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Research Article

The Symbolic Power of Money

Reminders of Money Alter Social Distress and Physical Pain

Xinyue Zhou,[1] Kathleen D. Vohs,[2] and Roy F. Baumeister[3]

[1]Department of Psychology, Sun Yat-Sen University; [2]Marketing Department, Carlson School of Management, University of Minnesota, Minneapolis; and [3]Department of Psychology, Florida State University

ABSTRACT—*People often get what they want from the social system, and that process is aided by social popularity or by having money. Money can thus possibly substitute for social acceptance in conferring the ability to obtain benefits from the social system. Moreover, past work has suggested that responses to physical pain and social distress share common underlying mechanisms. Six studies tested relationships among reminders of money, social exclusion, and physical pain. Interpersonal rejection and physical pain caused desire for money to increase. Handling money (compared with handling paper) reduced distress over social exclusion and diminished the physical pain of immersion in hot water. Being reminded of having spent money, however, intensified both social distress and physical pain.*

What is the psychological meaning of money? The present investigation was based on the idea that money is a social resource.

As social and cultural animals, humans rely on each other (i.e., on their social group and its organizing systems) to get what they want and need. This social interdependency sustains a strong need to belong (Baumeister & Leary, 1995), because gaining acceptance by the group is important for obtaining the means of survival. However, in all but the most primitive cultures, money can substitute for social popularity: Money enables people to manipulate the social system to give them what they want, regardless of whether they are liked (Lea & Webley, 2006). In other words, either money or interpersonal inclusion enables people to obtain what they want from the social system.

The present research investigated the relationship between thoughts of money and interpersonal rejection. Recent work by Vohs, Mead, and Goode (2006) suggested that thoughts of money activate feelings of self-sufficiency: Such thoughts made participants less likely to offer or request help. One possible implication of this finding is that money provides a feeling of confidence that problems can be solved and needs can be met, and such confidence, in turn, renders people less likely to care about others' approval. Thus, money may be a social resource in which resides efficacious power to manipulate the social system for one's benefit.

In the experiments reported here, we tested the hypothesis that reminders of money can alter the impact of social events, especially acceptance and rejection. Even just the idea or feeling of having money should generate a broad sense of strength or efficacy. Hence, feeling rejected (i.e., low in social approval) should increase the desire for money. Thoughts of having money should blunt the pain of being rejected. Thoughts of losing money, in contrast, might increase the pain of rejection: A person who lacks money is all the more dependent on the approval of others.

We also tested hypotheses concerning underlying processes. Seminal writings by Panksepp (1998) proposed that when animals evolved to use social interaction as a strategy for achieving biological ends, they did not invariably develop new systems to respond to these new realities, but instead adapted existing systems to respond to social events. Hence, the pleasure and pain systems became attuned to issues such as social acceptance and rejection. Striking evidence for this proposal comes from a study by Eisenberger, Lieberman, and Williams (2003), who showed that social rejection (ostracism) produced brain responses that resembled responses to physical pain. An important review by MacDonald and Leary (2005) also found support for the link between social and physical pain, showing that social exclusion produced analgesic effects akin to the temporary numbing of physical pain that accompanies a bodily injury. Later work confirmed that social exclusion also causes humans to show temporary numbness to physical pain (DeWall & Baumeister, 2006). Hence, much as money may be linked with social pain, it may be linked with physical pain, because social and physical pain rely on similar mechanisms.

Why might the idea of money mitigate physical pain? We propose that money, as an all-purpose social resource, activates

Address correspondence to Xinyue Zhou, Department of Psychology, Sun Yat-Sen University, Guangzhou 510275, China, e-mail: zhouxyue@mail.sysu.edu.cn, or to Kathleen Vohs, 3-150 321 19th Ave. S., Marketing Department, University of Minnesota, Minneapolis, MN 55455, e-mail: kvohs@umn.edu.

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a general sense of confidence, strength, and efficacy. Past work has established that strong self-efficacy beliefs improve the ability to withstand physical pain (Litt, 1988) and also contribute to interpersonal success (Wheeler & Ladd, 1982).

Therefore, we hypothesized that money is linked to physical pain. Pain should increase the desire for money. Thoughts of having money should reduce feelings of pain caused by an external stimulus, and thoughts of spending or losing money should intensify pain.

