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Other People's Money:

Money's Perceived Purchasing Power is Smaller for Others than for the Self

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ABSTRACT

Nine studies find that people believe their money has greater purchasing power than the same quantity of others' money. Using a variety of products from socks to clocks to chocolates, we found that participants thought the same amount of money could buy more when it belonged to themselves versus others – a pattern that extended to undesirable products. Participants also believed their money – in the form of donations, taxes, fines, and fees – would help charities/governments more than others' money. We tested six mechanisms based on psychological distance, the endowment effect, wishful thinking, better-than-average biases, pain-of-payment, and beliefs about product preferences. Only a psychological distance mechanism received support. Specifically, we found that the perceived purchasing power of other people's money decreased logarithmically as others' psychological distance from the self increased, consistent with psychological distance's subadditive property. Further supporting a psychological distance mechanism, we found that framing one's own money as distant (vs. near) reduced the self-other difference in perceived purchasing power. Our results suggest that beliefs about the value of money depend on who owns it, and we discuss implications for marketing, management, psychology, and economics.

Keywords: money; self-other differences; psychological distance; social distance; subjective value; endowment effect

Purchasing power is money's most fundamental property. Money has value because it can be exchanged for goods and services, and its degree of value depends on the quantity and quality of goods and services it can buy. Consumers consider money's purchasing power whenever they decide how much money to save, budget, or withdraw for purchases. The present research examines whether perceptions of money's purchasing power depend on whom the money belongs to. Specifically, we claim that people think a fixed quantity of their own money buys more than the same amount of others' money. Thus, we suggest, people perceive money as having greater market value when it belongs to themselves than when it belongs to others. As we subsequently explain, the psychological distance between the self and others plays a key role in this effect.

Research and theory in marketing, economics, and psychology has long been concerned with how people think about money (e.g., Kahneman and Tversky 1984). One stream of this work has identified biases in how people track and evaluate their financial activities (i.e., mental accounting; Thaler 1985, 2005). For example, consumers spend money in a way that "matches" its source: Money that is fortuitously found in an old coat pocket is spent indulgently, whereas money that comes from an old savings account is spent carefully (O'Curry 1997; Tykocinski and Pittman 2013). Similarly, windfalls that are linked to negatively perceived sources (such as gambling) tend to be spent in more virtuous ways – as if people emotionally launder their money to make it clean (Levav and McGraw 2009). The appearance of money has also been shown to affect how people spend and manage it. For example, people are more likely to cheat with used, dirty bills than with clean, crisp bills (Yang et al. 2013). Likewise, because people value dirty bills less than clean bills, they are quicker to spend dirty bills but place greater value on products purchased with clean ones (Di Muro and Noseworthy 2013; Galoni and Noseworthy 2015).

Similarly, research has shown that consumers undervalue (vs. overvalue) products when they are priced in a foreign currency that is a fraction (vs. multiple) of a consumer's home currency (Raghubir and Srivastava 2002) – an effect that has consequences for how much consumers decide to spend (Raghubir, Morwitz, and Santana 2012). Consistent with this literature, people also prefer larger denominations of money as opposed to an equal sum of smaller bills (Mishra, Mishra, and Nayakankuppam 2006; Raghubir and Srivastava 2009). Together, these findings reveal that people treat money differently depending on financially irrelevant factors such as its "looks" or its source. We examine whether perceptions of money's value depend on whether that source is the self or someone else.

While prior work has not considered self-other differences in the perceived value of money, it does suggest that people treat money differently when it belongs to others versus the self. For example, decision makers are less loss averse and more risk seeking when making choices with other people's money than with their own (Andersson, Holm, Tyran, and Wengström 2015; Chakravarty, Harrison, Haruvy, and Rutström 2011; Mengarelli et al. 2014; Pahlke, Strasser, and Vieider 2012; Polman 2012). One explanation is that people simply care less about the consequences of choices they make for others versus themselves, but research suggests that if anything, people are more motivated to make good choices for others than for themselves (Polman and Emich 2011; Polman and Vohs 2016). Another explanation is that people perceive the same amount of money as smaller when it belongs to others versus to themselves. For example, related research on time suggests that people perceive a fixed duration (e.g., 2 years) as shorter for others than for themselves (Maglio, Trope, and Liberman 2013a). Importantly, people tend to treat time and money similarly (DeVoe and Pfeffer 2007; Rajagopal and Rha 2009), at least in some contexts (Gino and Mogilner 2013; Leclerc, Schmitt, and Dube

1995; Okada and Hoch 2004). Thus, if people perceive their own time as longer than others' time, then it is possible that they also perceive their own money as larger than others' money.

Our research builds on previous work by Stellar and Willer (2014), who found that people perceive money's value differently depending on how the money was earned. Like us, they operationalize the perceived value of money as its perceived purchasing power. This is not unlike how inflation is measured: by calculating the cost of household goods. In their study, participants entered a raffle to win a $50 prize that ostensibly had been earned in either an immoral or neutral fashion by one of two well-known businesses. In the "neutral money" condition, participants were told the raffle money was provided by Target. In the "immoral money" condition, they were told that the raffle money was from Walmart and likely earned with substandard labor practices. Then they saw a list of common household items and estimated how many of each they could buy if they won the $50. Participants in the immoral condition thought they could purchase fewer items than participants in the neutral condition. Their study demonstrates that perceptions of money's value depend on a situational factor that is logically unrelated to how much money can actually buy (see also Dubois, Rucker, and Galinsky 2012; Jonas, Greitemeyer, Frey, and Schulz-Hardt 2002; Lasaleta, Sedikides, and Vohs 2014; Wertenbroch, Soman, and Chattopadhyay 2007). Going beyond this past work, we examine whether perceptions of money's value depend on to whom the money belongs.

THEORETICAL FRAMEWORK

Why would money owned by others feel subjectively less valuable than money owned by the self? In overview, our argument draws on two key points: (a) others' money is more

psychologically distant than one's own money, and (b) the same objective quantity of something (e.g., 5 hours; 50 miles; $100) can seem like a smaller amount when it is psychologically distant versus psychologically close. Thus, $100 should seem like "less money" – able to purchase fewer goods and services – when it belongs to someone else than when it belongs to the self. As we explain, our arguments are not only grounded in previous theorizing about psychological distance, but also advance that theorizing in important ways.

To begin, we propose that others' money feels more psychologically distant than one's own money. Research on the concept of *psychological distance* refers to it as "a subjective experience that something is close or far away from the self, here, and now" (Trope and Liberman 2010, p. 440). Just as across the country feels more distant than next door, and next year feels more distant than tomorrow, others can feel more or less distant to the self. Psychological distance encompasses temporal, spatial, probabilistic, and social distance (Liberman and Trope 2014). Applied to the present research, money could be psychologically close or distant on any of these four dimensions: temporal (e.g., it could be spent now versus in the future), spatial (e.g., it could be held in a bank account here versus thousands of miles away), hypothetical (e.g., it could be the prize in a lottery with a one-in-ten versus one-in-ten-thousand chance of winning), or social (e.g., it could belong to the self or another person). Our work focuses on social distance. Because others are, by definition, more socially distant than the self, it stands to reason that others' money also feels more distant than one's own money. Moreover, the more socially distant a person is, the more psychologically distant his or her money should feel. Indeed, money belonging to close others (e.g., friends and family) feels more like one's own money than money belonging to distant others (e.g., acquaintances; Aron et al. 1991; Tu, Shaw, and Fishbach 2016).

