdfeiler, Faul, & Buchner, 1996) to determine the sample size needed to detect a small to medium effect of money with a power of .80¹. The sample size in the present conditions was determined to be 128.

Participants. One-hundred-thirty undergraduate students (43 men, mean age = 21.52, $SD = 1.97$) from a university in China participated in this study in exchange for partial course credits². They were randomly assigned to one of two conditions (priming: money vs. control) in a between-subjects design. Data from six participants were excluded due to incompleteness or failure to follow instructions. We ran an analysis on the remaining 124 cases³.

Procedure. Upon arrival, participants worked on a picture evaluation task that was aimed at facilitating our experimental manipulation (e.g., Vohs et al., 2006; Jiang, Chen, & Wyer, 2014). Specifically, participants were instructed to rate each of 10 pictures in terms of

quality, complexity, and clarity. The pictures depicted various forms of money (e.g., coins, banknotes) in the money condition and assorted furniture (e.g., tables, chairs) in the control condition.

Next, participants indicated their positivity toward eight words in a randomized order on a 7-point scale (1 = *extremely negative*, 7 = *extremely positive*; e.g., Kouchaki et al., 2013). Four of the words were market related (i.e., *trade, market, exchange, and benefits*), whereas the rest were neutral words (i.e., *level, matter, position, and concept*). Mean scores were calculated to index participants' endorsements of a market-pricing mindset ($\alpha = .71$ for market-related words; $\alpha = .65$ for neutral words).

Finally, participants completed the 10-item objectification scale ($\alpha = .69$). This scale was translated into Chinese by the first author and then back-translated into English by a bilingual psychology professor. Modifications were made until the authors agreed that the back-translation matched the original meaning of the English version. Moreover, since Gruenfeld et al. (2008) used this scale in the context of a relationship with a specific person, we therefore modified it to make it suitable for a general relationship context. For example, the original item "I think more about what this person can do for me than what I can do for him/her" was changed to "I think more about what people can do for me than what I can do for them." Participants were instructed to indicate their agreement with each item on a 7-point scale (1 = *completely disagree*; 7 = *completely agree*).

Results and Discussion

Market-pricing mindset. A mixed-model ANOVA revealed a significant interaction effect between money priming and word type, $F(1, 122) = 15.56, p < .001, \eta_p^2 = .13$. The observed power to detect an effect of this size in the present conditions was 0.95. There were no main effects for priming, $F(1, 122) = 3.33, p = .07$, and word type, $F(1, 122) = .04, p$

= .85.

Specifically, money-primed participants rated market-related words more positively ($M = 4.56$, $SD = .98$) than neutral words ($M = 4.15$, $SD = .97$), $F(1, 122) = 8.65$, $p < .01$, $\eta_p^2 = .05$, whereas for participants in the control condition, the effect was reversed such that their attitudes toward market-related words were significantly less positive ($M = 3.89$, $SD = 1.02$) than toward neutral words ($M = 4.33$, $SD = .98$), $F(1, 122) = 8.52$, $p < .01$, $\eta_p^2 = .07$.

Additional data analyses demonstrated that money-primed participants rated the market-related words more positively than control participants, $F(1, 122) = 19.52$, $p < .001$, $\eta_p^2 = .14$, but the effect was not observed for neutral words, $F(1, 122) = 1.31$, $p = .25$.

Instrumentality orientation. A one-way ANOVA revealed a significant main effect of priming, as participants in the money condition scored higher on the objectification scale ($M = 3.27$, $SD = .83$) than did those in the control condition ($M = 2.87$, $SD = .83$), $F(1, 122) = 7.9$, $p < .01$, $\eta_p^2 = .06$. The observed power to detect an effect of this size in the two present conditions was 0.80.

Mediation analysis. We examined whether market-pricing mindset mediated the effects of priming on instrumentality orientation through bootstrapping (with 5000 iterations) procedures (Preacher & Hayes, 2004, 2008; control = -1, money = 1). The effect of priming was reduced to marginally significant (from $\beta = .24$, $p = .01$ to $\beta = .18$, $p = .05$) when market-pricing mindset was included in the equation, and market-pricing mindset was a significant predictor of instrumentality orientation ($\beta = .21$, $p = .02$). A bootstrap analysis showed that the 95% confidence interval for the indirect effect excluded zero (0.01, 0.14), suggesting a significant indirect effect (see Fig. 1; Shrout & Bolger, 2002; MacKinnon & Fairchild, 2009).

In the current experiment, participants' positivity toward market-related words was measured as the index for their market-pricing mindset. One might argue that since the concept of money is mentally associated with some of the words (e.g., exchange, trade, etc.),

money priming may also activate these constructs without the activation of a market-pricing mindset. We think, however, this explanation is not consistent with the current finding. Note that here we measured participants' positivity toward market-related words instead of their reaction time/speed of responding to such words. Past literature has shown that a strong mental association usually facilitates the activation of related concepts in the mind (e.g., Bryan, Dweck, Ross, Kay, & Mislavsky, 2009; Sassenberg & Moskowitz, 2005); thus, it is not surprising if money priming leads to a faster reaction time toward market-related words. However, a stronger mental association does not necessarily induce a more positive reaction toward the related constructs (Zhong, Strejcek, & Sivanathan, 2010). For example, danger-related words are related to "snake," but priming danger-related words should not make people like the word "snake" more; the opposite is probably true if priming makes people more vigilant toward negative stimuli. Thus, we believe that participants' positivity toward market-related words represents the activation of a market-pricing mindset, not simply the semantic activation of related words. Therefore, Experiment 1 provided initial support of our hypothesis that monetary reminders make people focus more on the instrumental aspect of a relationship, and this effect was mediated by a market-pricing mindset. In the following experiments, we further examined whether money-primed people would approach others for their instrumentality in a goal context.

Experiment 2

Experiment 2 aimed to extend the findings of Experiment 1 in two ways. First, we adopted a different manipulation to prime the concept of money, namely a scrambled sentence task, to increase the generalizability of our findings (Vohs et al., 2006, 2008). Second, we directly tested the effect of money on approach intentions toward instrumental targets in an active goal context. Whether a person can be instrumental or not for goal pursuit is not always explicitly stated; therefore, people may use various cues to infer others'

instrumentality (e.g., others' actions, resources, or attributes). In the present study, we manipulated the instrumentality of a target by varying certain attributes that this target possessed because people who possess certain attributes should be more helpful for accomplishing a certain goal than those without these attributes. We hypothesized that reminders of the construct of money would cause people to approach instrumental targets but not noninstrumental ones, and this approach should be driven by the perceived instrumentality.

Method

We conducted a power analysis with the program *G*Power* to determine the sample size needed to detect a medium effect size with a power of .80. The sample size in the present conditions was determined to be 190.

Participants. Two-hundred-ten undergraduates (67 men; mean age = 20.30; $SD = 1.06$) from a university in China participated in exchange for a small amount of monetary compensation or partial course credits. They were randomly assigned to one of four conditions in a 2 (priming: money vs. control) \times 2 (instrumentality: instrumental vs. noninstrumental) between-subjects design. Data from ten participants were excluded due to incompleteness and failure to follow instructions. We ran an analysis on the remaining 200 cases.