EXPERIMENT 1

If money can substitute for social acceptance, then thwarting the need to belong (via social rejection) should stimulate the desire for money. This was the hypothesis tested in Experiment 1. Twenge, Baumeister, DeWall, Ciarocco, and Bartels (2007) showed that rejected persons donated less money than others. Twenge et al. interpreted this reduced giving as due to a decrease in prosocial motivations, but it might simply have reflected increased desire to have and keep money.

Participants

Seventy-two undergraduate students at a Chinese university (48 females, 24 males) took part in same-sex groups of 4 and were given $8 renminbi yuan (RMB) for participating. No data were discarded.

Procedure

Participants in each group first discussed getting-acquainted questions for 5 min and then were led to separate rooms. Each person indicated which group member he or she would like to work with on an upcoming dyad task. Then the experimenter returned to each participant and, by random assignment, said that either everyone (acceptance condition) or no one (rejection condition) had selected the participant and that this ostensible problem would preclude that participant from engaging in the dyad task.

Desire for money was measured in three ways. First, participants were asked to draw a (Chinese) $1 RMB coin from memory. Past work has confirmed that drawing larger coins is a sign of stronger desire for money (Bruner & Goodman, 1947). Next, participants were given a list of seven pleasant things (e.g., sunshine, spring, chocolate, beach) and asked how many of them they would be willing to forgo permanently in exchange for $10 million RMB (~ $1.4 million U.S.). Finally, as participants were getting ready to leave the experiment, another experimenter entered the room and asked for donations for an orphanage.

Results and Discussion

Rejected participants, compared with accepted participants, drew larger coins, $t(70) = 3.01$, $p < .01$; expressed willingness to forgo more pleasures in return for money, $t(70) = 2.08$, $p < .05$; and donated less money to the orphanage, $t(70) = 2.54$, $p < .02$. All three measures were significantly intercorrelated, $.33 < r < .65$, a finding consistent with the assumption that they all measure the same variable. Thus, social rejection increased the desire for money.

EXPERIMENT 2

Experiment 2 tested the hypothesis that priming the idea of physical pain would activate the desire for money, just as social rejection activated the desire for money in Experiment 1.

Participants

Ninety-two undergraduate students at a Chinese university (64 females, 28 males) took part in exchange for $8 RMB.

Procedure

Participants came into the laboratory and first performed a word-completion task. Half of them were randomly assigned to the neutral condition and received 30 word fragments that when completed would represent neutral concepts (e.g., *stone*, *lunch*); the other participants were assigned to the pain condition and received 10 word fragments that when completed referred to physical suffering (e.g., *headache*, *pain*, *sore*) and 20 word fragments that referred to neutral concepts. Then, participants were given a sheet that showed 10 coin sizes and were instructed to choose which circle corresponded to the size of each of three actual coins. Last, participants listed 10 things besides money that they valued in life and then were instructed to indicate which of those things they would give up in exchange for $10 million RMB.

Results and Discussion

Participants in the pain condition, compared with those in the neutral condition, estimated coin sizes as significantly larger, $t(90) = 3.08$, $p < .005$, and were willing to trade more valued things for money, $t(90) = 3.49$, $p = .001$. The two measures were positively correlated, $r(90) = .68$, $p < .001$. Thus, thoughts of physical pain increased desire for money.

EXPERIMENT 3

Experiments 1 and 2 showed that social rejection and physical pain stimulated the desire for money. Our theory was that money, as a social resource, improves the implicit confidence that problems in general can be solved. If that is correct, then thinking about money ought to reduce suffering from problems, including social exclusion.

Participants

Eighty-four undergraduate students at a Chinese university (52 females, 32 males) were randomly assigned among four conditions and were given partial course credit for participating.

Procedure

First, participants were given what was described as a finger-dexterity task. Those in the money condition counted out 80 $100 bills from a stack provided by the experimenter, whereas participants in the paper condition counted out 80 pieces of paper. Next, all participants played a computerized ball-tossing game (Cyberball; Eisenberger et al., 2003). They were led to believe they played with 3 live participants, but in fact the computer simulated the other players. Initially, the ball was tossed equally among the 4 players. In the normal-play condition, this equal play continued throughout the game. In the social-exclusion condition, the simulated confederates stopped throwing the ball to the live participant after 10 throws. Afterward, participants rated the social distress they felt about the game using the Southampton Social Self-Esteem Scale (Sedikides, 2008). Sample items on this scale include "I felt valued" and "I felt rejected." Finally, participants estimated the number of throws they had received and completed the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988).

