Seeing and Being Green?

The Effect of Money Priming on Willingness to Perform Sustainable Actions, Social Connectedness, and Prosociality

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Abstract

This investigation attempted to conceptually replicate/extend research that suggests that reminders of money can inhibit prosociality, promote self-sufficiency, and influence political beliefs. Based on these results, we hypothesized that money primes would decrease willingness to engage in sustainable actions. We also predicted that people would distribute points less prosocially and feel less socially connected when money was primed. Individuals were recruited from an undergraduate participant pool and MTurk. Meta-analytic results across the two samples revealed that money priming did not have a significant impact on willingness to act sustainably, but it did cause participants to distribute points less prosocially and report lower social connectedness than individuals in the control condition. While effects were smaller than those reported in Vohs, Mead, and Goode (2006), this study still offers support for the detrimental impact of reminders of money on interpersonal relations.

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Despite money being a ubiquitous part of modern life, it is only within the past decade that the psychological effects of money have been empirically investigated. In their seminal paper, Vohs, Mead, and Goode (2006) found that participants who were subtly exposed to reminders of money were more self-sufficient and less prosocial than those who were not primed with money (i.e., they took longer to ask for help, were less helpful with others, donated less money to charity, physically distanced themselves more from others, and showed more of a preference for solitary activities). Since then, other researchers have shown that being exposed to money cues can increase selfish and unethical behavior (e.g., Gino & Mogilner, 2014), and can even have an influence on how we think about interpersonal relations at a societal level (i.e., leading to greater endorsement of current social systems, free-market economics, social inequality between groups, and belief in a just world; Caruso, Vohs, Baxter, & Waytz, 2013). Overall, these studies suggest that brief and subtle reminders of money can have a significant impact on our judgments, motivations, and behaviors.

Recently, however, concerns have been raised about the validity and replicability of priming research (e.g., Kahneman, 2012). In particular, a number of studies have failed to replicate some of the money priming effects previously mentioned. Tate (2009) and Grenier et al. (2012) did not replicate some of the original findings from Vohs et al. (2006), and a large-scale multi-lab replication project by Klein et al. (2014) did not replicate Caruso et al.'s (2013) finding that money priming increases system justification. Taking these results into account, the psychological effects of money are unclear. The current investigation addresses some of these

mixed findings with an attempt to conceptually replicate and extend the results from Vohs et al. using larger sample sizes and novel measures (i.e., social value orientation and social connectedness). We chose to assess these constructs because they have been shown to be sensitive to subtle experimental manipulations (e.g., Bekkers, 2004; Ferguson, Branscombe, & Reynolds, 2011; Fitzsimons & Shah, 2008), and they could be easily adapted/completed online (removing the possibility for experimenter bias). Investigating social value orientation and social connectedness might also help elucidate the cognitive changes that underlie money priming's effect on prosocial behaviors.

The other goal was to extend previous findings to the environmental domain. For a variety of reasons, we thought that reminders of money might hamper willingness to engage in sustainable behaviors. Research has found that people with independent self-contruals are more likely to report that they would manage resources competitively and unsustainably in a hypothetical commons dilemma (Arnocky, Stroink, & DeCicco, 2007). Furthermore, support for free-market economics is associated with decreased concern for the environment and lower intentions to do something about environmental problems like climate change (Heath & Gifford, 2006). Reminders of money may make individuals feel less pressure to engage in socially desirable actions like sustainable behaviours as the need for social acceptance appears to be reduced when people are primed with money (Zhou, Vohs, & Baumeister, 2009). Money cues activating perceptions of financial wealth may also lead one to feel that they are less vulnerable and better able to adapt to environmental problems and, thus, become less concerned or motivated to be proenvironmental. The strong association between money and the consumption of resources is another reason to suspect that money priming might reduce motivations to conserve and sustain. Some studies even suggest that the use of economic appeals to persuade

people to engage in proenvironmental actions can be less effective than appealing to environmental concerns (e.g., Bolderdijk, Steg, Lehman, & Postmes, 2012; but see Dogan, Bolderdijk, & Steg, 2014). Lastly, there is some preliminary evidence that money priming decreases appreciation of and concern for nature (i.e., universalism is valued less after people are reminded of money; Caruso et al., 2013). If people feel less connected and concerned about the natural world, they will likely be less willing to behave in ways that protect it (Nisbet, Zelenski, & Murphy, 2009). From this perspective, money primes might function in the opposite manner of nature exposure (Zelenski, Dopko, & Capaldi, 2015).