Procedure. Upon arrival, participants worked on a sentence-descrambling task (e.g., Vohs et al., 2006) including 30 sets of five jumbled words. Participants were asked to create a sentence by using four of the five words from each set. In the control condition, all of the phrases primed neutral concepts (e.g., "He opens his door"), whereas in the money condition, half of the jumbled word sets contained neutral concepts and the other half were related to money (e.g., "I cashed a check").

Next, participants were asked to work on a task that was described to require mathematics skills and logical thinking, and their goal was to complete the task as well as possible. There was no information contained in the instructions that could imply the connection between task completion and monetary rewards. They were then provided with a profile of an anonymous student (indexed by the letter A) from the same university with whom they could choose to collaborate on the task. The profile contained information about the student's age, year of study, hobbies, and extracurricular activities (see Appendix A). In the instrumental condition, "A" was described as majoring in math, being a fan of math, and planning to become a financial analyst after graduation. In contrast, in the noninstrumental condition, "A" majored in Chinese, loved writing and reading, and was planning to become a writer after graduation.

After participants read the file, to measure their approach intention toward the social target, they were asked to indicate to what extent they would (1) choose "A" as their work partner on the mathematical task, (2) feel good about "A," and (3) make friends with "A" (1 = *not at all*; 9 = *extremely*). The average scores of the three items were calculated to index approach intention ($\alpha = .85$). Finally, the perceived instrumentality of the target was measured on a 9-point scale (1 = *not at all*; 9 = *extremely*) with two items: "How much could 'A' help on the task?" and "How useful is 'A' to you?" Scores on the two items were averaged to index perceived instrumentality ($r = .75$). After completing the measures, participants were told that they had finished the experiment and did not need to complete the mathematical task. Then they were fully debriefed and thanked.

Results and Discussion

Approach intention. A two-way ANOVA on participants' intentions to approach the target revealed a significant main effect of instrumentality, $F(1, 196) = 9.35, p < .01, \eta_p^2 = .05$. Not surprisingly, participants were more willing to choose "A" as their partner when

“A” was instrumental ($M = 6.22$; $SD = 1.18$) than when “A” was noninstrumental ($M = 5.67$; $SD = 1.43$). The main effect of priming was not significant, $F(1, 196) = .11$, $p = .74$. More importantly, the effect of the interaction between priming and instrumentality on approach intentions was significant, $F(1, 196) = 16.33$, $p < .001$, $\eta_p^2 = .08$ (see Fig. 2a). The power to detect an effect of this size in the present conditions was 0.98.

Further analyses revealed that when primed with money, people were more willing to choose “A” as their partner in the instrumental condition ($M = 6.60$; $SD = .94$) than in the noninstrumental condition ($M = 5.32$; $SD = 1.42$), $F(1, 196) = 25.32$, $p < .001$, $\eta_p^2 = .11$. When primed with the neutral concept, although people also showed greater intentions to choose “A” as their partner when in the instrumental condition ($M = 5.81$; $SD = 1.28$) than in the noninstrumental condition ($M = 5.69$; $SD = 1.37$), $F(1, 196) = .48$, $p = .49$, the differences were not significant.

Additional analyses showed that for the instrumental target, participants’ approach intention was higher in the money condition than in the control condition, $F(1, 196) = 9.03$, $p < .01$, $\eta_p^2 = .04$. In contrast, this effect was also significant for the noninstrumental target but in the opposite direction, such that participants were less willing to approach the noninstrumental targets in the money condition than in the control condition, $F(1, 196) = 7.32$, $p < .01$, $\eta_p^2 = .04$.

Perceived instrumentality. A two-way ANOVA showed that the main effect of instrumentality was significant, $F(1, 196) = 4.26$, $p < .05$, $\eta_p^2 = .02$. Specifically, participants rated the instrumental target as more useful ($M = 6.44$; $SD = 1.35$) than the noninstrumental target ($M = 6.05$; $SD = 1.27$). The interaction between priming and instrumentality on perceived instrumentality was also significant, $F(1, 196) = 4.63$, $p = .03$, $\eta_p^2 = .03$ (see Fig. 2b). The power to detect an effect of this size in the present conditions was 0.73. The main effect of priming was not significant, $F(1, 196) = 1.69$, $p = .20$.

Simple comparisons showed that money-primed participants rated the instrumental target as more useful ($M = 6.74$; $SD = 1.28$) than control participants did ($M = 6.11$; $SD = 1.54$), $F(1, 196) = 5.61$, $p = .02$, $\eta_p^2 = .03$, while money-primed participants rated the noninstrumental target as less useful ($M = 5.97$; $SD = 1.30$) than control participants did ($M = 6.12$; $SD = 1.24$), although this effect was not significant, $F(1, 196) = .37$, $p = .54$.

Mediation analysis. We predicted that perceived instrumentality would mediate the effects of priming and instrumentality on approach intentions. This mediation effect was tested through bootstrapping procedures (Preacher & Hayes, 2004, 2008) for the money-priming condition. Specifically, the high-instrumentality condition was coded as “1,” and the low-instrumentality condition was coded as “-1.” A bootstrapping analysis with 5000 iterations revealed a significant indirect effect in the money-priming condition, 95% CI: [.02, .29] (See Fig. 2c).

Experiment 2 provided evidence for the second and third hypotheses, which suggested that exposure to money enhances approach toward instrumental others but not toward noninstrumental ones. These results indicate that money-primed participants do not exhibit a heightened approach toward just any social target they encounter, but that the enhanced effect of money on approach intention is limited to social targets who are highly instrumental to their goal. Moreover, it was demonstrated that money-primed participants' approach intentions and evaluations of others were influenced by the target's perceived instrumentality.

Furthermore, we also found that money makes people show less willingness to approach low-instrumental targets, which is consistent with previous findings showing that money-primed people demonstrated a general avoidance tendency in interpersonal interactions (Vohs et al. 2006, 2008; Zhou, Vohs, & Baumeister, 2009). These results thus demonstrate a potential boundary condition to the effect of money on alienation in interpersonal relationships.

Experiment 3

Experiment 2 provided support that activating the concept of money increases people's tendency to approach instrumental targets. Experiment 3 sought to replicate this effect by adopting a different way to manipulate social targets' instrumentality. Specifically, Vohs et al. (2006) proposed that money decreases people's inclination to seek help because it evokes a self-sufficiency mode, which is an insulated state wherein people focus on the completion of personal goals while preferring interpersonal distance. Therefore, for money-primed participants, the role of a target may be redundant if the participants possess certain skills that could guarantee the completion of their goals. In particular, in this experiment, we manipulated participants' perceived competence in a certain task, and we expected to find that the influences of money on approach toward instrumental targets would only emerge for people who were not confident about their ability.

Method

We conducted a priori power analysis with the program *G*Power* to determine the sample size needed to detect a medium effect size with a power of .80. The sample size in the present conditions was determined to be 190.

Participants. One-hundred-ninety undergraduates (59 men; mean age = 19.24; $SD = 1.27$) from a university in China participated in the experiment in exchange for partial course credits. They were randomly assigned to one of four conditions in a 2 (priming: money vs. control) \times 2 (competence: high vs. low) between-subjects design. Data from eight participants were excluded due to incompleteness and failure to follow instructions. We ran an analysis on the remaining 182 cases.