The difference in psychological distance between one's own and others' money is relevant to our research because a fixed quantity feels subjectively smaller when evaluated at greater psychological distance (Kanten 2011; Maglio and Trope 2011). For example, 3 months seems shorter if it starts in 12 months (high distance) than if it starts now (low distance; Zauberman, Kim, Malkoc, and Bettman 2009). This example reflects the *Weber-Fechner Law* (Dehaene 2003), and illustrates a *subadditivity property* – a diminishing sensitivity to increases in psychological distance (Kim, Zhang, and Li 2008). In plain terms, subadditivity reflects a contrast effect, in which a fixed quantity (e.g., 3 months) will seem psychologically smaller when it is evaluated against a large quantity (e.g., 12 months) versus a small quantity (e.g., 0 months). Note, by "smaller" we do not mean that money's size is literally smaller; rather, we mean that a dollar (or a euro or a yen) can feel like less money – as though it buys less, akin to having less purchasing power. Originally, the Weber-Fechner Law was proposed to explain how people perceive changes in physical stimuli. For example, a candle seems like less light when added to a bright room than when added to a dark room. However, the Weber-Fechner Law also applies to judgments of quantity more generally (Dehaene, Dehaene-Lambertz, and Cohen 1998), including quantities of psychological distance (see Maglio et al. 2013a).

The marketing literature has demonstrated a variety of subadditive effects, including: in judgments of price discounts, where the difference between a 30% and a 50% discount feels smaller than the difference between a 10% and a 30% discount (Della Bitta and Monroe 1980); in judgments of calories, where an unhealthy meal that is combined with a healthy item is perceived to contain fewer calories than when the unhealthy meal is perceived alone (Chernev 2011); and in judgments of money's value, where a discount of $5 seems less valuable when the original price is $125 than when it is $15 (Tversky and Kahneman 1981). In mathematical terms,

subadditivity describes a logarithmic function. At low levels of a quantity, the relation between one unit change in quantity is linear, but for increasingly higher levels, the relation gradually flattens, illustrating a pattern of scope neglect. For example, each $5 increase to a pot of money has a diminishing marginal effect on the pot's subjective value. As the pot grows, each additional $5 seems smaller.

These examples above illustrate subadditivity on a single dimension of measurement – i.e., *within-dimensional subadditivity*, whereby a larger amount of time, space, or money, respectively shrinks an additional hour, mile, or dollar. However, subadditivity applies across the four dimensions of psychological distance as well (Maglio, Trope, and Liberman 2013b). As an example of this *cross-dimensional subadditivity*, people thought that the two years to an election felt like a longer time when the election was described as occurring nearby (at their university) versus faraway (at another university; Maglio et al. 2013a). Similarly, 27 miles felt like a greater distance when people were told they would begin traveling it in 7 days versus 365 days (Maglio et al. 2013a). Currently, it is unclear what causes cross-dimensional subadditivity (Maglio et al. 2013b), but researchers do agree it hinges upon the idea that the different dimensions of psychological distance each have the same effect on construal level (Bar Anan, Liberman, Trope, and Algom 2007; Fiedler, Jung, Wänke, and Alexopoulos 2012; Maglio et al. 2013b). It is well established that the more psychologically distant a stimulus is, the more abstractly it is construed (Trope and Liberman 2010); and insofar as two dimensions share the same effect on construal level, "they share a common meaning and are seen as fitting together" (Wakslak 2012, p. 151). Indeed, past research has found cross-dimensional subadditivity among the four dimensions of psychological distance (Maglio et al. 2013a). In this vein, our research asks a different question:

whether one dimension of psychological distance (i.e., social distance) can subadditively affect perceptions of a *non*-distance dimension (i.e., the purchasing power of money).

Previous research would suggest money would not seem less valuable when owned by others (Maglio et al. 2013a, 2013b). In this view, one dimension of psychological distance can shrink another dimension of psychological distance, but cannot shrink perceptions of a non-distance quantity, like money. In the only study to test this view (Maglio et al. 2013a, study 1B), participants judged a $150,000 budget as feeling equivalently large when it was framed as belonging to an organization composed of their own university's faculty (socially close) versus another university's faculty (socially distant). However, because the study only had sufficient statistical power to detect a large effect size (i.e., 80% power to detect $d > 0.84$ at $p < .05$), it could have missed a real effect.

Contrary to this previous theory and research, we propose that psychological distance can have a subadditive effect on perceptions of money's purchasing power, because money has a likewise similar effect on construal level as the dimensions of psychological distance. That is, the larger an amount of money is, the more abstractly it is construed (MacDonnell and White 2015; see also Hansen, Kutzner, and Wänke 2013). Because construal level is a "common currency" that allows one dimension of psychological distance to subadditively affect a separate dimension of psychological distance (Bar Anan et al. 2007; Fiedler et al. 2012), it stands to reason that cross-dimensional subadditivity might extend to any two dimensions that share a similar effect on construal. In this vein, money is a candidate non-distance dimension for cross-dimensional subadditivity, because it too influences construal level in the same manner as the other dimensions of distance. Thus, the more psychologically distant the money, the more diminished

(and thus less valuable) it would seem. In other words, much like temporal distance (e.g., days) can shrink spatial distance (e.g., miles), social distance may seem to shrink money.

To summarize our argument, money is more socially, and thus psychologically, distant when it belongs to others than to the self, and research has shown that (a) the different dimensions of psychological distance have subadditive effects on each other; (b) this cross-dimensional subadditivity effect rests on the different distance dimensions' common effect on construal level; and (c) money has a similar effect on construal level as psychological distance. We thus predicted that psychological distance can have a subadditive effect on money, such that the same number of dollars that is owned by another person (vs. the self) will seem like a smaller amount of money.

Our theorizing suggests that psychological distance should diminish perceptions of a variety of different quantities, not just money, as long as those quantities and psychological distance have similar effects on construal level (for a review of variables that affect construal level, see Fujita, Trope, and Liberman 2016). However, as a first test of our theory, our research focused on money for several reasons. First, people make frequent judgments about money's purchasing power: when they decide how much to withdraw from a cash machine, how much to convert to foreign currency for a trip abroad, or how much to save each month for retirement. Thus, our focus on money allows us to demonstrate the far-reaching implications of our phenomenon. Second, interest in money spans centuries and academic disciplines (e.g., marketing, economics, management, accounting, finance, psychology, anthropology, etc.). Thus, a focus on money allows our work to relate to a wide range of different areas of research. Third, judgments of money represent a particularly stringent test of our theorizing. Because people use money all the time, they should be familiar with its properties. It is obviously not the case that

one's own $50 can actually be exchanged for more products than another person's $50. By contrast, other quantities, like customer loyalty points, may be less familiar to participants, and have unique, less generalizable properties (e.g., loyalty points belonging to "preferred" customers might actually be exchangeable for more goods and services than points belonging to ordinary customers). Thus, showing our effect with money highlights its robustness and non-intuitive nature.

What is more, besides that an investigation of money is theoretically and empirically interesting in its own right, our studies provide the first evidence linking psychological distance to the perceived purchasing power of money. And, our work is the first to show that psychological distance can have a subadditive effect on perceptions of a non-distance quantity – that is, social distance can make a fixed quantity of dollars seem smaller. As noted, previous research and theory on psychological distance argue that such an effect does not and could not occur (Maglio et al. 2013a). Thus, in addition to demonstrating a novel and surprising phenomenon about how people think about the value of money, we challenge an existing theory's presumed boundary conditions.

Encouragingly, our prediction is consistent with a large body of work on *intertemporal discounting*, which examines how people prefer less money now over more money later, to a seemingly irrational extent (see Frederick, Loewenstein and O'Donoghue 2002; Soman et al. 2005). For example, participants in one study wanted $15 in the present as much as $30 in three months (Thaler 1981). Although studies of intertemporal discounting do not share our focus on perceptions of purchasing power, they do suggest that a fixed sum seems like "less money" in the future compared to the present. Given that time is psychologically interchangeable with other dimensions of psychological distance (Trope and Liberman 2010), it is plausible that people

would also perceive socially distant money as a smaller amount. Thus, $50 could seem like less money – capable of purchasing fewer goods – when it belongs to others than when it belongs to the self.

