Values, self and other-regarding behavior in the dictator game

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Abstract

Do values influence behavior? This study investigates whether individuals' value beliefs, measured by the Schwartz Portrait Value Questionnaire, causally influence their other-regarding behavior in the dictator game. We find that four out of the five values we examine correlate significantly with individuals' game behavior. Furthermore, for the purpose of establishing causality, we conduct two experimental manipulations to test if cognitively "activating" the values increases value-congruent behavior. The first manipulation primes the value beliefs to make them cognitively salient. The second, which draws on the notion that values are internalized into one's self-system, primes and makes salient the self. Both manipulations—priming the values and priming the self—are found to generally increase the impacts of values on action, which provides evidence that values do causally influence behavior. Unexpected findings regarding the universalism value and the hedonism value are also discussed.

Keywords

Altruism, dictator game, experimental games, self, values

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Introduction

Do values influence behavior? The theory of *Homo economicus*, which assumes that actors are fundamentally driven by material self-interests, maintains that they do not. The competing perspective, which might be broadly termed *Homo sociologicus*, argues that they do (Durkheim, [1893] 1984; Parsons, 1937; Weber, [1922] 1978). According to the latter view, values can be internalized by an individual and become part of that person's "self-system" (Parsons, 1951). Internalized values are believed to play a vital role in guiding actors' evaluation of alternatives and shaping their behavioral choices.

Empirical support to the theorized value–behavior relation, however, is surprisingly weak (Hechter et al., 1999). Early studies using survey data found only weak or inconsistent relationships between people's self-reported values and behavior (Hill, 1981; Schuman and Johnson, 1976). These weak findings prompted some to declare that values do not predict behavior, at least not generally or for most people (Kristiansen and Hotte, 1996; McClelland, 1985). Others provocatively asked whether values should be "written out of the social scientist's lexicon" (Hechter, 1992: 214). The lack of strong empirical support contributed partly to the decline of research on values after the 1960s (Hechter, 1993; Hitlin and Piliavin, 2004).

Recently, the behavioral game approach has emerged as an influential paradigm for studying agents' motives and behavior. A large body of findings on "social preferences" and "other-regarding" behavior has been accumulated which directly challenges the notion that actors are purely self-interested (see Fehr and Gintis, 2007; Kagel and Roth, 1995 and Levitt and List, 2007 for reviews on the economics literature; see Kollock, 1998 and Yamagishi, 1995 for reviews on the sociological literature). Those intriguing findings, however, have not been systematically brought to bear on the questions about individuals' subjective values and their influences on behavior (Simpson, 2004 and Simpson and Willer, 2008 are exceptions). The potential of the experimental game paradigm in advancing our understanding of the values–behavior question remains under-exploited.

In this study we use experimental games to investigate whether individuals' values causally influence their other-regarding behavior. We first evaluate whether individuals' value beliefs, as measured by a commonly used value questionnaire, are correlated with their other-regarding behavior in the dictator game. Furthermore, we perform two experimental manipulations to establish causality. Applying the "priming" method of social-cognitive research, we examine whether cognitively switching the values "on" and "off" produces corresponding behavioral changes. The first manipulation

primes the value beliefs directly to make them salient. We assess whether cognitively "activating" the values in this way increases their impacts on behavior. The second manipulation primes and makes salient one's self-concept. We argue that activating one's self should also help activate one's values, because the self contains internalized values, a key insight of the sociological theory on values. This manipulation allows us to test a seemingly counterintuitive hypothesis that priming one's self leads to, instead of more selfish behavior, behavioral changes that are congruent with one's values.

In the next section, we discuss the concept of values and the potential usefulness of the behavioral game approach in studying the value–behavior question. We address the two experimental manipulations and their theoretical underpinnings in the third section. We then lay out the experimental design and the hypotheses. We present the findings in the fifth section and discuss the implications in the sixth section.

Values and behavioral games

Most scholars accept that values can be conceived of as people's general evaluative beliefs concerning the desirability of conducts or end-states (Hechter, 1993; Hitlin and Piliavin, 2004; Kluckhohn, 1951; Rokeach, 1973; Schwartz, 1992). Values are conceptually distinct from other constructs such as attitudes or preferences, by virtue of being general, abstract, and cross-situational. Attitudes and preferences are usually specific to particular objects, outcomes, or actions, in certain contexts or situations (e.g. a negative attitude toward drunk-driving or a positive preference for having popcorn during movies). In contrast, values are generalized beliefs or principles (e.g. valuing honesty or equality) which can be applied across a number of situations, even ones that have never been encountered before. In brief, attitudes and preferences are narrower and more specific constructs, which may embody or express values that are more general and abstract (for more detailed discussions on the conceptual issues, see Hechter, 1992; Hitlin and Piliavin, 2004; Schwartz, 1994).