Procedure. Upon arrival, participants learned that they would work on two rounds of tasks of playing sudoku, a number-placement puzzle with a nine-by-nine grid. To complete the task, one needs to fill in 47 empty cells with digits following a general principle (i.e.,

letting each column, each row, and each of the 9 three-by-three sub-grids contain all of the digits from 1 to 9). Participants were led to believe that mathematics skills and logical reasoning were crucial for completing the task. We instructed participants to complete the task as well as possible but did not provide any monetary rewards for successful completion of the task. Participants first worked on the first round of the sudoku task for 5 minutes and then were provided with correct answers as well as a benchmark to evaluate their own performance (i.e., “good at sudoku,” “so-so at sudoku,” and “not good at sudoku”). The perceived competence was manipulated by providing different levels of performance benchmarks. For example, for the high-competence group, having seven or more correct answers was diagnosed as being good at sudoku; however, for the low-competence group, this number increased to 43 or more (for details, see Appendix B).

After comparing their own performance with the benchmark, participants were asked to indicate to which of the three performance groups (“good,” “so-so,” and “not good”) they belonged. Their responses were recorded as a manipulation check. Afterward, participants were instructed to complete a different task to clear their minds before starting the second round of the sudoku task, in which the concept of money (vs. neutral concept) was primed with the same sentence-descrambling task as in Experiment 2. Next, the experimenter told participants that they could choose another participant to cooperate with on the second round of the sudoku task and provided them with a profile of a student (indexed by the letter A; for details, see Appendix C). In the profile, the target was described as being good at math (e.g., majored in mathematics and economics and had data analysis experience). Participants answered several questions, as in Experiment 2, regarding intention to approach the target ($\alpha = .92$). The perceived instrumentality of the target was also measured with the same items used in Experiment 2 ($r = .85$).

Results and Discussion

Perceived competence. Ninety-seven percent of the participants in the high-competence condition regarded themselves as belonging to the “good at sudoku” group, while 96 percent of participants in the low-competence condition regarded themselves as not good at Sudoku, indicating our manipulation was effective.

Approach intention. A two-way ANOVA showed that the main effect of competence was significant, $F(1, 178) = 5.77, p = .02, \eta_p^2 = .03$. Participants with low competence were more willing to choose the target as their partner ($M = 6.64; SD = 1.47$) than participants with high competence were ($M = 6.19; SD = 1.46$). The main effect of money priming was not statistically significant, $F(1, 178) = .07, p = .79$. More importantly, the interaction between priming and competence on approach intention was significant, $F(1, 178) = 6.97, p < .01, \eta_p^2 = .04$ (see Fig. 3a). The power to detect an effect of this size in the present conditions was 0.79.

Further analyses showed that when primed with money, participants in the low competence condition were more willing to choose the target as their partner ($M = 6.91; SD = 1.18$) than those in the high competence condition ($M = 5.18; SD = 1.44$), $F(1, 178) = 11.59, p < .001, \eta_p^2 = .06$, while in the control condition, participants in the low competence condition ($M = 6.43; SD = 1.42$) and those in the high competence condition ($M = 6.51; SD = 1.71$) did not differ in their approach intentions, $F(1, 178) = .02, p = .86$.

Additional analyses showed that low-competence participants were more likely to choose the target as their partner in the money-priming condition than in the control condition, $F(1, 178) = 3.15, p = .07, \eta_p^2 = .02$. However, for high-competence participants, the interaction intention toward the target was less strong in the money-priming condition than in the control condition, $F(1, 178) = 4.09, p = .05, \eta_p^2 = .02$.

Perceived instrumentality. A two-way ANOVA showed a significant main effect of competence, $F(1, 178) = 5.16, p = .02, \eta_p^2 = .03$. That is, low-competence participants rated

the target as more useful ($M = 7.06$; $SD = 1.13$) than high-competence participants did ($M = 6.70$; $SD = 1.33$). The main effect of priming was not significant, $F(1, 178) < .01$, $p = .98$. Moreover, the interaction between priming and competence on the perceived instrumentality of the target was significant, $F(1, 178) = 4.94$, $p = .03$, $\eta_p^2 = .03$ (see Fig. 3b). The power to detect an effect of this size in the present conditions was 0.70.

Simple comparisons showed that when primed with money, low-competence participants rated the instrumental target as more useful ($M = 7.28$; $SD = .78$) than those with high competence ($M = 6.46$; $SD = 1.37$), $F(1, 178) = 6.57$, $p = .01$, $\eta_p^2 = .05$, while in the control condition, participants rated the target as equally useful regardless of whether they were competent ($M = 6.89$; $SD = 1.84$) or not ($M = 6.84$; $SD = 1.34$), $F(1, 181) < .01$, $p > .92$.

Mediation analysis. We tested the mediating role of perceived instrumentality in the causal link between perceived self-competence and approach intention (Preacher & Hayes, 2004, 2007) for the money-priming condition. For approach intention, the mediation analysis revealed a significant indirect effect in the money-priming condition, 95% CI: [-.42 to -.05] (see Fig. 3c).

Experiment 3 replicated Experiment 2 by suggesting that money-primed participants based their approach toward a target on the evaluation of their own ability to complete their tasks, thereby providing further evidence to our hypotheses 2 and 3. In particular, when people were made to believe that they were not competent at a given task, money priming made them more willing to choose an instrumental other as their partner; this effect did not emerge for those who were confident about their ability.

Experiment 4

The aim of Experiment 4 was twofold. First, we assessed the influences of money priming on approach intentions with a different task in which the control target used in

Experiment 2 became instrumental. We did this to rule out the possibility that priming money increases approach to math-majored targets since money might increase people's positivity toward math-related attributes because of their shared numeric nature. Second, we sought to explain the seemingly inconsistent findings between our study and previous ones. Specifically, in their study Vohs et al. (2006) instructed participants to work on a challenging task and informed participants that another person could offer help. They found that participants primed with money were less willing to seek help than participants of a control group. We directly compared our study with the work of Vohs et al. (2006) by adding one additional condition in which the potential partner's instrumentality was not explicitly mentioned. We proposed that money-primed participants would approach others only when the other's instrumentality was made salient and also high.

Method

We conducted a priori power analysis with the program *G*Power* to determine the sample size needed to detect a medium effect size with a power of .80. The sample size in the present conditions was determined to be 240.

Participants. Two-hundred-fifty-five undergraduates (82 men; mean age = 21.46; *SD* = 1.89) participated in exchange for partial course credits. They were randomly assigned to one of six conditions in a 2 (priming: money vs. control) \times 3 (instrumentality: high vs. low vs. no information) between-subjects design. Data from seven participants were excluded due to incompleteness and failure to follow instructions. We ran an analysis on the remaining 248 cases.