Results and Discussion

The manipulation check confirmed that participants in the exclusion condition estimated they received far fewer throws than those in the normal-play condition, $F(1, 80) = 1{,}013.33$, $p < .001$. Counting money versus counting paper had no effect on the estimated number of throws received, $F(1, 80) = 2.07$, n.s.

An analysis of variance (ANOVA) on social distress revealed three significant effects. Social exclusion increased distress, $F(1, 80) = 18.28$, $p < .001$, and counting money led to less distress than counting paper, $F(1, 80) = 9.33$, $p < .005$. The interaction between Cyberball condition and counting condition was significant, $F(1, 80) = 4.39$, $p < .05$, as illustrated in Figure 1. Planned comparisons confirmed that counting money instead of paper significantly reduced distress in the exclusion condition, $F(1, 80) = 13.17$, $p < .001$, but not in the normal-play condition, $F(1, 80) < 1$, n.s. Thus, money reduced distress and maintained self-esteem in the face of social exclusion.

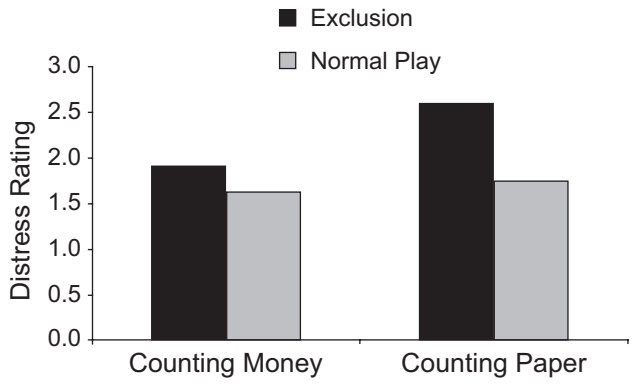

Fig. 1. Results from Experiment 3: mean distress rating as a function of Cyberball condition (social exclusion vs. normal play) and counting condition (counting money vs. counting paper).

PANAS scores showed no effects of counting or Cyberball condition on overall positive or negative affect, Fs < 2.67, n.s. Given our hypothesis about money conferring a sense of confident efficacy, we conducted a separate analysis for the single PANAS item *strong*. There was a significant main effect of counting condition on reports of feeling strong, $F(1, 80) = 25.76$, $p < .001$; the main effect of Cyberball condition and the interaction of counting condition and Cyberball condition were not significant, Fs < 1. Participants who counted money reported feeling stronger ($M = 3.45$, $SD = 0.67$) than those who counted paper ($M = 2.59$, $SD = 0.86$). Also, the degree to which participants felt strong correlated inversely with reports of distress regarding the Cyberball game, $r(82) = -.32$, $p < .01$. These results fit the theory that money operates as a resource, so that counting money helps buffer the impact of exclusion by making people feel stronger.

EXPERIMENT 4

According to prior theories, responses to social events arise from some of the same physiological mechanisms that respond to physical pain (MacDonald & Leary, 2005; Panksepp, 1998). If so, then counting money should reduce physical pain, just as it reduced social pain in Experiment 3.

Participants

Ninety-six undergraduate students at a Chinese university (60 females, 36 males) participated in exchange for partial course credit.

Procedure

Prior to coming to the laboratory, participants were randomly assigned to count money or paper. After completing the counting task (the same task as in Experiment 3), participants performed a pain-sensitivity task. In the high-pain condition, an assistant placed the participant's hand on a structure to support and immobilize it and then immersed the left index and middle fingers in water three times, once at 43 °C (baseline) for 90 s, then at 50 °C (very hot) for 30 s, and then again at 43 °C for 60 s. In the moderate-pain condition, the participant's fingers were immersed only in the water at the baseline temperature (43 °C), for 180 s. Afterward, participants used a 9-point scale to rate how painful this task had been. Then, they completed the PANAS as a mood measure.