Method

The hypotheses, planned analyses, exclusion criteria, materials, and procedure were all preregistered before any data were collected (see Capaldi & Zelenski, 2015).

Participants

Samples were obtained from two sources: an undergraduate participant pool at a Canadian university and MTurk workers from the United States. Following the exclusion criteria, four participants from each source were excluded. The Canadian sample (N = 199) was primarily female (82.9%) and White (68.3%), with ages ranging from 17 to 55 years old (M = 20.67, SD = 4.69). In the American sample (N = 196), the majority of participants were female (60.7%) and White (78.1%), with ages ranging from 18 to 75 years old (M = 36.34, SD = 12.81).[1] The hypotheses were tested in each of the two samples and then a meta-analytic average was obtained to examine the cumulative support for each hypothesis.

Materials and Procedure

The sentence descrambling task from Vohs et al. (2006) was employed as the experimental manipulation in the current investigation. Participants were randomly assigned to a

money priming condition where half of the 30 sentences contained money-related concepts or a control condition that only contained neutral phrases.

After the priming manipulation, participants completed a modified version of the Willingness to Perform Sustainable Behavior Measure (Ferguson et al., 2011). Individuals indicated how willing they would be to engage in 20 environmentally friendly behaviors on a 7-point Likert scale ranging from 1 (*extremely unwilling*) to 7 (*extremely willing*; Cronbach's αs = .88 and .93). In order to avoid exposing participants to additional money cues, 10 items from the original version of this measure were removed for this study that explicitly mentioned money-related concepts (e.g., taxes). Higher scores indicate greater willingness to act sustainably.

Participants were then asked to distribute points between themselves and a hypothetical other in a modified version of the 6-item Social Value Orientation Slider Measure (Murphy, Ackermann, & Handgraaf, 2011). Higher scores indicate a more prosocial allocation of resources.

Social connectedness was measured using a 4-item modified and expanded version of the Inclusion of Other in Self Scale (Aron, Aron, & Smollan, 1992). Each item contained seven pairs of circles which varied in the degree they overlapped with one circle labelled "self" and the other circle labelled "friends", "family", "community", or "society". An average overall score was obtained, with higher scores indicating greater social connectedness (Cronbach's αs = .57 and .79).

Results

See Table 1 for descriptive statistics. We hypothesized that individuals exposed to money primes would report lower willingness to engage in sustainable actions compared to those in the control condition. This hypothesis was not supported as the effect was inconsistent across the

two samples; subtle reminders of money caused a small increase in willingness in the Canadian undergraduate sample, $t(188) = 1.64$, $d = .24$, 95% CI [-.05, .52], and a slight decrease in willingness in the American MTurk sample, $t(185) = -0.85$, $d = -.13$, 95% CI [-.42, .17]. The inconsistent effect of money primes on willingness to act sustainably was reflected in the results from a fixed-effect meta-analysis ($d = .06$, 95% CI [-.15, .26], $k = 2$, $n = 377$).

We also hypothesized that participants exposed to money primes would be less prosocial when distributing points compared to those in the control condition. A small negative effect of money primes on social value orientation was observed in the American MTurk sample, $t(176) = -1.99$, $d = -.30$, 95% CI [-.59, -.002], and the Canadian undergraduate sample, $t(170) = -1.13$, $d = -.17$, 95% CI [-.47, .13]. A fixed-effect meta-analysis revealed that money primes led to lower social value orientation scores across the two samples ($d = -.24$, 95% CI [-.45, -.03], $k = 2$, $n = 350$).

Lastly, we hypothesized that individuals in the money priming condition would feel less socially connected compared to those in the control condition. A small negative effect of money primes on social connectedness was observed in the Canadian sample, $t(196) = -1.76$, $d = -.25$, 95% CI [-.53, .03], and the American sample, $t(190) = -1.22$, $d = -.18$, 95% CI [-.46, .11]. A fixed-effect meta-analysis revealed that money primes led to decreased social connectedness across the two samples ($d = -.21$, 95% CI [-.41, -.01], $k = 2$, $n = 390$).