Procedure. Upon arrival, participants learned that they would work on several unrelated tasks. Specifically, participants were first instructed to work on the same picture evaluation task as in Experiment 1 to prime the concept of money (vs. neutral). Next, participants read the instructions for a Chinese-idiom completion task. Specifically, this task

was a character-placement puzzle that required filling a four-by-four grid with Chinese characters. To complete the task, one needed to fill in the 12 empty cells with Chinese characters following a general principal (i.e., making each column and each row form a Chinese idiom). There was no information contained in the instructions that might imply the connection between task completion and monetary reward. Participants were instructed to complete the task as well as possible. Next, participants were informed that they could select another participant to collaborate with on the task and then were provided a profile of a candidate indexed by letter A. The profiles were exactly the same as in Experiment 2 except that the instrumentality manipulation was reversed such that the Chinese-major target was instrumental, whereas the math-major target was not instrumental. In the no-information condition, there was no instrumental information provided except the basic background information (i.e., age, year of study, hobbies, and extracurricular activities).

Afterward, the perceived instrumentality of and approach intention toward the target were measured with the same items used in Experiments 2 and 3 ($\alpha = .93$ for approach; $r = .71$ for perceived instrumentality).

Results and Discussion

Approach intention. A two-way ANOVA showed that the main effect of instrumentality was significant, $F(2, 242) = 15.45, p < .01, \eta_p^2 = .11$. Post hoc tests showed that participants were more willing to approach the highly instrumental target ($M = 6.89; SD = 1.42$) than the low-instrumental target ($M = 5.61; SD = 1.48$) and neutral target ($M = 5.97; SD = 1.67$), $ps < .01$. However, participants' intention to approach the neutral target was not significantly different from intention to approach the low-instrumental target, $p = .26$. The main effect of priming was not significant, $F(1, 242) = .38, p = .54$. More importantly, the interaction between priming and instrumentality on approach intention was significant, $F(1, 242) = 5.09, p < .01, \eta_p^2 = .05$ (see Fig. 4a). The power to detect an effect of this size in the

present conditions was 0.92.

Since participants' approach intention toward the neutral target and the low-instrumental target did not differ statistically, we conducted an ad hoc analysis by pooling these two conditions. We recoded the highly instrumental condition as 2 and the other two conditions as -1. A 2 (priming) \times 2 (instrumentality) ANOVA revealed a significant main effect of instrumentality, $F(1, 244) = 28.54, p < .001, \eta_p^2 = .11$. Participants were more willing to approach the highly instrumental target ($M = 6.89; SD = 1.42$) than the low-instrumental and neutral targets ($M = 5.79; SD = 1.58$). The main effect of money was not significant, $F(1, 244) = .22, p = .64$. More importantly, the interaction between priming and instrumentality was significant, $F(1, 244) = 10.16, p < .01, \eta_p^2 = .04$. The power to detect an effect of this size in the present conditions was 0.88.

Further tests showed that money-primed participants were more willing to approach the highly instrumental target ($M = 7.26; SD = 1.43$) than control participants were ($M = 6.51; SD = 1.32$), $F(1, 244) = 4.89, p = .03, \eta_p^2 = .02$. However, this effect was reversed for the low-instrumental and neutral targets such that money-primed participants were less willing to approach these targets ($M = 5.51; SD = 1.62$) than control participants were ($M = 6.07; SD = 1.50$), $F(1, 244) = 5.81, p = .02, \eta_p^2 = .02$.

Additional analyses revealed that money-primed participants were more willing to approach the highly instrumental target than the low-instrumental and neutral targets, $F(1, 244) = 36.58, p < .001, \eta_p^2 = .13$, while in the control condition, although participants reported higher approach intention toward the highly instrumental target than toward the low-instrumental and neutral targets, these differences were not significant, $F(1, 244) = .230, p = .13$.

Perceived instrumentality. A two-way ANOVA showed that the main effect of instrumentality was significant, $F(2, 242) = 19.32, p < .001, \eta_p^2 = .14$. Post hoc tests showed

that participants rated the highly instrumental target as more useful ($M = 7.04$; $SD = 1.42$) than the low-instrumental target ($M = 5.53$; $SD = 1.78$) and neutral target ($M = 6.08$; $SD = 1.53$), $ps < .001$. However, the perceived usefulness of the neutral target was not significantly different from that of the low-instrumental target, $p = .06$. The main effect of priming was not significant, $F(1, 242) = 1.53$, $p = .22$. Moreover, the interaction between priming and instrumentality salience on approach intention was approaching significance, $F(1, 242) = 4.97$, $p < .01$, $\eta_p^2 = .04$ (see Fig. 4b). The power to detect an effect of this size in the present conditions was 0.82.

Since participants' perceived instrumentality of the neutral target and the low-instrumental target did not differ statistically, we therefore conducted an ad hoc analysis by pooling these two conditions, similar to the approach intention analysis. The highly instrumental condition was recoded as 2, and the other two conditions were recoded as -1. A 2 (priming) \times 2 (instrumentality) ANOVA revealed a significant main effect of instrumentality, $F(1, 244) = 33.15$, $p < .001$, $\eta_p^2 = .12$. Participants rated the highly instrumental target ($M = 7.04$; $SD = 1.42$) as more useful than the low-instrumental and neutral targets ($M = 5.81$; $SD = 1.68$). The main effect of money was not significant, $F(1, 244) = .02$, $p = .90$. More importantly, there was a significant interaction between priming and instrumentality, $F(1, 244) = 9.88$, $p < .01$, $\eta_p^2 = .04$, and the power to detect an effect of this size in the present conditions was 0.80. Money-primed participants rated the highly instrumental target as more useful ($M = 7.36$; $SD = 1.46$) than control participants did ($M = 6.71$; $SD = 1.34$), $F(1, 244) = 3.32$, $p = .06$, $\eta_p^2 = .02$. However, this effect was reversed for low-instrumental and neutral targets, such that money-primed participants rated those targets as less useful ($M = 5.46$; $SD = 1.56$) than control participants did ($M = 6.16$; $SD = 1.73$), $F(1, 244) = 8.42$, $p < .01$, $\eta_p^2 = .04$.

Mediation analysis. We tested the mediating role of perceived instrumentality in the

causal link between instrumentality and approach intention for the money condition (Preacher & Hayes, 2004, 2008). Specifically, the high-instrumentality condition was coded as “2,” and the remaining two conditions were coded as “-1.” A bootstrapping analysis with 5000 iterations showed that the 95% confidence interval for the indirect path through perceived usefulness was .21 to .57, showing a significant mediation effect (see Figure 4c).

Two additional mediation analyses were conducted to compare the high-instrumentality condition to the low-instrumentality condition (the high-instrumentality condition was coded as “2,” the low-instrumentality condition was coded as “-2,” and the neutral condition was coded as “0”) and the neutral condition separately (the high-instrumentality condition was coded as “2,” the low-instrumentality condition was coded as “0,” and the neutral condition was coded as “-2”). Both analyses indicated a significant mediating effect: the 95% confidence intervals for the indirect path through perceived likability were 0.17 to 0.52 and 0.14 to 0.39, respectively.

Meta-Analysis

To examine the overall effect of money on instrumental approach across Studies 2 through 4, we conducted a random-effects meta-analysis using the *Comprehensive Meta-Analysis* (CMA) software. Specifically, we examined whether money and social target’s instrumentality interact to predict people’s intention to approach the social target.