Though values are theorized to play a crucial role in guiding actions, earlier studies on the relationship between values and behavior were not able to produce clear and strong empirical results (Hechter et al., 1999). A number of methodological challenges may have contributed to the mixed findings (Hechter et al., 2005; Hitlin and Piliavin, 2004). One obstacle is that a given action can arise from more than one plausible motive. For example, the act of one person helping another could be an expression of the actor's altruistic values, but it could also be a strategic choice anticipating a

return of favor in the future, or a calculated move to avoid sanctions or obtain rewards from others.

The behavioral game approach holds some unique advantages for tackling the issue of mixed motives. By preconfiguring the games' incentive structures, researchers can eliminate or minimize certain confounding motives to make the observed behavior a better reflection of the underlying motive. For example, in the two-player "dictator game," one player is randomly assigned to be the dictator who unilaterally decides how to divide a given amount of resources between the two. The game has only one round and no repetition. In such a setting, a purely egoistic dictator should have no incentive to share anything. Any amount given to the other person, in principle, can only result from some "other-regarding" preferences of the actor.

The results of such experimental games have consistently shown that players' behavior substantially deviate from the standard model of self-interest maximization (Camerer, 2003; Fehr and Falk, 2002; Thaler, 2000). In the dictator game, for instance, typically more than 60% of the players give a positive amount to the other player, and the average transfer is about 20% of the total endowment (Levitt and List, 2007). Similarly, deviations from the standard model have been observed in a wide spectrum of games that involve the conflict between self-interests and the interests of others, such as the prisoner's dilemma game (e.g. Hayashi et al., 1999; Simpson, 2006), the trust game (e.g. Buchan et al., 2002; Kiyonari et al., 2006), and the public good game (e.g. Ledyard, 1995; Sell et al., 2002).

An intriguing question thus arises. If individuals do not follow the standard self-interest-maximization model, can their other-regarding behavior be explained by their value beliefs? Surprisingly little is known on that question. The literature on the dictator game reports that individual heterogeneity in the sharing behavior is quite high, but few studies have examined whether the variation corresponds to individuals' values. Most studies, especially in behavioral economics, focus on demonstrating and parameterizing the other-regarding behavior. Some have tried to link it with individuals' personality characteristics (e.g., Ben-Ner et al., 2004; Boone et al., 1999; Brandstätter and Königstein, 2001). But few have explored the question of whether the behavior is predicted by actors' internal value beliefs.

In sociological research, pioneering efforts are emerging to bring the concept of values into the behavioral game paradigm. Scholars (Simpson, 2004; Simpson and Willer, 2008) have recently used the Social Value Orientation (SVO) measure (McClintock, 1988; Van Lange, 1999) to gauge individuals' altruistic dispositions, and demonstrated that individuals' SVO measures are related to their other-regarding behavior. The findings are encouraging. However, the SVO, as it uses individuals' choices in game-like allocation
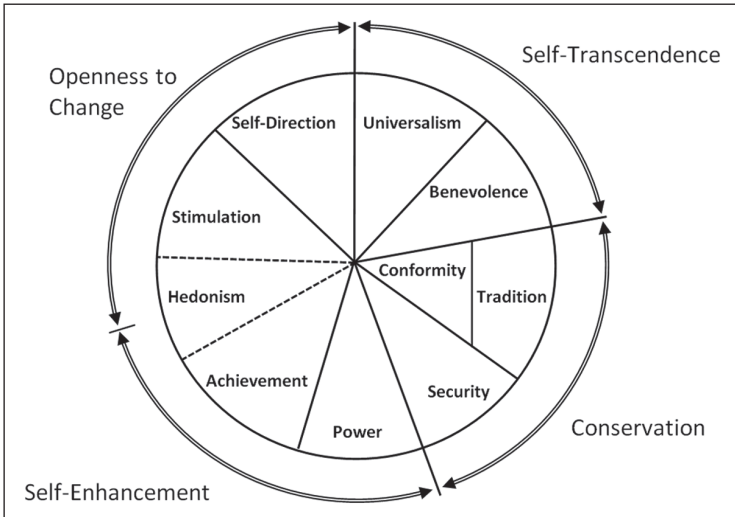
Figure 1. Schwartz Theoretical Model of Relations among Motivational Types of Values.
Adapted from Hitlin and Piliavin (2004).

tasks to infer and characterize their underlying dispositions, is a behavior-based measurement. It does not directly measure individuals' subjective and abstract value beliefs. Therefore if the goal is to study the relationship between value beliefs and actual behavior, the SVO has important limitations. Instead, questionnaire instruments traditionally used in survey research, to the extent that they directly probe individuals' subjective value beliefs, are more suitable.