Results and Discussion

An ANOVA on pain reports yielded three significant effects. First, reported pain was higher in the high-pain than in the moderate-pain condition, $F(1, 92) = 57.35$, $p < .001$; this finding indicates that the pain manipulation was successful. Second, reported pain was lower after participants counted money than after they counted paper, $F(1, 92) = 15.73$, $p < .001$. Third, the interaction of counting condition and pain

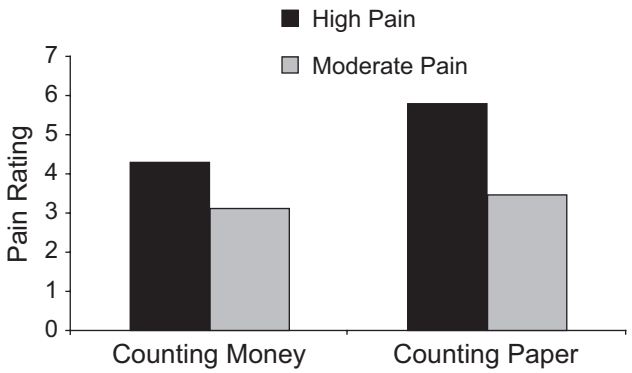

Fig. 2. Results from Experiment 4: mean pain rating as a function of pain condition (high vs. moderate pain) and counting condition (counting money vs. counting paper).

condition was also significant, $F(1, 92) = 5.49, p = .02$. Planned comparisons indicated that counting money significantly reduced pain in the high-pain condition, $F(1, 92) = 19.91, p < .001$, but not in the moderate-pain condition, $F(1, 92) = 1.32, p = .25$ (see Fig. 2).

Scores on the positive- and negative-affect subscales of the PANAS did not vary as a function of counting or pain condition or their interaction, Fs < 1.45, n.s. Again, ratings of the item *strong* showed a main effect of counting condition, $F(1, 92) = 7.57, p < .01$; participants who counted money reported feeling stronger ($M = 3.46$, $SD = 1.03$) than participants who counted paper ($M = 2.83$, $SD = 1.19$). Neither the main effect of pain condition nor the interaction of counting condition and pain condition had a significant effect on *strong* ratings, Fs < 2.15, n.s. Pain reports were significantly correlated with reports of feeling strong, such that feeling strong inversely predicted how much pain participants reported experiencing, $r(94) = -.30, p < .01$.

EXPERIMENT 5

Our theory held that the meaning of money as an acquired social resource accounts for its ability to reduce pain and distress. An alternative explanation of the results of Experiments 3 and 4 might attribute them to mere distraction. One way to tease apart these hypotheses would be to look at the effects of losing money. Thoughts of losing money should be at least as distracting as thoughts of gaining money, but the meaning of gaining money is the opposite of the meaning of losing or spending money. Our theory would predict that thinking about outgoing money would increase distress from rejection, whereas the distraction hypothesis would predict the opposite (that thinking about losing money would reduce distress).

Participants

One hundred eight students at a Chinese university (76 females, 32 males) were randomly assigned among four conditions and were given partial course credit for participating.

Procedure

Half of the participants were first assigned to list their monetary expenditures for the past 30 days. The rest were instructed to write about the weather conditions over the past 30 days. Then, all participants played Cyberball, experiencing either normal-play or social-exclusion conditions, as in Experiment 3. Also as in Experiment 3, participants completed the Southampton Social Self-Esteem Scale (our measure of social distress) and the PANAS.

Results and Discussion

An ANOVA revealed three significant effects on the social-distress measure. First, social distress was higher after participants listed monetary expenditures than after they listed weather conditions, $F(1, 104) = 36.22, p < .001$. Second, as in Experiment 3, social distress was higher after exclusion than after normal play, $F(1, 104) = 41.72, p < .001$. The interaction of Cyberball and writing conditions was also significant, $F(1, 104) = 6.88, p = .01$ (see Fig. 3). Planned comparisons indicated that reflecting on money loss increased distress in both the social-exclusion condition, $F(1, 104) = 37.34, p < .001$, and the normal-play condition, $F(1, 104) = 5.76, p < .03$, but that the impact was significantly larger in the social-exclusion condition (hence the interaction).

Thus, thinking about having spent one's money increased the negative impact of social exclusion. This finding contradicts the alternative explanation based on distraction and supports the view that the impact of thinking about money reflects its value as a social resource.

PANAS scores for overall positive and negative affect did not vary with Cyberball condition, writing condition, or their interaction, Fs < 1.50, n.s. Bolstering our theory that having money makes people feel efficacious, PANAS self-ratings for the item *strong* showed a main effect of writing condition, $F(1, 104) = 5.03, p = 0.03$; no other effects were significant, Fs < 1. In Studies 3 and 4, thoughts of gaining money led to feelings of strength. In Study 5, participants who thought about having spent money felt less strong ($M = 2.24$, $SD = 0.73$) than participants who thought about the weather ($M = 2.61$, $SD = 0.96$).