For approach intention, the test for residual heterogeneity was not significant, $\tau^2 = .005$ ($SE = .03$), $Q_E(5) = 5.68$, $p = .34$. More importantly, the interaction effect between money and instrumentality was significant across the three studies, $d = .48$, 95% CI = [.31, .65], $z = 5.87$, $p < .001$, such that people’s intention to approach a high-instrumentality target differed significantly between the money-primed and control groups, $d = .54$, 95% CI = [.29, .78], $z = 4.30$, $p < .001$, and this effect also emerged for the low-instrumentality target, $d = -.46$, 95% CI = [-.76, -.15], $z = -2.95$, $p < .01^4$.

These findings suggested that there was an overall pattern in our studies that money and social targets' instrumentality could interact to predict people's approach in interpersonal interactions, such that money priming makes people approach high-instrumentality targets but avoid low-instrumentality targets. Consistent with the recent money literature (e.g., Jiang et al., 2014; Savani, Mead, Stillman, & Vohs, 2016; Whillans & Dunn, 2015), we also find small to medium effects of money priming in our studies.

Discussion

The findings of the four experiments supported our hypothesis that activating the concept of money will increase people's tendency to approach others when others are instrumental to their goal pursuit. We sought to provide evidence for this general hypothesis by testing three specific hypotheses: (1) reminders of the concept of money would make people focus more on the instrumental aspects of a relationship, (2) in a goal pursuit context, money should increase people's approach toward social targets who are instrumental for the goal, and (3) heightened approach toward instrumental targets of money-primed people should be driven by the targets' instrumentality. All these predictions were supported.

Our findings extend prior research by investigating the impact of monetary reminders on interpersonal processes. Past research has focused on the devastating effects of money on interpersonal relationships. Specifically, money triggers a market-pricing mindset, resulting in a subjugation of others to one's own interests and preferences for distance between self and others (Vohs et al., 2006, 2008). However, recent literature on this topic has emphasized the boundary conditions for these effects. For instance, a recent work demonstrated that priming new money (as compared to used money) enhances rather than hinders interpersonal forgiveness, suggesting that money does not influence interpersonal interaction in an overwhelmingly negative way (Mok & De Cremer, 2015). Our research in this regard also identifies a boundary condition to the effect of money. Indeed, our research suggests that

money primes an increased approach toward others depending mainly on the other's instrumentality. That is, money can heighten interpersonal attraction as long as others are facilitative of personal goals. Therefore, the current research represents a meaningful break from the accumulated evidence of selfishness, indifference, and withdrawal among money-primed people.

Money and Instrumentality. Instrumentality can be an important factor in understanding current research findings as well as informative to future research on the impacts of money on people. Previous research has repeatedly showed that money-primed people are unwilling to make sacrifices or do good deeds for people in general and that they focus on self-interest to the exclusion of others. However, our research has shown that instead of creating a general indifference among people, money actually makes people more selective in their choices of relationship partners, such that only those instrumental to people's personal goals are attractive. Thus, one crucial question to address is whether instrumentality influences other aspects of interpersonal processes of people with the concept of money on their minds. In fact, in a recent study in work settings, researchers found that the salience of the concept of money enhanced personal performances without hindering interpersonal cooperation (Beus & Whitman, in press). Specifically, this study was conducted during the contract-signing period for NBA players, and it was found that in the year before they signed a new contract, their personal performance and cooperation were both enhanced. Considering that cooperation was also a predictor for possible salary increases (although not as important as personal performance), it is wise for people to cooperate to secure a higher salary (Beus, & Whitman, in press). More importantly, although money makes people more resistant to persuasion, research has shown that if the proposed activity (e.g., smoking) was framed as self-interested (e.g., premature skin aging), as compared to other-interested (e.g., children imitating smoking behavior), people who were reminded of the construct of money were

more willing to change their behaviors (Whillans, & Dunn, 2015). This line of research implies that money-primed people will do things that benefit themselves. If so, then it is plausible that money-primed people will behave pro-socially in interpersonal relationships that they deem instrumental for their attainment of personal goals. Previous research has repeatedly found that money decreases prosocial helping and ascribed this effect to the indifference and alienation of money-primed people (e.g. Vohs et al., 2006, 2008); however, it is also possible that money-primed people may be more likely to refuse to provide help to those who do not give it first. Therefore, it is worthwhile to investigate the impacts of money on interpersonal relationships (such as allocation of interests, helping behaviors) in the context of a target's instrumentality.

Money and Self-sufficiency. How can the present findings be reconciled with other evidence of social withdrawal among money-primed people? For example, Vohs et al. (2006) found that participants primed with money were less willing to seek help than participants in a control group when they were working on a challenging task. The seeming differences between previous findings and our findings can be at least partially explained by the differences in research designs. In Vohs et al.'s (2006) study, participants were not given detailed information about the instrumentality of the potential helper, whereas this crucial information was provided in the present research. Therefore, the key factor influencing money-primed people's responses toward others seems to be the explicitly instrumental nature of the social targets under consideration. We directly tested this possibility in Experiment 4, and the results demonstrated support for our hypothesis: Money enhances approach only when others' instrumentality is made salient and high. Thus, it might be more accurate to characterize people who are reminded of the construct of money as selective of relationship partners, which is still compatible with a generally reluctant attitude toward others.

Moreover, Vohs et al. (2006) proposed that money evokes a self-sufficiency mode, which is an insulated state wherein people put forth individual effort to attain personal goals and prefer to be separated from others. Our research demonstrated that money does make people behave self-sufficiently under certain circumstances. For example, in our experiments 2 and 4, we found that money makes people less willing to approach others compared to their counterparts in the control condition, when the target under consideration is perceived as non-instrumental. Moreover, in Experiment 3 we found that when money-primed people were led to believe that they were competent at their tasks, the approach toward instrumental targets decreased compared to those who were led to believe they were not good at their tasks. These results suggest that money-primed people prefer to rely on themselves when they are highly confident in their own ability to complete their tasks. Instead of addressing “whether money makes people behave self-sufficiently,” our research delineated “under what circumstances money-primed people will behave self-sufficiently.” That is, when money-primed people feel confident about their abilities, or when they lack confidence about others’ abilities, they will prefer to rely more on themselves than on others. Our research, therefore, has identified an important boundary condition to the relationship of money to interpersonal interaction.

Money and Power. Previous studies on the effect of power demonstrated that power can also facilitate an instrumental approach toward social targets; specifically, high-power participants, as compared to their low-power counterparts, showed heightened intention to approach social targets who were instrumental to an active goal (Gruenfeld et al., 2008). Our research contributes to a better differentiation of power and money, two related constructs that are both associated with resources and autonomy. Money and power both represent resources that provide personal strength and autonomy, and in Schwartz’s circumplex (1992), caring about money is typically closely related to caring for power and achievement; nonetheless, it should be noted that money and power are still distinct constructs and have

different implications for people's cognition and behaviors in many situations. Researchers have found that, for instance, social power increases pro-social inclinations and empathy toward others (Côté et al., 2011), whereas the idea of money elicits the opposite effect (Molinsky et al., 2012). Regarding the instrumental-approach effect, in their study Gruenfeld et al. (2008) showed that power enhanced instrumental approach because it activated achievement goal pursuit. However, we demonstrated in our research that money increases approach toward instrumental targets through a market-pricing mindset, wherein people focus on expected outputs with a given amount of inputs.