OVERVIEW OF STUDIES

We conducted nine studies to test whether people believe their money can buy more than the same amount of others' money. In addition to testing the role of psychological distance in this effect, we examined several alternative mechanisms related to the endowment effect, wishful thinking, better-than-average bias, pain of payment, and the expensiveness of products people assume they versus others prefer to purchase.

Study 1A established the basic effect by showing that people believed their own $50 could purchase more products than others' $50. Study 1B replicated this effect when participants had a financial incentive to accurately estimate how many products $50 could purchase.

Studies 2 and 3 found support for a psychological distance mechanism. Study 2 manipulated the relative social distance of others from the self (with six different distances, in addition to a zero distance describing the self). The more distant the other person, the less purchasing power the money was assumed to have. Moreover, as social distance increased, it had a diminishing effect on assumed purchasing power, such that the perceived purchasing power of others' money decreased linearly at first and then flattened. In other words, there was an indistinguishable difference between perceptions of distant (far) others' money and more distant (farther) others' money – a logarithmic function consistent with psychological distance's subadditive property.

Study 3 again manipulated whether people judged the purchasing power of their own versus others' money, and orthogonally manipulated another dimension of psychological distance (i.e., whether the money was framed as more versus less hypothetical). According to subadditivity, one dimension of psychological distance will have a smaller effect on judgment when instantiated at a high (vs. low) level of a different psychological distance dimension (Maglio et al. 2013b). Thus, if the psychological distance between the self and others drives our effect, then this effect should be smaller when psychological distance is already high (vs. low). Supporting this prediction, people tended to think their own money could buy more than others' money when psychological distance was low, but not high. As we explain subsequently, the results also cast doubt on an alternative explanation based on the endowment effect (Kahneman, Knetsch, and Thaler 1990).

The remaining studies (4-8, reported in the online appendix) replicated our basic effect in a range of different domains (e.g., charitable donations), while addressing alternative mechanisms. Studies 4 and 5 tested different versions of a "wishful thinking" mechanism, finding no support. Studies 6 and 7 tested a related mechanism that relies on the "better-than-average" effect, and found no support. Finally, study 8 found no evidence that beliefs about the purchasing power of one's own versus others' money were driven by beliefs about how painful it is for them to spend money, or differences in the costliness of products that people imagine they versus others would purchase. In sum, our nine studies demonstrate a novel, robust, and replicable phenomenon, support a mechanism based on psychological distance, and cast doubt on alternative explanations.

STUDIES 1A AND 1B: ESTABLISHING THE EFFECT

Studies 1A and 1B test whether people think that a fixed sum of money can purchase more products when it belongs to the self than when it belongs to others. The two studies followed similar procedures, except that in study 1B participants had a financial incentive to accurately estimate how much money can buy.

Method

We recruited 350 participants in study 1A from Amazon Mechanical Turk (MTurk), choosing this sample size before collecting data (Simmons, Nelson, and Simonsohn 2013) because it provides sufficiently high statistical power to detect a small effect (both before excluding data and after the exclusions described next). After removing those who failed an attention check or did not complete the study, 289 participants remained (for the attention check, participants indicated whether they were thinking of their own money or someone else's money).

To assess generalizability to a different population, study 1B recruited participants in public locations in a mid-sized American city. We aimed for 200 and succeeded in recruiting 194. The targeted sample size was smaller than in study 1A due to the comparative difficulty of recruiting participants in public versus on MTurk. Despite the smaller sample size, it is noteworthy that a post hoc power analysis found that we had adequate statistical power at $\alpha = .05$. As there was no attention check, we retained all data for analysis.

In both studies, we employed a between-subjects design in which participants saw a list of consumer products. Depending on their randomly assigned condition, they were either asked, "How many of each item do you think you can buy with $50?" or "How many of each item do

you think someone other than yourself can buy with $50?" To create an incentive-compatible judgment context, study 1B participants estimated the number of items knowing that anyone who estimated correctly (based on the manufacturer-suggested retail prices) would be entered in a raffle for a $100 Amazon gift card.

In study 1A, the products were: *dozen eggs*, *Hershey chocolate bar*, *toothbrush*, *pair of scissors*, *soft wool socks*, *Big Mac*, *frozen pizza*, *small latte*, *light bulb*, and *loaf of bread*. In study 1B, the products were: *6-count Bounty paper towel rolls*, *packages of 8-count Energizer AA batteries*, *packages of 2-count Sharpie fine point markers*, *2-liter bottles of Coca-Cola*, *boxes of 90-count Glad kitchen-sized trash bags*, *packages of 6-count Scotch Brite sponges*, *Brita water pitchers*, *DiGiorno frozen pizzas*, *1-liter bottles of Listerine*, and *boxes of 500-count Q-Tip cotton swabs*.

Results and Discussion

Because some products on our lists were more expensive than others (and therefore fewer of these products can be bought with $50), we *z*-transformed responses to each product (separately in each study) before averaging the responses. In other words, our dependent measure is the (standardized) mean number of products participants believed they or others could buy with $50. For the raw, unstandardized results and corresponding tests for each individual item, see table 1. A higher number of products is indicative of higher purchasing power and hence value of money.

Supporting our hypothesis, study 1A participants estimated that their own money could buy more everyday products (M = 0.078, SD = 0.71) than others' money could (M = -0.087, SD

= 0.64), $t(287) = 2.07$, $p = .04$, $d = 0.25$. We found the same result when participants had a financial incentive to correctly estimate the number of products: study 1B participants also thought their own money could buy more products ($M = 0.106$, $SD = 0.66$) than others' money could ($M = -0.103$, $SD = 0.42$), $t(192) = 2.64$, $p = .009$, $d = 0.38$. In fact, despite the financial incentive, study 1B's effect size was somewhat larger than study 1A's. These results provide preliminary evidence that people think the same amount of their own money has greater purchasing power than others' money, thus acting as if the market value of money is higher when the money belongs to them versus others.

STUDY 2: EXAMINING MULTIPLE DEGREES OF SOCIAL DISTANCE

Study 2 tested two predictions. First, we have argued that people impute greater value to their own money than to others' money because others are more socially distant than the self. If this is true, then the subjective value of money should decrease as one considers increasingly socially distant others. Second, in order for this relation between social distance and perceived purchasing power to be subadditive, it should display a logarithmic pattern (Jones and Rachlin 2006; Kim et al. 2008; Zauberman et al. 2009): The effect of increasing social distance should be relatively linear at low levels of social distance (e.g., 1^{st}-tier friend to 2^{nd}-tier friend), tapering off at higher levels (e.g., 9^{th}-tier to 10^{th}-tier friend). To test these predictions, study 2 asked participants to consider the purchasing power of money belonging to the self or others with varying levels of closeness to the self.

Method

Participants in study 2 were randomly assigned to one of seven conditions in a between-subjects design. Because of the number of conditions, we recruited 950 participants on MTurk, of whom 939 completed the study. In the *self* condition, they judged the purchasing power of their own money. In the six *other-person* conditions, they read the following passage (adapted from Jones and Rachlin 2006):

> The following question asks you to imagine that you have made a list of the 100 people closest to you in the world ranging from your dearest friend or relative at position #1 to a mere acquaintance at #100. The person at number one would be someone you know well and is your closest friend or relative. The person at #100 might be someone you recognize and encounter but perhaps you may not even know their name. You do not have to physically create the list – just imagine that you have done so.