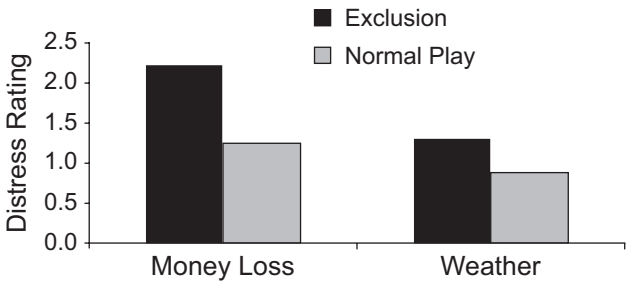

Fig. 3. Results from Experiment 5: mean distress rating as a function of Cyberball condition (social exclusion vs. normal play) and writing condition (listing monetary expenditures vs. listing weather conditions).

Feeling strong was negatively related to feeling distress about the Cyberball game, $r(106) = -.32$.

EXPERIMENT 6

In Experiment 6, we tested the hypothesis that money loss would exacerbate physical pain, just as it did social distress in Experiment 5.

Participants

Ninety-six undergraduate students at a Chinese university (56 females, 40 males) were randomly assigned among four conditions and received partial course credit for participating.

Procedure

Participants first completed the writing manipulation (writing about expenses vs. the weather) used in Experiment 5. Then, they performed either the high-pain or the moderate-pain water-immersion task, as in Experiment 4. After the pain manipulation, they rated the degree of pain they had experienced. Finally, participants completed the PANAS.

Results and Discussion

As before, an ANOVA revealed three significant effects. A manipulation check confirmed that participants' pain was worse in the high-pain than in the moderate-pain condition, $F(1, 92) = 37.34, p < .001$. As predicted, pain was also worse in the money-loss condition than in the weather condition, $F(1, 92) = 28.59$, $p < .001$. The interaction of pain condition and writing condition was significant, $F(1, 92) = 5.25$, $p < .025$ (see Fig. 4). Planned comparisons indicated that reflecting on monetary loss instead of the weather led to significantly worse pain in both the high-pain and the moderate-pain conditions. However, this effect was significantly larger for the high-pain condition, $F(1, 92) = 29.17, p < .001$, than for the moderate-pain condition, $F(1, 92) = 4.67, p < .05$.

PANAS ratings showed no differences as a function of writing condition, pain condition, or their interaction, Fs < 2.65, n.s. Once again, however, feeling strong was predicted by writing condition, $F(1, 92) = 3.70$, $p = .058$ (one-tailed). Participants who recounted their monetary expenditures reported feeling less strong ($M = 2.44$, $SD = 0.92$) than participants who wrote about the weather ($M = 2.81$, $SD = 0.98$). The main effect of pain condition and the interaction of pain condition and writing condition were not significant for this item, Fs < 1.15, n.s. Feeling strong was again negatively correlated with self-reported pain, $r(94) = -.29, p < .01$.

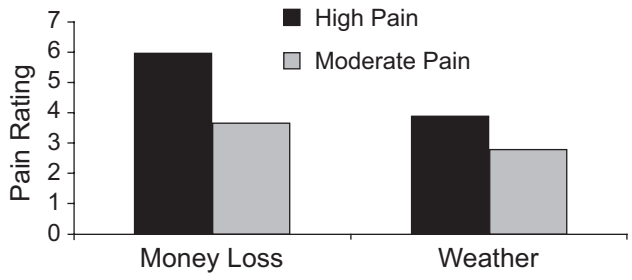

Fig. 4. Results from Experiment 6: mean pain rating as a function of pain condition (high vs. moderate pain) and writing condition (listing monetary expenditures vs. listing weather conditions).

GENERAL DISCUSSION

Actually having money brings obvious benefits. The present findings suggest that even the mere idea of money can have benefits. Thinking about money interacted with social and physical adversity to alter participants' subjective experience. First, we found that both social rejection and thoughts of physical pain led to increased desire for money. Second, we found that counting money, which presumably evoked the idea of getting and having money, reduced the suffering induced by Cyberball ostracism and real physical pain. Third, we showed that remembering having spent money made participants more vulnerable to distress in response to social exclusion and physical pain.