Specifically, people with an instrumentality mindset care about what others can do for accomplishing their goals, whereas people with a market-pricing mindset expect output based on their inputs. Therefore, while people with the instrumentality mindset may not consider the cost of approaching others, cost/benefit calculation should be critical for people with the market-pricing mindset. For example, for Study 3, if money prime activates an instrumentality mindset, it would be expected that with the money prime, low-competence participants should report the highest approach tendency compared to the other three groups. The results of Study 3 demonstrated that the interaction effect between money prime and self-competence was also strongly driven by the money primed, high-competence participants, who reported the lowest approach tendency towards the target compared to the other three groups. Furthermore, the results of Studies 2 and 4 also demonstrated that money-primed participants demonstrated high approach intention toward high-instrumental targets, and also low approach intention toward low-instrumental targets. These results suggest that money prime activates an exchange mindset such that people do not want to invest in others if the benefit does not justify the investment/cost. Therefore, although both money and power can enhance the instrumental-approach association, they exert their influences in different ways and through different mechanisms.

The evidence of calculation of costs and benefits of money-primed people has also been well documented in previous research. For example, researchers have shown that money makes people reluctant to help others when helping is not explicitly associated with self-benefits (Liu, & Aaker, 2008). Similarly, money was found to increase environmental behaviors only when people were led to believe that behaving environmentally was beneficial for themselves (Whillans, & Dunn, 2015). It seems that the activation of money changes the goals one instrumentally pursues; that is, the concept of money makes people pursue the maximization of self-interest over other goals, such as communal or moral goals. However, although power is often characterized in the literature as facilitating the approach goals (e.g. Guinote, 2007; Keltner, Gruenfeld, & Anderson, 2003), in contrast to the aphorism that power always corrupts, the power literature has shown that priming power increases the likelihood an individual will act on his or her goals. For example, research has demonstrated that the psychological experience of power is associated with less self-interest in the presence of a strong moral identity (DeCelles, DeRue, Margolis, & Ceranic, 2012). Moreover, power-primed communal people responded in socially responsible ways, whereas power-primed exchangers acted more in line with their self-interest (Chen, Lee-Chai, & Bargh, 2001). Therefore, whether or not the idea of power increases self-interested behaviors depends on people's own values, identities, or the contents of goals. We therefore believe this difference can further help to distinguish these two related but distinct concepts as well as their potential influences. Future research should be devoted to distinguishing these two concepts in areas where they may both have some influence.

Money and Person Perception. It should be noted that except for the effect of money on interpersonal interactions, we found that money-primed participants showed polarized tendencies in their perceptions of a social target's usefulness. Specifically, with the concept of money being activated, participants tended to regard an instrumental social target as more

useful, in contrast to the way control participants viewed an instrumental social target. This pattern was consistently found in experiments 2, 3, and 4. In fact, the evidence for this effect of money on polarization of person perception was not rare in previous research. For example, in a recent study, researchers found that money makes people rate other people's facial expressions as more extreme (Jiang et al., 2014). The authors explained this effect as a result of money making people prefer a business-style relationship wherein extreme facial expressions are inappropriate. These results combined may suggest that money makes people perceive others through the lens of their self-interest. Therefore, the question to be answered in future research is whether this effect will be generalized to other aspects of person perception, such as morality and warmth. Answers to this question could help to better understand the effect of money on interpersonal interactions.

Limitations and future directions

Our experiments are not without limitations, which we believe can serve as avenues for future investigations. The present research examined whether money causes people to evaluate relationships on a cost-benefits basis and approach those who are instrumental for their goals. According to Fiske (1991, 1992), market-pricing mode is a relational model that involves a resources allocation pattern among relationship partners. Moreover, people in a market-pricing relationship should expect output based on their inputs (Fiske, 1991, 1992). Market-pricing mindset was only measured in Study 1 using a less direct measure of word evaluation task; therefore the evidence may be at best suggestive. Future research should use more direct measures to test the effect of money prime on the activation of market-pricing mode. Exchange mentality implies that one may be called upon to do something for the other, that is, what people can gain from a relationship should be based on their inputs. Thus future investigations can examine whether money prime makes people devote more to a relationship if they would like to gain more from that relationship. Further research could also examine

whether money prime will lead people to focus on the instrumental aspects of themselves in relationships, and how this would influence their interpersonal presentations and interactions.

Our research focused only on the formation of relationships with strangers; how money thoughts influence people's interactions with intimate and close others remains unanswered. People tend to include close others in their self-concept (Aron, Aron, Tudor, & Nelson, 1991; Campbell, Sedikides, Reeder, & Elliot, 2000). Therefore, in many circumstances, people respond differently to their close others than to others who are strangers or acquaintances. For example, recent research showed that money-primed people perceive their own antisocial behavior as more appropriate, and this effect also extended to their close others (Chen et al., 2014). Thus, how money would alter the way people interact with their close others requires an answer. Will money thoughts lead people to instrumentally subjugate the interests of their close others? Will money make people form close relationships merely based on the calculation of instrumentality? Answers to these questions will help to depict the full impact of money on interpersonal relationships.

Furthermore, money may compromise relationships in communal settings that require interpersonal caring or warmth; however, it is unclear what type of influence money exerts on other types of relationships, such as those that function mainly on transactional terms (e.g., work relationships). As demonstrated in previous research, money can enhance team cooperation in the sense that collaboration can benefit team members (Beus & Whitman, in press). It warrants further investigation whether money can actually enhance the growth and health of such relationships rather than exert the opposite effects. Research findings in these areas can contribute to a big picture of the effects of money.

Finally, in the current research we did not measure actual behaviors. Past research has demonstrated that intention is the key determinant of actual behavior (e.g., Abraham, Sheeran, & Johnston, 1998; Eagly & Chaiken, 1993; Gollwitzer & Moskowitz, 1996), and in

a meta-analysis of the relationship between behavioral intention and actual behavior, the authors found that a medium to large change in intention leads to a small to medium change in behavior (Webb, & Sheeran, 2006). Therefore, we believe that our current findings can be extended to actual behaviors. However, future research is warranted to directly examine the relationship between money and actual interpersonal behaviors.

Concluding Remarks

In the present research, we focused on how money influences social interactions. Specifically, we examined whether or not money would facilitate approach toward instrumental social targets. Our research showed that monetary reminders lead people to focus on the instrumental aspect of relationships. Bearing the idea of money in mind, people focus more on others' instrumental attributes; they approach instrumental others more readily, and this effect is accounted for by the perceived instrumentality of others. Future research should extend this research by examining the influences of money on interpersonal interactions within the context of perceived social targets' instrumentality and exploring whether money may enhance the growth and health of relationships that function on the basis of exchange and transaction (e.g., work relationships).