Depending on condition, participants in the six *other-person* conditions judged the purchasing power of money belonging to either the 1^{st}, 2^{nd}, 5^{th}, 10^{th}, 20^{th}, or 50^{th}-ranked person on their list. Our independent variable was thus rank-ordered social distance, with participants in the *self* condition assigned a rank of 0. To increase generalizability, we used a different measure of purchasing power than in studies 1A and 1B: Participants provided subjective judgments of how much they thought the relevant individual could purchase with $900 (1 = *not a lot* to 9 = *a lot*) rather than estimating the number of products that a sum of money could purchase.

Results and Discussion

Because our independent variable (social distance) is ordinal, we conducted a non-parametric test of its relationship with purchasing power. As predicted, the more socially distant

the money's owner was, the less participants thought the money could buy, Spearman's ρ (937) = -.10, p = .003. The negative relationship between social distance and purchasing power was also significant when we analyzed only the participants in the six *other-person* conditions, ρ (805) = -.07, p = .035. That is, again, the more socially distant another person was, the less participants thought his or her money could purchase. The effect sizes were small, probably because asking participants whether they could buy "a lot" of products is a less precise measure than asking them to estimate the specific number of products they could buy (as in our previous studies). More importantly, these findings lend support to our claim that social distance plays a role in diminishing the subjective value of money when considering the self versus others. In support, we did not find a difference between participants' perceived purchasing power of their own money (M = 7.72, SD = 2.51) and money that belongs to the first person on their list (M = 7.60, SD = 2.36), t(266) = 0.417, p = .677. Thus, social distance alone is sufficient to reduce estimates of purchasing power.

We next tested whether the shape of the relationship between social distance and perceived purchasing power was logarithmic. Recall that people show diminishing marginal sensitivity to increasing social distance (i.e., the subadditivity principle; Kim et al. 2008; Maglio et al. 2013a, 2013b). Applied to our paradigm, subadditivity suggests that the effect of social distance on perceived purchasing power should taper off as social distance increases – a logarithmic effect. To test this logarithmic effect, we plotted the data in figure 1 and carried out a curve estimation analysis with closeness as the independent variable and perceived value of money as the dependent variable. Compared with a linear, quadratic, or cubic curve, only the logarithmic curve passed the threshold of significance, b = -0.073, t(938) = 2.25, p = 0.025,

indicating that the effect of social distance on purchasing power gets subadditively smaller as social distance increases.

Together, study 2's findings are consistent with our claim that social distance plays a role in why people impute greater purchasing power to their own money than to others' money. Perceived purchasing power decreased with increased social distance – and the effect of social distance on purchasing power diminished as participants considered more distant others, consistent with the subadditive property of psychological distance.

STUDY 3: ADDING DISTANCE TO ONE'S OWN MONEY

We have argued that the subadditive property of psychological distance explains why people think their money can buy more than others' money. Study 2 provided initial evidence by asking participants to consider others with varying degrees of social distance. Study 3 provided a complementary test in a moderation-of-process design (Spencer, Zanna, and Fong 2005).

According to subadditivity, a given change in psychological distance will seem smaller when judging targets who are already psychologically distant (Maglio et al. 2013a; Zauberman et al. 2009). For example, a social distance manipulation had a smaller effect on product evaluations when participants considered buying the products in one year (high temporal distance) versus the next day (low temporal distance; Kim et al. 2008). We thus reasoned that the psychological distance between one's own and others' money would seem smaller when people are already thinking about their own money as psychologically distant (versus near). Accordingly, if people think their own money has greater market value than others' money

because of psychological distance, then making one's own money feel more psychologically distant should attenuate the effect.

Study 3 thus manipulated social distance and another dimension of psychological distance in a 2 × 2 factorial design. Specifically, we manipulated whether people judged their own versus others' prize money, and orthogonally manipulated whether winning that money was more or less uncertain. We predicted that the difference in judgments of one's own versus others' money would be diminished when measured in terms of high uncertainty (i.e., high hypothetical distance) versus low uncertainty (i.e., low hypothetical distance) – a moderation effect. This test would support the role of psychological distance in our effect.

We manipulated hypothetical distance in lieu of temporal or spatial distance because, for reasons unrelated to psychological distance, actual purchasing power varies from time to time, and place to place. For example, at a McDonalds in the US, a Big Mac cost 12% more in 2013 than in 2008 (temporal distance), and, in 2008, a Big Mac cost 28% more in the UK than in the US (spatial distance; The Economist 2017). In the context of money, hypotheticality is thus a cleaner manipulation of psychological distance than time or space.

The hypotheticality manipulation also tests an alternative explanation based on the endowment effect (Kahneman et al. 1990). In endowment studies, sellers receive an item (e.g., a mug) that buyers can purchase. Suggesting that ownership increases how much people value an item, the average seller asks for more money in exchange for the item than the average buyer is willing to offer (i.e., sellers' willingness to accept [WTA] is higher than buyer's willingness to pay [WTP]; see Morewedge and Giblin 2015). Our paradigm differs in key ways – for example, endowment studies examine the monetary value people attach to items, whereas we examine how people judge money itself; which is to say that endowment studies are concerned with the

personal value people attach to an item (e.g., as measured by their WTA or WTP), whereas we have examined perceptions of money's market value (i.e., purchasing power – how many items money can buy). These differences aside, it is possible that a mechanism similar to the endowment effect explains our findings: Merely owning money may increase its perceived market value (cf. Morewedge, Shu, Gilbert, and Wilson 2009).

To be sure, an endowment explanation would struggle to account for study 2's results, which showed that people imputed more purchasing power to socially closer (vs. more distant) others. The endowment effect indeed predicts that people value their own possessions more than others', but – unlike our psychological distance account – it makes no predictions about how people value possessions belonging to *different* others who vary in *their* level of distance to the self (as we find).

Nonetheless, study 3 pitted endowment and distance against each other in a more direct test. Specifically, in study 3's 2 (ownership: self vs. other) × 2 (hypothetical distance: close vs. far) design, an endowment mechanism would predict a main effect of ownership – that people impute greater purchasing power to their own money than to others' money, regardless of hypothetical distance. By contrast, endowment would not clearly predict the interaction effect we anticipate: that ownership has a larger effect at near (vs. far) psychological distances. As noted, we expect the tendency to impute greater purchasing power to one's own versus others' money is smaller when thinking about a more-uncertain prize (high hypothetical distance) than a less-uncertain prize (low hypothetical distance). Psychological distance would provide a more parsimonious explanation than endowment for these results.

Method

In advance of data collection, we planned to recruit 800 participants from MTurk. This represents more participants per condition than in our previous studies because study 3 tests an attenuated interaction, which requires larger cell sizes to detect than main effects (Simonsohn 2014). The study had four conditions in a 2 × 2 between-subjects design: Participants judged either their own or others' $50, and the money was described as the prize in a raffle that has a "5 in 100 chance of winning" (high uncertainty, hence high hypothetical distance) or a "95 in 100 chance of winning" (low uncertainty, hence low hypothetical distance).

Similar to studies 1A and 1B, participants rated how many items they (or someone else) could buy with the $50; however in a departure from the open-ended responses participants furnished in studies 1A and 1B, in this study, we asked participants to rate how many of each item could be purchased on a scale ranging from 0-5, 6-10, 11-15, … 71-75 (the midpoint of each range was selected as participants' response, consistent with Stellar and Willer 2014). In this study, we assessed 6 products: *box of cereal*, *gallon of milk*, *magazine*, *one-subject notebook*, *package of pencils*, *Snickers bar*. We created a composite score from participants' responses for the 6 items ($\alpha = .81$), which furnished our dependent measure, money's perceived purchasing power (see table 1 for the descriptive statistics and corresponding tests for each individual item).