In this research, we first aim to examine if individuals' values, as measured by established questionnaire instruments, predict their behavior in experimental games. We choose Schwartz's Portrait Value Questionnaire (PVQ) to measure individuals' values (Schwartz et al., 2001). We use the dictator game, as described earlier, to elicit individuals' other-regarding behavior.

The Schwartz value scheme is one of the most systematic measures of values (Hitlin and Piliavin, 2004). It consists of 10 major values that are found to be important across different cultures in a number of cross-national studies (Schwartz, 1992, 1994, 2007; Schwartz and Bardi, 2001). The scheme organizes the values around two axes (Figure 1). One axis contains the "self-enhancement" and "self-transcendence" values. The self-enhancement values are self-regarding or proself in nature, whereas the self-transcendence values

are other-regarding or prosocial in orientation. The second axis contains the "openness-to-change" values which promote seeking new experiences and changes, and the "conservation" values which emphasize security and following tradition.

Since our central question is the influence of values on the other-regarding (vs. self-regarding) behavior in the dictator game, we focus on the axis that is theoretically most relevant, namely, the self-transcendence vs. self-enhancement dimension.[1] We hypothesize that the self-transcendence values, since they are other-regarding and prosocial, positively predict the sharing behavior in the dictator game, whereas the self-enhancement values, as they are self-regarding and proself, negatively predict such behavior.

Experimental manipulations: Priming values and priming the self

Cognitive activation through priming

The second objective of the research is to evaluate the causal relationship between values and behavior by experimentally manipulating the values. If such manipulations, e.g. turning values "on" and "off," induce corresponding changes in behavior, we can infer that values causally influence behavior. Although directly modifying individuals' value beliefs in the laboratory is difficult and ethically problematic, approximate methods can be applied. In this study, we use the technique of priming to manipulate the cognitive salience of the values—in a sense, to cognitively switch them on and off.

Priming is a commonly used method in social-cognitive research to "activate" mental constructs (Gilovich et al., 2006). The basic idea is to expose individuals to symbols, objects, or other cognitive cues that are related to the mental constructs to be activated, so that the cognitive salience, or mental accessibility, of the target constructs will be temporarily enhanced. The effectiveness of priming to affect subsequent judgment or behavior has been shown in a wide range of cognitive and social tasks (Bargh, 2006; Cameron et al., 2012 and Wheeler and DeMarree, 2009 provide reviews). Recent studies have indicated that priming individuals with value-laden symbols, e.g. statements from the Ten Commandments (Aquino et al., 2009), information related to environmental protection (Verplanken and Holland, 2002), or words that describe particular values (Maio et al., 2009), can induce behavioral changes in the direction of the values primed.

Priming values

In this study, our first manipulation is to prime the values and make them cognitively salient. This is accomplished by asking the participants to answer the Schwartz value questionnaire and then perform a surprise recall test immediately after, before they play the dictator game. In effect, the whole set of Schwartz value questionnaire items serve as the primes. We deliberately choose this "full-spectrum" priming design in order to better deal with potential confounding by "demand characteristics" (Orne, 1962). Specifically, skeptics have argued that primes planted in the experimental setting may produce hints regarding what type of behavior is expected by the experimenter, and that the participants' behavioral changes may be merely the results of their well-known willingness to conform to such expectations (for a strong critique of laboratory results from this perspective see Levitt and List, 2007). For example, if the experimenter peppers the laboratory setting with morality primes such as messages of loving one's neighbors, skeptics can question whether the participants change their behavior because of the cognitive activation of their own moral values, or because they perceive that the experimenter expects such behavior.

Our design intentionally primes all values in the entire Schwartz system, including both the self-regarding and other-regarding ones, as well as others that are not directly relevant to the target behavior. To the extent that the priming produces cues of expected behavior or demand characteristics, those should be scattered and pointing to all directions. If behavioral changes are driven by such external cues, the outcome should be an increase in the random scattering of individual behavior. In contrast, if the priming changes behavior by enhancing the salience of individuals' internalized value beliefs, as intended by our experimental design, we should observe increased influences of individuals' values on their behavior, i.e. the correlation between values and behavior would become stronger. The design thus allows us to differentiate the two alternatives with the empirical data.

Priming the self

To further ascertain that it is actors' internalized values that causally affect behavior and to rule out demand characteristics as the alternative explanation, we employ another experimental manipulation which does not involve value primes at all. The manipulation focuses on the concept of the self and its relationship with one's values. Specifically, we use priming techniques established in the self-awareness research to manipulate the salience of the self-concept, and test the hypothesis that priming the *self* produces behavioral changes that are consistent with one's *values*.

This somewhat counterintuitive prediction draws on, and highlights, the contrasting views on the concept of the self between the theory of *Homo economicus* and that of *Homo sociologicus*. To the former, an actor's self and what the self wants are fundamentally and unproblematically selfish. To the latter, the self is a social product emerged through social interactions and the process of socialization. It is at least partly constituted by schemas, standards, and perspectives acquired from the social environment. Thus the self is not necessarily selfish, but value-laden.