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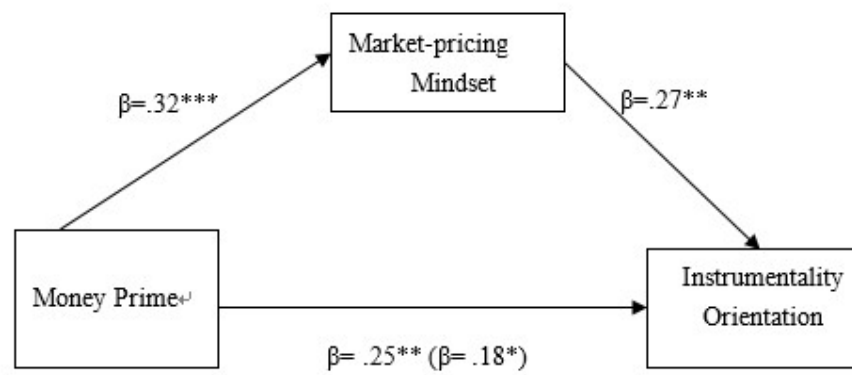


Figure 1. Market-pricing mindset mediates the effect of money on instrumentality orientation (Experiment 1).

*** $p < .001$; ** $p < .01$; * $p \leq .05$

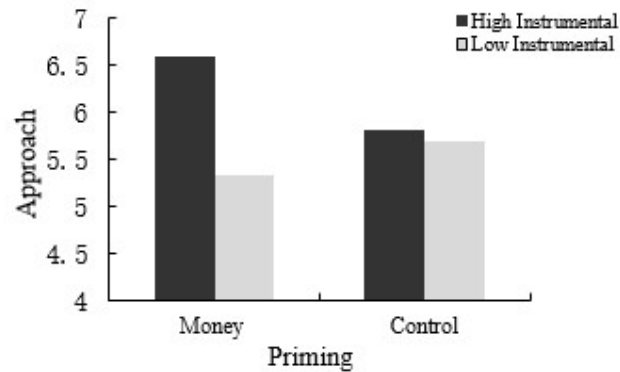


Figure 2a. Participants’ intention to approach the target as a function of priming and target instrumentality (Experiment 2).

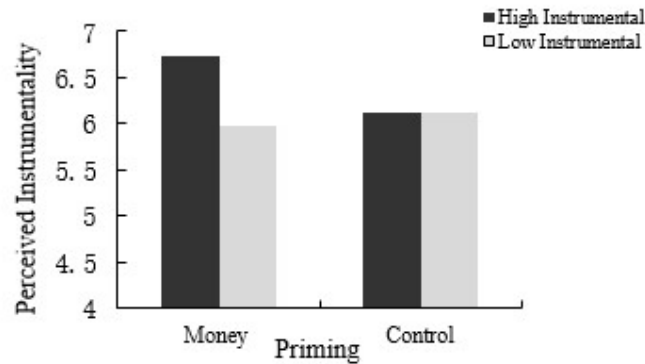


Figure 2b. Participants’ perceived instrumentality of the target as a function of priming and target instrumentality (Experiment 2).

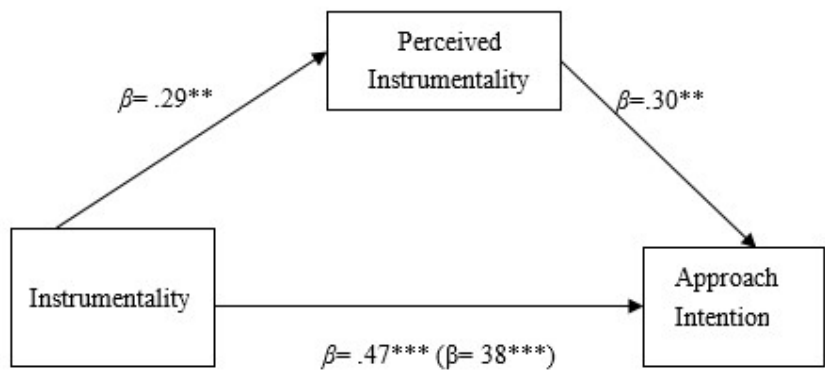


Figure 2c. Perceived instrumentality of the targets mediated the effect of instrumentality on approach intentions for the money-priming condition (Experiment 2).

*** $p < .001$; ** $p < .01$; * $p < .05$

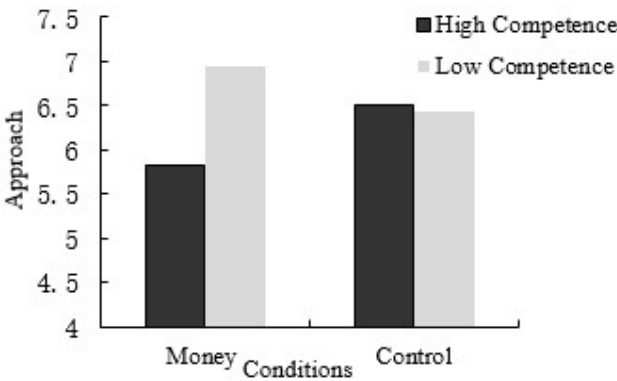


Figure 3a. The effect of the interaction between priming and self-competence on approach intention (Experiment 3).

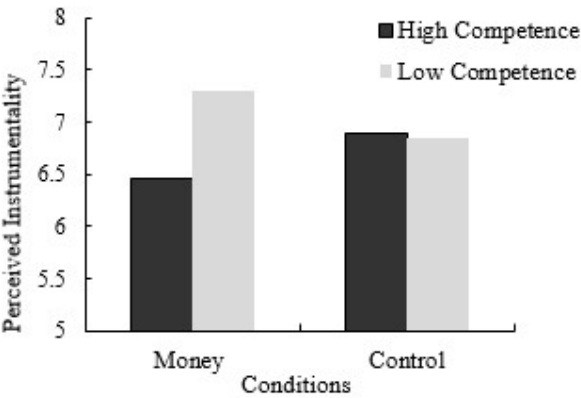


Figure 3b. Participants' perceived instrumentality of the target as a function of priming and target instrumentality (Experiment 3).

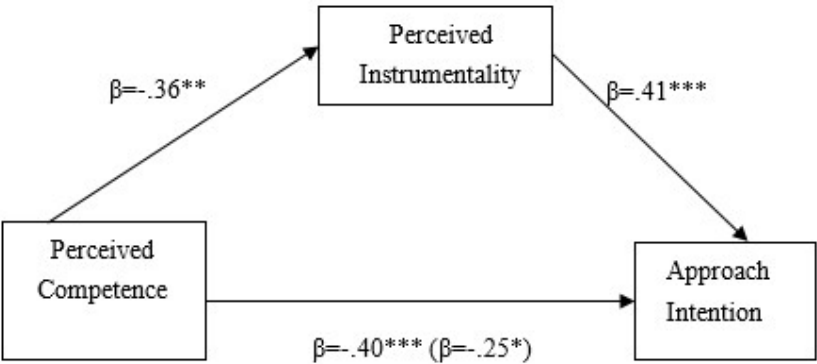


Figure 3c. Perceived instrumentality of the target mediated the effect of self-perceived competence on intention to approach the instrumental target for money-primed participants (Experiment 3).