Results

We analyzed the data with a 2 (money's ownership: self vs. other) × 2 (hypothetical distance: close vs. distant) factorial ANOVA. Replicating our previous studies, we observed a

significant main effect of ownership: Participants judged their own money as significantly more valuable than others' money (respectively, *M*s = 23.54 and 19.92; *SD*s = 9.26 and 10.54), $F(1, 796) = 27.29$, $p < .001$, $d = 0.36$. Consistent with our argument that a sum of money seems smaller when it is more psychologically distant, a second main effect indicated that participants judged the more certain (psychologically close) money as marginally more valuable than the less certain (psychologically distant) money; respectively, *M*s = 22.37 and 21.10, *SD*s = 10.73 and 9.35, $F(1, 796) = 3.49$, $p = .062$, $d = 0.13$.

Most importantly, supporting a psychological distance account of why people judge their own money as more valuable than others', the interaction was also significant, $F(1, 796) = 8.80$, $p = .003$, $d = 0.21$ ($\eta_p^2 = .011$). In the low uncertainty condition (low hypothetical distance), participants judged their own money as more valuable than others' money (respectively, *M*s = 25.25 and 21.88; *SD*s = 9.55 and 8.67), $F(1, 796) = 11.31$, $p < .001$, $d = 0.37$. By contrast, in the high uncertainty condition (high hypothetical distance), participants' judgments of their own versus others' money were statistically indistinguishable (respectively, *M*s = 20.31 and 19.54; *SD*s = 9.96 and 11.09), $F(1, 796) = 0.63$, $p = .427$. In sum, study 3, supports the role of psychological distance and its subadditive property in explaining the effect.

GENERAL DISCUSSION OF STUDIES 1-3

Why do people think their money can buy more than others' money? Our results point to the subadditive property of psychological distance. That is, others' money is more psychologically distant than one's own, and more distant quantities can seem like smaller amounts. We found two forms of support. First, study 2 found that the more socially distant

another person was from the self, the less purchasing power participants imputed to his or her money. Additionally, the effect of social distance on perceived purchasing power was larger at closer distances than at farther distances to the self, consistent with psychological distance's subadditive property (e.g., Kim et al. 2008). Second, study 3 established an important boundary condition that further supports the role of psychological distance: Making money feel more psychologically distant eliminated people's tendency to impute greater value to their own money than to others' money. This finding is again consistent with psychological distance's subadditive property, in that the self-other difference in judgments of money was larger at low levels of psychological (hypothetical) distance, and disappeared at high levels of psychological (hypothetical) distance.

Studies 2 and 3 provide evidence for the psychological mechanism using a moderation-of-process approach (Spencer et al. 2005), in contrast to a measurement-of-mediation approach. Despite its widespread acceptance and continued use, the limitations of the measurement-of-mediation approach for making causal arguments about psychological processes have been articulated repeatedly in recent years (see Bullock, Green, and Ha 2010; Green, Ha, and Bullock 2010; Fiedler, Schott, and Meiser 2011; Jacoby and Sassenberg 2011; Spencer et al. 2005; Zhao, Lynch, and Chen 2010). In light of these limitations, we used the moderation-of-process approach, though we acknowledge it has its own limitations. For example, like the measurement-of-mediation approach, it could leave open the possibility that an unmeasured causal variable explains study 2 and 3's results. However, this possibility is unlikely because both studies used manipulations based on those that have been tested extensively in the psychological distance research over two decades. Also, any alternative explanation would have to be able to account for both the logarithmic pattern observed in study 2 and the compounded distance account

observed in study 3 – both of which are consistent with psychological distance and its property of subadditivity.

SUMMARY OF STUDIES 4-8

In addition to finding support for a psychological distance mechanism in studies 2 and 3 (and ruling out an explanation based on the endowment effect), we tested four alternative explanations in studies 4-8 but found little support (see online appendix). In studies 4 and 5, we did not find evidence that wishful thinking leads people to think their money can buy more than others' money. Specifically, study 4 participants thought that their $50 could buy more products than others' $50, even though the products were not something that participants would wish to have (e.g., rotten eggs). And in study 5, we did not find that individual differences in wishful thinking moderated our effect. Studies 6 and 7 cast doubt on an explanation based on the better-than-average effect (Alicke et al. 1995). In these studies, we tested whether people believe they can buy more than others for the same money because they think they are better-than-average at finding deals. We found that participants thought their money could help charitable and governmental organizations more than the same amount of other people's money – contexts in which getting a deal was not relevant or possible. Finally, study 8's results did not support the possibility that people imagine that they would choose less expensive versions of a product than others would. Moreover, study 8 also considered an explanation based on the possibility that people think money's purchasing power is based on how painful it is to spend money. Demonstrating that this observation cannot account for our effect, we found no significant

interaction between participants' pain-of-payment and their beliefs about money's purchasing power.

META-ANALYSIS OF STUDIES 1-8

All told, in our nine studies we observed the effect among 4475 participants, across several changes in procedure, design, and sample characteristics. Our evidence for the phenomenon emerged across a diversity of everyday products: durable and non-durable goods, hedonic and utilitarian goods, relative "virtues" and relative "vices," desirable and undesirable, branded and un-branded, more-expensive and less-expense. In fact, we investigated 49 unique consumer products in all, and of the total product-items we tested, 45 of them were in the direction of our effect when analyzed individually (see table 1). Furthermore, besides the 49 unique consumer products, our effect also emerged when people judged how helpful money could be when paid as donations to 5 different charities (study 6); as well how helpful money could be when paid as taxes, fines, or fees (study 7). That is, besides spending money on products, we also observed our effect in contexts in which consumers give their money in the form of payments to organizations such as charities and the government. Thus, in all, we investigated 57 unique items in total. It is rare in research to find this many different product- and item-stimuli tested in one paper; and the range and number of products and stimuli that comprise our studies increases the external validity of our findings. Although conducting field studies is one way to assess external validity, it can also be assessed by conducting studies containing many stimuli (Fontenelle, Phillips, and Lane 1985; Wells and Windschitl 1999).

Moreover, we tested our predictions in student and non-student subject populations, among different quantities of money (*viz*. $50, $100, $150, $300, $900), in both between- and within-subjects designs, and in an incentive-compatible context. And, we observed our effect regardless of whether participants provided an open-ended, numerical estimate of how many items they versus others could buy for a fixed sum; whether they provided a subjective response that could range from *not a lot* to *a lot*; or whether they provided their intuitions about how valuable the sum is. Overall, the meta-analytic effect size across our studies was small but consistent, average Cohen's $d = 0.267$, $p < .001$. To put this effect size in perspective, it is useful to compare it to other effect sizes in the literature (Lakens, 2013). Our effect closely resembles the average effect size of research findings in the social influence literature ($d = 0.262$; Richard, Bond, and Stokes-Zoota 2003). Moreover, it is larger than the documented effects of some widely known and researched areas in marketing, such as the effect of comparative (vs. non-comparative) advertising on purchase intentions ($d = .200$; Grewal, Kavanoor, Fern, Costley, and Barnes 1997). Finally, given that money's market value does not actually depend on whether the money belongs to the self or others, and that the ability to buy goods and services is a defining property of money, an effect of this size is surprising and theoretically important (Prentice and Miller 1992). In sum, our results support a psychological distance mechanism and cast doubt on five alternative explanations.