All these findings fit the general principle that money operates as a social resource that confers a broad, strong feeling of being able to cope with problems and satisfy one's needs. Resources are valued more in times of threat and adversity than at other times (Hobfoll, 1989), presumably because resources improve one's overall ability to cope (Experiments 1 and 2). Getting or having resources reduces pain and suffering (Experiments 3 and 4); conversely, losing resources makes one more vulnerable, which intensifies suffering (Experiments 5 and 6).

We have emphasized the psychological and social meaning of money, rather than its actual use and function, because money did not have any pragmatic utility for coping with the problems induced in these studies. Money could not actually have purchased either more ball tosses during Cyberball or respite from the hot water. The fact that it produced subjective benefits without objective efficacy points to how people think and feel about money. Apparently, the mere thought of having a resource brings psychological benefits, even when one does not use the resource—indeed, even when one does not actually have the resource, as the money-counting procedure showed.

Alternative Interpretations

The very success and power of our manipulations raise the question of what, exactly, was primed along with money. We did not find that overall mood or emotional state (measured by the PANAS) was affected by our manipulations. Rather, our findings were specific to social distress and physical pain (and feelings of strength).

Vohs et al. (2006; Vohs, 2006) investigated possible direct effects of being reminded about money. They found that thinking about money had no impact on state self-esteem, nor did it alter self-construals as independent versus interdependent (all

Fs < 1, n.s.). Reminders of money also did not stimulate a desire for power.

The experiments reported in this article tested the theory that money is a social resource that provides a broad capability for dealing with problems and securing benefits. Hence, we hypothesized that the idea of having money should be associated with feelings of strength, efficacy, and confidence, and that those feelings should help buffer against social rejection and physical pain. Prior work has linked feelings of efficacy to pain tolerance, hardiness, resilience, and interpersonal success (Litt, 1988; McFarlane, Bellissimo, & Norman, 1995; Wheeler & Ladd, 1982).

During the development of the PANAS emotion measure (see Watson & Clark, 1994), a self-assurance subscale emerged from the long version. This subscale included the items *bold*, *fearless*, *strong*, *confident*, and *daring*. On the final short measure, the item *strong* was included to represent that subscale. We repeatedly found that ratings on that item differed significantly between conditions, in a manner consistent with the theory that money is a social resource. Counting money made people feel stronger, whereas recollections of having spent money made them feel weaker (as compared with participants in control conditions). Moreover, these shifts in feeling strong versus weak predicted the distress caused by social exclusion and physical pain. These findings confirm the view that the primary effect of the idea of money is to promote general feelings of strength.

The link between thoughts of money and self-reported feelings of strength speaks to another potential alternative explanation, namely, simple reward value. One might speculate that any pleasant stimulus (e.g., chocolate) would mitigate the impact of social exclusion and physical pain. But chocolate and other rewards do not necessarily boost a sense of strength. Moreover, pleasantness alone did not account for the present results, because overall positive affect was not differentially related to reported distress and pain across the experimental conditions. Furthermore, in the first two studies, participants specifically indicated a strong preference for money over chocolate and other pleasant things. Hence, it seems likely that the present results are fairly specific to money. At most, another stimulus might produce similar effects if it could build a feeling of strength and ability to cope. It is doubtful, however, that many rewards can approach money in conferring feelings of strength.

Concluding Remarks

One of the remarkable advances of human over animal social life is the reliance on abstract, symbolic means of influence. Money is prominent among these: Money enables people to move the social system to confer benefits. As social animals, humans are deeply sensitive to social acceptance and rejection, but as cultural animals (see Baumeister, 2005), they are also sensitive to symbolic resources that might enable even rejected or unpopular persons to get what they need from the social system. The present findings indicate that the mere idea of money has considerable psychological power, enough to alter reactions to social exclusion and even to physical pain.

In each pair of studies in this investigation, social exclusion and physical pain yielded parallel effects. These findings add to the growing body of evidence that the human body's physiological systems for physical pain and trauma respond also to social, interpersonal events (MacDonald & Leary, 2005). The fact that the thought of an abstract social resource (money) produces reactions paralleling reactions to social acceptance and physical pain suggests how profoundly the human mind and body are attuned to, and perhaps designed for, functioning in complex social and cultural systems.

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