*** $p < .001$; ** $p < .01$; * $p < .05$

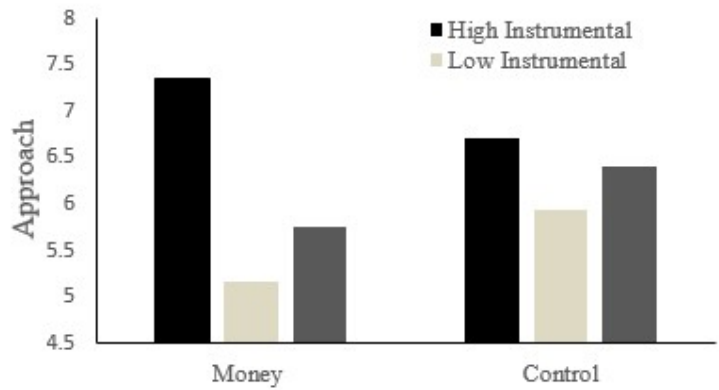


Figure 4a. The effect of the interaction between priming and instrumentality on approach intention (Experiment 4).

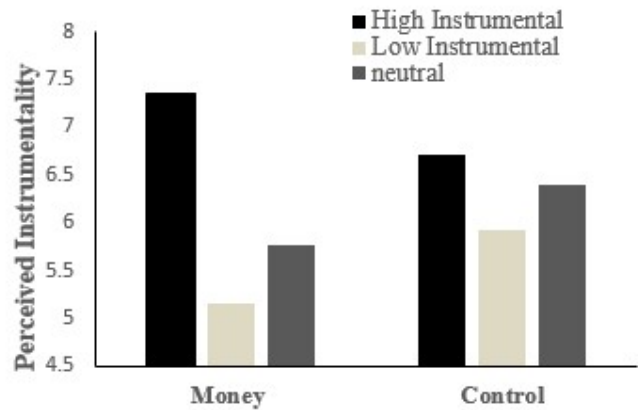


Figure 4b. Participants' perceived instrumentality of the target as a function of priming and target instrumentality (Experiment 4).

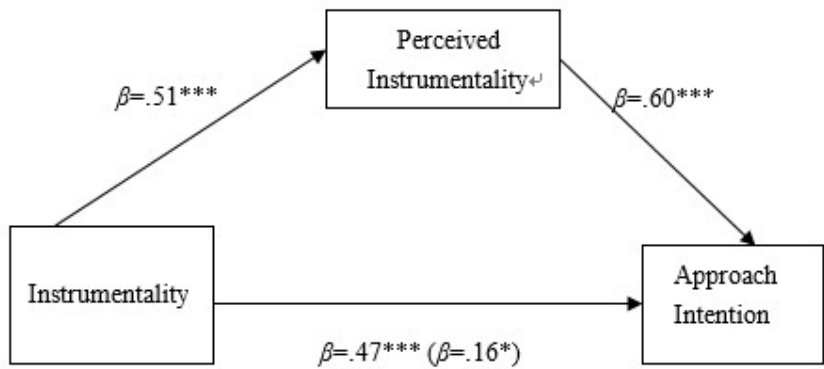


Figure 4b. Perceived instrumentality of the target mediated the effect of target instrumentality on intention to approach the instrumental target (Experiment 4).

*** $p < .001$; ** $p < .01$; * $p < .05$

Appendix A

The profile for the social target in Experiment 2 (high-instrumentality condition) and
Experiment 4 (low-instrumentality condition)

Age: 20

Major: *Statistics*

Year of study: *2nd year*

Prize & Awards:

Second prize in the RUC mathematics competition in 2013.

Activities:

Volunteers in the Red Cross organization.

Hobbies:

Movies, music, swimming, and singing.

Self-description:

I am a big fan of math. I hope I can be a financial analyst after my graduation, since I am interested in applying my knowledge of math to practical research. I am quite an easygoing person, I have a lot of friends around, and I think most of them like me a lot, since I care about them. We always hang out together.

The profile for the social target in Experiment 2 (low-instrumentality condition) and
Experiment 4 (high-instrumentality condition)

Age: 20

Major: *Chinese*

Year of study: *2nd year*

Prize & Awards:

Second prize in the RUC Composition competition in 2013.

Activities:

Volunteers in the Red Cross organization.

Hobbies:

Movies, music, swimming, and singing.

Self-description:

I love writing and reading. I hope I can be a writer after my graduation. I am quite an easygoing person, I have a lot of friends around, and I think most of them like me a lot, since I care about them. We always hang out together.

Appendix B

The performance standard for Sudoku task in Experiment 3.

High-Competence Group:

Number of correct answers Diagnosis

7 or more good at Sudoku

4-6 so-so at Sudoku

0-3 not good at Sudoku

Low-Competence Group:

Number of correct answers Diagnosis

43 or more good at Sudoku

38-42 so-so at Sudoku

0-38 not good at Sudoku

Appendix C

The profile for the target in Experiment 3

EDUCATION

Renmin University of China, 2012–Present

Mathematics and Economics

G.P.A. 3.3 overall; 3.5 in major

Related Coursework: Mathematical Methods, Statistical Analysis, Discrete Mathematics, Logic and Reasoning, Financial Calculus, Mathematics Project

RELATED EXPERIENCE

Research Assistant, Mathematics, RUC, Summer 2013–Spring 2014

- Assisted with major lab study for Dr. Zhang
- Collaborated with other students on mathematic modeling and applied computing by helping to process data
- Organized lab for student and faculty use

Extra-Curricular Activities

Member, Music Club, Fall 2012–Present

Member, Beijing Youth Volunteer Association

HOBBIES

Movies, Music.

SELF DESCRIPTION

I am a big fan of math. I hope I can be a financial analyst after my graduation as I am interested in applying my knowledge of math to practical research. I am an easygoing person; I always have many friends around and they know that I care about them a lot.

Footnote

1. As suggested by the review team, in the review process we increased the sample size in our studies in order to strengthen the reliability of our findings. To make sure the data collected in the second wave were homogeneous with those of the original one, ANOVAs were conducted on critical dependent variables with the data collection phase as an independent variable. All analyses revealed insignificant results, supporting the validity of pooling these two sets of data. The analyses we reported in the paper were based on the pooled data, and the details about the two waves of data collection can be found in the online supplemental materials.
2. All four experiments were conducted in a large city in northern China, with an average disposable family income of around USD 7663 per year and average family expenses of around USD 5522 per year.
3. Throughout the four experiments, participants failed to follow instructions including those who did not form correct sentences in the money prime and control conditions (in Studies 2 and 3), those who spent more than 5 minutes on the Sudoku task (in Study 3), and those who did not follow the presenting order of the questionnaires or had interruptions during the experiment (e.g. talking on the phone; in Studies 1, 2, 3 and 4). For participants with incomplete data, we only excluded those who did not complete the experiments by missing the whole DV measures (emergency leave or handed in uncompleted questionnaires). Including those who did not follow instructions in data analyses did not change the pattern of the results, the detailed data analyses results can be found in the online supplemental materials.
4. To facilitate direct comparison of the effect size of each study with the overall effect size, we calculated the effect size Cohen's d and confidence interval on effect size for experiments 2 to 4. Specifically, the effect size for the interaction between money priming and instrumentality on approach intention in experiment 2 was $d = .48$, 95% CI = [.05, .91]; the effect size for the interaction between money priming and perceived competence on approach intention in

experiment 3 was $d = .59$, 95% CI = [.13, 1.04]; and the effect size for the interaction between money priming and instrumentality on approach intention in experiment 4 was $d = .42$, 95% CI = [.17, .67].