Discussion

Money is a ubiquitous aspect of daily life, as is the opportunity to behave more sustainably. Given current environmental problems and the need for widespread behavioral change, the interaction between these two phenomena is an important but overlooked area of research. The current study did not find evidence that subtle reminders of money have a

consistent detrimental impact on our willingness to engage in proenvironmental behaviors. Although more research is needed, this study nevertheless suggests that simply priming the concept of money may not automatically undermine sustainable attitudes and behaviors. Rather, more explicit and direct references to money in an environmental context may be required for it to be detrimental.

In general, the current investigation appeared to support the pattern of findings from Vohs et al. (2006) and provides some evidence for the robustness and generalizability of their money priming effect using novel dependent measures. Preferring direct replications, Pashler and Harris (2012) and others have criticized conceptual replications' usefulness. Failed conceptual replications can be attributed to poor methods that are tweaked until more supportive results are found, and publication bias further distorts the record of failed attempts. To ameliorate these concerns, we preregistered previously validated methods and our analysis plan, and recruited a second sample to directly replicate our conceptual replication. Although adjudicating published effects with direct replications is important, we must also understand their breadth with methodological extensions.

Our effects on social outcomes were much smaller in magnitude than those reported in Vohs et al. (2006). Nonetheless, reminders of money generally caused people to feel less socially connected and be less prosocial when distributing points across the two studies. The decrease in social connectedness and a more selfish social value orientation might help explain some of money priming's effects on helping behavior, independence, etc., more generally. In addition, these results might inform the types of appeals charitable organizations present to the public in order to elicit donations and recruit volunteers (i.e., avoid unintentionally priming self-sufficiency and a market-pricing perspective by including money-related information in their

messaging). In contrast, priming time or nature might be a more effective strategy as these have been shown to produce the opposite effects of money (e.g., Mogilner, 2010; Zelenski et al., 2015).

We deliberately recruited participants from two different sources to examine the generalizability of our findings, but this approach does make it difficult to interpret why the direction of one of our effects (i.e., willingness to act sustainably) differed across samples. For instance, was it because one sample consisted of students and the other consisted MTurk workers, or was it because one sample was from Canada and the other was from the United States? The inclusion of paid MTurk workers at all may be considered another limitation by some. Samples from MTurk, however, appear to be more representative than traditional university participant pools (Paolacci, Chandler, & Ipeirotis, 2010) and have been successfully used in previous studies in this area (Caruso et al., 2013; Gino & Mogilner, 2013). Moreover, based on our results, paying these participants to participate did not appear to unintentionally prime them.

Overall, this study offers support for a modest detrimental impact of reminders of money on interpersonal relations.

Notes

[1] In general, age was not associated with the dependent variables. One exception was the association between age and willingness to perform sustainable behaviors in the Canadian undergraduate sample, $r(188) = .18$. The vast majority of this sample, however, was under 25 years old ($N = 178$) and the correlation became trivial in size when participants with ages three standard deviations above the mean were excluded, $r(184) = .07$.

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Table 1

Descriptive Statistics and Effect Sizes Associated with the Statistical Tests of Hypotheses

	Canadian Undergraduate Sample			American MTurk Sample		
	Condition			Condition		
	Money	Control	*d* [95% CI]	Money	Control	*d* [95% CI]
Sustainable Willingness	*M* = 5.09 *SD* = 0.78	*M* = 4.89 *SD* = 0.92	.24 [-.05, .52]	*M* = 5.03 *SD* = 1.26	*M* = 5.17 *SD* = 1.07	-.13 [-.42, .17]
Social Value Orientation	*M* = 24.07 *SD* = 15.02	*M* = 26.50 *SD* = 12.94	-.17 [-.47, .13]	*M* = 22.50 *SD* = 15.94	*M* = 27.05 *SD* = 14.56	-.30 [-.59, -.002]
Social Connectedness	*M* = 3.67 *SD* = 1.07	*M* = 3.93 *SD* = 0.99	-.25 [-.53, .03]	*M* = 3.49 *SD* = 1.19	*M* = 3.71 *SD* = 1.34	-.18 [-.46, .11]

Note. Degrees of freedom varied from 170 to 196.