GENERAL DISCUSSION

Our research documents a novel and surprising phenomenon: People think their money has higher purchasing power than the same amount of another person's money. We also

demonstrate that psychological distance plays a key role in this phenomenon. Decades of research have demonstrated how psychological distance influences consumer choices and judgments (Fujita et al. 2016), but we are the first to show how psychological distance can influence a fundamental perception on which these choices and judgments may rest: e.g., what choices consumers think they can make in exchange of their money. We also test and rule out other plausible theoretical explanations for our findings. Thus, our results speak to the literatures on psychological distance, endowment effect, wishful thinking, better-than-average biases, pain-of-payment, and beliefs about product preferences.

Our findings challenge an important assumption about psychological distance. Previous research and theory assumes that increasing one dimension of psychological distance (e.g., spatial distance) can *only* have subadditive (i.e., shrinking) effects on *other* dimensions of psychological distance (e.g., social distance; Maglio et al. 2013a, 2013b). For example, 200 miles could seem like less time when traveled by someone else than when travelled by the self, but, according to this prior theorizing, $200 should not seem like less money when owned by someone else versus the self. A prior study that failed to find an effect of social distance on perceptions of money seemed to support this assumption (Maglio et al. 2013a, study 1B), but it had inadequate statistical power to detect an effect of the magnitude we observed in our meta-analysis (i.e., only 15% power to detect $d = 0.267$ at $p < .05$). Thus, based on limited evidence, prior theorizing placed narrow limits on the ability of psychological distance to shrink perceptions of other quantities. Our results challenge these limits by demonstrating an effect that prior theorizing said did not and could not exist. We showed that increasing a dimension of psychological distance (i.e., social distance) had a subadditive effect on perceptions of money – a non-distance dimension. Having broken the presumed boundary conditions on psychological

distance's subadditivity effect, our findings open the door to future research questions about what other quantities, besides money, perceptually "shrink" when their psychological distance is increased. We discuss such questions below.

Implications for Psychological Distance and Subadditivity

We have noted that perceptions of monetary value and psychological distance are connected by their shared effects on construal level (Liberman and Trope 2014; MacDonnell and White 2015). In line with research that has found that one dimension of distance subjectively shrinks the quantity of another dimension – a link that, as noted, is enabled by both dimensions sharing a similar effect on construal level (Maglio et al. 2013a) – we have found that social distance shrinks the quantity of money – a non-distance dimension that has a similar effect on construal level as distance. Thus, our main contribution is to demonstrate a novel phenomenon (that people believe their money has more purchasing power than others') and to provide evidence of the mechanism (psychological distance). Taking this a step further, future work could explore, more generally speaking, why sharing a similar effect on construal level leads respective dimensions to show subadditive effects. This would inform not only our research focus on money, but also the research on the effects of experiencing multiple dimensions of distance (Bar Anan et al. 2007; Fiedler et al. 2012; Huang, Burtch, Hong, and Polman 2016; Kim et al. 2008; Maglio et al. 2013a, 2013b; Wakslak 2012; Williams and Bargh 2008; Yan 2014; Zhao and Xie 2011). Based on our findings, the subadditive effect of psychological distance will extend to other, non-monetary resources, provided these resources have a similar effect on construal.

In fact, considering the range of product-stimuli that have been found to relate to construal level (such as colors, sounds, shapes, smells, and measurement units; see Elder, Schlosser, Poor, and Xu 2017; Lee, Deng, Unnava, and Fujita 2014; Maglio, Rabaglia, Feder, Krehm, and Trope 2014; Maglio and Trope 2011), we expect that cross-dimensional subadditivity effects could apply to many non-distance dimensions that are instantiated at the same time. For example, when thinking about a heavier lawnmower, people might be less sensitive to its loudness, as though using a 50-lb lawnmower that produces 90 decibels of sound feels quieter than a 60-lb lawnmower that produces the same number of decibels. Or, when thinking about a camera with more megapixels, people might be less sensitive to its battery life, as though using a 20.2 megapixel camera with 8 hours of battery life feels like it will last longer than a 24.2 megapixel camera with the same number of hours of battery life. To be sure, research in marketing has investigated how consumers process and weigh the specifications that comprise their product choices (e.g., Hsee, Yang, Gu, and Chen 2011); however, no research has looked at how a smaller or larger quantity on one specification affects the perception of another specification's quantity.

We caution, however, that psychological distance may not have subadditive effects on perceptions of all stimuli that are related to construal level. Psychological distance and construal level are independent constructs (Van Boven and Caruso 2015), so although a higher construal level is usually associated with greater psychological distance, there are exceptions. For example, construal level and psychological distance have opposite effects on a stimuli's emotional intensity (Williams, Stein, and Galguera 2014). When distance and construal do not go hand-in-hand, the type of cross-dimensional subadditive effect we have documented may not occur.

In keeping with the idea of emotional intensity, it is interesting to consider whether it alone could play a role in how people perceive the market value of their own and others' money. We suspect that this role, if any, is not straightforward. In study 8, we found no evidence that the extent of pain-of-payment people experience (a measure of affect intensity) was related to the difference in perceived purchasing power of one's own and others' money. In other work, inducing feelings of nostalgia did not affect how people judged money's purchasing power (Lasaleta et al. 2014). However, future work should examine whether different emotionally intense experiences shape the perceived purchasing power of money. Considering the range of myriad emotions, it is possible that some emotion(s), at varied intensities, would affect the subjective value of money.

Throughout our studies, we have shown that a fixed quantity of money seems like a smaller amount – i.e., like "less money," able to purchase fewer products – when it is psychologically distant from the self. It is interesting to consider whether money could seem *physically* smaller when thought about as psychologically distant – much like real objects appear physically smaller when viewed from faraway versus inspected up close. Perhaps so – when people perceive money as more valuable, they perceive the corresponding bills and coins as physically larger (Bruner and Goodman 1947; McCurdy 1956). Our theorizing does not depend on perceptions of money's physical size, either literally or metaphorically, but this topic could merit future research. For example, perhaps in an intertemporal choice, researchers might find that later-larger money is seen as smaller than sooner-smaller money.

Implications for the Endowment Effect

Our findings complement research on the endowment effect, by which people personally value products they own more than identical products they do not own (Kahneman et al. 1990; Morewedge and Giblin 2015). Related to the endowment effect, our findings show that people judge money to have higher market value than money that they do not own. However, our effect is not simply a novel demonstration of the endowment effect; there are several crucial differences that distinguish the two phenomena.

First, the endowment effect is an effect of ownership; people place more value on what they versus others own (Morewedge et al. 2009). Thus, as noted, the endowment effect cannot account for why the more socially distant another person was, the fewer products people thought his or her money could buy – that is, in considering *only* others' perceived purchasing power, the endowment effect cannot explain why people impute less purchasing power to increasingly distant others (study 2). Nor can the endowment effect explain why framing one's own money in more hypothetically distant terms eliminated our effect, especially considering our manipulation of money's hypothetical distance did not change the actual sum of money (study 3).

Second, we examine a different type of value than endowment effect studies. The endowment effect is about how much people *personally* value a commodity (e.g., a mug), as measured by their willingness to trade it for other goods, or by the amount buyers are willing to pay (WTP) and sellers are willing to accept (WTA) (see Morewedge and Giblin 2015). The standard finding is that sellers value their own commodities more than buyers, as shown by a higher WTA than WTP. By contrast, we investigate how people judge the *market* value of a commodity, as measured by what they believe it can be exchanged for (in our case, the commodity is money). Our measure is analogous to asking how much money merchants would be willing to accept in exchange for their goods. Logically, the personal value a person places on

a commodity is different from his or her estimates of its market value. An individual could be unwilling to part with her grandmother's costume jewelry (placing high personal value on it) and simultaneously believing that others would be unwilling to buy it (assigning low market value to it). Applied to money, the endowment effect would predict that people demand more goods in exchange for their money than others on average are willing to provide (i.e., higher WTA for money than WTP). Even if this prediction is true, it does not logically imply that they also believe that their money can buy more goods on the open market than others' money can.

Third, whereas studies of the endowment effect equate money with value, our studies question whether the subjective value of money is the same for buyers and sellers. Thus, our findings may provide an alternative explanation for the endowment effect. For example, WTP may be lower than WTA not because sellers want the relevant item more than buyers, but because sellers and buyers have different perceptions of money's purchasing power. If buyers think their money can purchase more items than sellers think it can, sellers should demand more money than buyers are willing to pay.

Fourth, the endowment effect examines how much people (personally) value products – i.e., *consumption* goods. In contrast, we have investigated how people judge the (market) value of money, an *exchange* good in that its primary purpose is as a medium of exchange. Scholars have theorized that there should be no endowment effect when exchange goods are traded for each other (e.g., when one form of currency is traded for another; Kahneman et al. 1990), and some research provides support (Novemsky and Kahneman 2005; but see Bateman, Kahneman, Munro, Starmer, and Sugden 2005 for more mixed evidence). Our work does not cast doubt on this theorizing about exchanging money for money – in fact, in a study (N = 306) not previously discussed, we found no evidence that people believed their money could buy more foreign

currency than others' money. Instead, our main studies examined a different question: whether people believe that an exchange good (money) can be traded for more consumption goods when the money belongs to the self versus others.

Practical Implications and Future Directions

Our research could explain why people see themselves as spending less money than others – a phenomenon called the X effect (Frederick 2010; Kurt and Inman 2013). Because people perceive their money to be more valuable than others', they may not think they need to spend as much of it. For example, if people overestimate how much others are willing to spend on a box chocolates, they may also underestimate how many boxes of chocolates others can buy for a fixed sum of money (as we find). Related to this idea, the amount of money people believe they have relative to others may affect how much a fixed amount of their money versus others' money can buy. Beliefs about wealth differences help explain the X effect (Matthews, Gheorghiu, and Callan 2016) and may also influence how people judge the market value of their own versus others' money.

As a first demonstration of our phenomenon, the present studies focused on judgments, but future research should examine their behavioral consequences. Everyday decisions about money depend in part on people's judgments of money's purchasing power. For example, a household's budgeting plans, the amount of money people withdraw from an ATM, the number of credit cards they sign up for, and the amount they borrow all depend on how much they think money can buy. Our research raises the possibility that people make different decisions about money for themselves than the decisions they think others should make. For example, if people

assume that their money can purchase more than others' money, then they might assume they need less cash, a lower credit limit, and smaller loans than others do. People may also feel like they can retire and live off of a smaller amount of money than can others. As a result, people may not appropriately consider relevant base-rate information when making these financial decisions. For example, despite knowing that their friends barely scraped by on $100 per day during a recent trip to Barcelona, vacationers might budget less for themselves – and be unpleasantly surprised to find themselves exceeding their budget.

Our results also have implications for decisions about how much money to give to others. People may think that the wages they pay, the tips they leave, and the donations they make represent greater generosity than identical wages, tips, and donations given by others. As a result, they might expect others to give more than they are inclined to give themselves. For example, an employer might feel generous for paying $7/hour and see little reason to pay more, but judge a different employer as stingy for paying the same wage. In addition to investigating this possibility, future research should explore whether decisions about how much money to give others depend on how the money is transferred (e.g., Uhlmann and Zhu 2013). A diner who is deciding how much of a tip to leave, for example, could think of the money as "currently his" or "soon to be the waiter's." Based on our results, we would predict that when framed as "currently his," the money will seem particularly valuable and the diner will leave a lower tip – but when framed as "soon to be the waiter's," the money will seem less valuable and the tip will be larger.

It will also be interesting to explore the implications of our findings for decisions about how much money to save. Research by Hershfield and colleagues (2011) reveals that one psychological barrier to saving money is a feeling of discontinuity between the present self and the future self. The money one saves for later could be seen as another person's money (Pronin,

Olivola, and Kennedy 2008) – which means that saving money could feel like sacrificing purchasing power. On the one hand, this feeling could lead people to spend more now while their money can buy more. On the other hand, perhaps this feeling could be leveraged to encourage people to save more. That is, if the money seems less valuable to the future self than to the current self (even adjusting for inflation), then people should save more to ensure that the future self has enough.

It would also be worthwhile to investigate whether our results extend to other kinds of money. Future research might investigate how our findings extend to windfalls of money that belong to others or to hard-earned, long-saved money that belongs to others. Research shows that people treat their own windfalls differently from their own hard-earned money (Arkes et al. 1994; Epley and Gneezy 2007; Levav and McGraw 2009), and these differences could be moderated by whether people are thinking about others' windfalls or hard-earned money. The same logic might apply to money owned by people who vary on materialism. How people judge the value of money that belongs to materialistic people, and likewise how materialistic people judge their own and others' purchasing power might moderate our documented effect: People low in materialism might be less concerned about the value of money and thus not exhibit the effect (or do so to a lesser extent) compared with people high in materialism. Similarly, people may judge the value of other people's money differently depending on their beliefs about others' materialism.

Previous work shows that reminders of money can change behavior (Hansen, Kutzner, and Wänke 2013; Kouchaki et al. 2013; Piff 2013; Tong, Zheng, and Zhao 2013; Vohs, Mead, and Goode 2006, 2008) – for example, by heightening feelings of independence and self-sufficiency, reducing willingness to help, and diminishing how much people care about social

exclusion (Vohs et al. 2006; Zhou, Vohs, and Baumeister 2009). It could be interesting to test whether these effects depend on whether the money belongs to the self versus others. Going beyond self-other differences, future research could also examine whether people treat money differently depending on characteristics of its owner (cf. Newman and Bloom 2014). For example, people might treat bills owned by millionaires differently from bills owned by the poor.

As noted, research could also investigate whether our findings extend to judgments of non-monetary resources. For example, perhaps customer loyalty points seem more valuable or a car could seem to have a higher trade-in value when owned by the self versus others. More tentatively, our results could generalize beyond perceptions of market value to perceptions of efficacy. Much like money seems more "effective" in purchasing goods when it belongs to the self versus others, medicine could seem more effective in curing one's own versus others' diseases, or a GPS could seem like a better navigation aid when owned by the self versus others. Furthermore, predictions about effectiveness (e.g., medicine's effectiveness) are more tentative because they do not clearly involve perceptions of quantity. Much like psychological distance can make quantities of time or geographical distance seem smaller (Maglio et al. 2013a), we have shown that psychological distance can make a fixed number of dollars seem like "less money." Psychological distance could conceivably make a pill seem less effective by leading people to perceive it as "less medicine," but this possibility does not follow directly from our theorizing. Our theorizing clearly applies when psychological distance could make a fixed quantity seem like a smaller amount. It is agnostic about whether psychological distance could make non-monetary items seem more effective. Our theory does not claim that the psychological distance between oneself and others creates the impression that one's own possessions are better

in every way than others' are. Instead, it claims that psychological distance makes quantities (e.g., $50) seem like a smaller amount (e.g., like less money).

Although we encourage future research to examine how far our effect extends beyond money, we focused our initial theory and research on money because it provides a generalizable, high-impact, conservative, and clean test of our theorizing. The test is generalizable because people must make judgments about money and its market value frequently in everyday life. Money is ubiquitous, and arguably the most important non-social resource. The test is high-impact because scholarly interest in money spans centuries and disciplines, including marketing, economics, psychology, anthropology, and many others (Helms and Maurer 2014). What is more, our test is important because compared with other forms of exchange (e.g., flyer points), money has more tangible, fungible properties. Likewise, it is a conservative test because normatively, the market value of $50 is identical regardless of whether it belongs to the self or others. Given people's extensive experience with money, the fact that they think about their own and others' money differently is surprising. Finally, our test is clean because it minimizes the likelihood of confounding factors that differ depending on who owns the money. Examining non-monetary resources could introduce confounds unrelated to psychological distance. For example, people could think their car has a higher trade-in value than others' cars because they think they drive their car less frequently or more gently than others. But unlike cars, when it comes to money, it is not possible to get "more from it" than someone else's money. Thus, in our research we tested both a wide-reaching and conservative exemplar of our theorizing.

Finally, our research has important implications for the decisions people make about others' money. Financiers make such decisions so frequently that they refer to other people's money in shorthand, using the acronym OPM. Previous work has shown that people make riskier

investments with others' money than with their own (e.g., Trump, Finkelstein, and Connell 2014). Although this phenomenon likely has multiple causes, our results suggest a novel explanation: People may think that it is less problematic to lose others' money because it has less market value than their own. Given popular press (e.g., Krugman 2001) and best-selling management books (e.g., Bagli 2013) heralding how easy it is to invest other people's money, this will be an important topic for future research.

CONCLUSION

The purpose of money is to facilitate economic transactions by quantifying value. Money only has value because it can be exchanged for goods and services. Our research investigated how people perceive the value of money itself, and revealed that they think a fixed amount of their money can buy more products and be more helpful to organizations than the same amount of others' money. In other words, the perceived market value of money itself depends on who owns it. In this way, our research documents a novel way in which the value of money is in the eye of the beholder.

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TABLE 1

UNSTANDARDIZED SCORES FOR NUMBER OF ITEMS THAT CAN BE PURCHASED WITH A FIXED SUM OF MONEY ($50 FOR STUDIES 1A-B, 3-5, AND 8; $100 FOR STUDY 6)

	Self-Owned Money			Other-Owned Money			*p*	Cohen's
Study 1A	*M*	*SD*	*Median*	*M*	*SD*	*Median*	value[a]	*d*
dozen eggs	28.88	14.80	25	24.36	12.37	20	0.005	0.33
chocolate bars	44.00	11.55	48	42.24	9.85	44	0.162	0.17
toothbrushes	21.07	10.13	20	17.30	8.07	15	0.000	0.41
pairs of scissors	10.79	5.96	10	9.80	4.70	9	0.114	0.18
wool socks	3.55	4.23	3	3.26	1.68	3	0.444	0.09
Big Macs	13.86	4.11	13	13.43	3.37	13	0.331	0.11
frozen pizzas	8.95	3.25	9	9.49	4.68	8	(0.248)	0.14
small lattes	15.44	4.72	15	15.35	5.53	15	0.886	0.02
light bulbs	13.64	8.62	13	11.31	7.97	9	0.017	0.28
loaves of bread	22.59	11.07	20	20.81	9.69	20	0.144	0.17
Study 1B								
6-count Bounty paper towel rolls	35.81	30.72	30	29.42	27.76	20	0.126	0.22
8-count Energizer AA batteries	11.54	12.80	8	11.21	13.21	8	0.857	0.03
2-count Sharpie fine point markers	17.16	11.86	15	16.48	9.16	16	0.652	0.06
2-liter bottles of Coca-Cola	28.79	14.68	25	24.14	11.35	25	0.014	0.36
90-count Glad kitchen-sized trash bags	16.30	45.94	10	9.64	6.83	8	0.155	0.20
6-count Scotch Brite sponges	19.49	13.48	16	14.68	9.54	12	0.004	0.41
Brita water pitchers	5.15	8.74	3	5.69	8.90	3	(0.667)	0.06
DiGiorno frozen pizzas	12.13	9.37	10	9.77	4.96	9	0.028	0.32
1-liter bottles of Listerine	13.68	11.93	11	11.08	6.85	9.5	0.062	0.27
500-count Q-Tip cotton swabs	19.47	12.89	16	15.26	9.61	12	0.011	0.37
Study 3[b]								
boxes of cereal	16.49	8.85	13	15.79	10.43	13	0.490	0.07
gallons of milk	17.35	8.06	18	15.00	8.70	13	0.008	0.28
magazines	16.95	11.66	13	14.02	11.13	13	0.015	0.26
one-subject notebooks	32.84	15.74	33	27.83	16.41	28	0.003	0.31
packages of pencils	33.58	16.22	33	28.29	17.05	23	0.003	0.32
Snickers bars	37.77	14.62	38	33.06	15.25	33	0.003	0.32
Study 4								
expired dozen eggs	32.02	14.98	25	29.96	14.12	25	0.178	0.14
melted chocolate bars	45.73	10.27	50	43.25	9.07	45	0.015	0.26
generic toothbrushes	20.58	9.13	20	20.70	9.77	20	(0.905)	0.01
rusty pairs of scissors	11.87	5.33	10	10.51	4.71	10	0.010	0.27
itchy wool socks	3.46	1.25	3	3.64	3.27	3	(0.491)	0.06
day-old Big Macs	14.41	4.48	14	13.86	4.36	13	0.242	0.13
freezer-burned frozen pizzas	10.21	4.10	10	10.10	4.49	10	0.821	0.03
small burnt lattes	17.92	5.90	17	16.61	4.63	15	0.019	0.25
inefficient light bulbs	13.84	8.73	10	11.11	7.94	8	0.002	0.33
stale loaves of bread	24.98	11.28	23	22.83	9.75	20	0.054	0.20

TABLE 1 (CONT.)

UNSTANDARDIZED SCORES FOR NUMBER OF ITEMS THAT CAN BE PURCHASED WITH A FIXED SUM OF MONEY ($50 FOR STUDIES 1A-B, 3-5, AND 8; $100 FOR STUDY 6)

	Self-Owned Money			Other-Owned Money			*p*	Cohen's
Study 5	*M*	*SD*	*Median*	*M*	*SD*	*Median*	value[a]	*d*
watering cans	13.19	16.57	10	12.21	12.72	10	0.461	0.07
candles	77.97	643.68	10	29.33	64.76	10	0.238	0.11
books	5.55	10.30	4	4.05	8.16	3	0.078	0.16
greeting cards	39.02	88.13	20	31.89	50.85	20	0.273	0.10
cupcakes	33.92	43.88	24	31.20	24.44	25	0.397	0.08
Study 6								
dogs	6.83	9.68	4	5.41	6.69	4	0.074	0.17
books	22.47	24.73	14	20.16	21.00	10	0.289	0.09
trees	33.80	50.34	10	24.59	35.37	10	0.027	0.22
clothes	11.16	14.09	5	10.06	11.30	5	0.364	0.09
worms	797.36	2256.79	100	661.40	1902.22	100	0.492	0.06
Study 8								
alarm clocks	5.34	4.04	5	5.08	3.27	5	0.388	0.06
bars of soap	32.85	36.84	25	26.42	19.97	20	0.007	0.22
bottle openers	24.42	22.39	17	21.75	17.92	16	0.099	0.13
flip flops	12.21	12.97	6	9.93	10.43	6	0.016	0.19
cheeseburgers	25.78	33.04	18	23.51	20.68	15	0.297	0.09
smart phone cases	4.65	7.77	3	4.57	6.11	3	0.887	0.01
trashcans	5.75	5.01	5	5.53	4.75	5	0.582	0.05
umbrellas	6.40	5.08	5	6.22	4.89	5	0.648	0.04

Notes

[a] *p* values represent results to *t* tests between self- and other-owned money conditions (*p* values from negative tests are in parentheses).

[b] In study 3, values represent results to *t* tests between self- and other-owned money in the near-hypothetical-distance condition.

FIGURE 1

THE LOGARITHMIC RELATION BETWEEN PERCEIVED PURCHASING POWER AND SOCIAL DISTANCE