The notion that the self-system is social in nature and contains normative standards goes back to classic sociologists. For example, in his seminal work, Mead (1934) theorizes the importance of social interaction, role-playing, and perspective-taking in the emergence of the self. Parsons (1951) sees socialization, a process through which values and norms are internalized, as the key to the making and integration of the self-system. Contemporary scholars continue to recognize the intimate relationship between values and the self, although formulations and emphases differ. For instance, Gecas (2000) stresses the "value identities" that individuals develop based on selected values that are important to them. Several authors emphasize an overall "moral identity," i.e. one's identification with the broad idea of being a "moral person," centered on a common basket of moral values (Aquino et al., 2009; Blasi, 1984; Stets and Carter, 2011). Others argue that the value system constitutes the core of an individual's "personal identity," and provides the basic coherence for a person's self-understanding (Hitlin, 2003).

The general argument that values, or at least some of them, are part of one's self-concept leads to an important empirical implication which we can exploit. That is, when one's self-concept is made salient, the values embedded in the self are also likely to become more salient and as a result exert stronger influences on behavior. In other words, priming the self can serve as an alternative and indirect route to cognitively activate the values. Priming the self therefore should induce behavioral changes that are congruent with one's value priorities: individuals with strong altruistic values would behave even more altruistically, whereas those with strong self-regarding values would act even more egoistically. The predicted outcome is in contrast to what the *Homo economicus* theory implies. If actors are purely egoistic, activating the self should simply increase self-benefiting behavior. It also differs clearly from what would be observed if the behavioral changes are driven by demand effects, in which case the cues of the self should again prompt more self-regarding behavior. Priming the self thus provides a strong test of the value theory against its alternatives.

To manipulate the salience of the self, we draw on the self-awareness literature in psychology and borrow from its commonly used techniques (see Silvia and Duval, 2001 for a review). In particular, we use self-related symbols such

as the word "I" or "me" as primes to enhance participants' self-salience or self-awareness. We choose word-primes over techniques that use mirrors or videoed self-images, because previous studies in behavioral games have reported that the display of human faces can change participants' game behavior (e.g. Haley and Fessler, 2005; Scharlemann et al., 2001).

The self-awareness literature offers some support to the notion that priming the self can lead to an increased tendency to conform to one's inner standards. For example, Kallgren et al. (2000) found that priming the self using video self-images made individuals more likely to refrain from littering, but only for those who already professed strong commitments to the anti-littering norm. Verplanken and Holland (2002, study 5), using a measure of the "altruistic value" they constructed by choosing items from the Schwartz Value Scale (SVS), found that priming the self with symbols and words increased value-congruent behavior, measured in terms of the willingness to donate to a human rights organization, for those who are at the top and the bottom quartiles of the altruistic value measure. We attempt to build upon and extend these studies in a more systematic manner, by connecting the self-salience manipulation to the behavioral game paradigm and examining all values in the self-transcendence vs. self-enhancement axis of the Schwartz value scheme.

Study design and hypotheses

As outlined above, the study focuses on the question of whether individuals' value beliefs have causal influences on their behavior in the dictator game. We employ two experimental manipulations to cognitively activate the values. The first is to prime the values directly to make them salient. The second is to prime and make salient the self, which indirectly activates the values contained in the self-system. We use a two (values primed vs. values not primed) by two (self-primed vs. self-not-primed) design, implemented through two experiments. In experiment one, values are primed and made salient; in experiment two they are not. In each experiment there are two conditions concerning the self: one in which the self is primed and made salient and one in which it is not. (Table 1 summarizes the design schematically.)

The experimental procedure consists of three basic steps: (1) participants' values are measured; (2) their self-awareness is manipulated; and (3) a dictator game is played. We discuss each in turn.

Value measurement

Values are measured by Schwartz's Portrait Value Questionnaire (PVQ). The PVQ contains 40 items measuring 10 values organized along two axes.

Table 1. A schematic view of the experimental design.

		Self primed	Self not primed
		Searching for the Chinese character equivalent to "I" and "me"	Searching for the Chinese character equivalent to "of"
Experiment One	**Values primed**		
	Value questionnaire with a surprise recall task administered right before the dictator game in the same session	N = 72	N = 66
Experiment Two	**Values not primed**		
	Value questionnaire administered in a separate session 7–10 days before the dictator game, amidst other questionnaires and with no recall task	N = 58	N = 61

As discussed earlier, we focus on the self-transcendence vs. self-enhancement axis, which contains five values. The self-transcendence values include *benevolence* (the wish to care about and promote the welfare of others around oneself) and *universalism* (concern with fairness, justice, and tolerance for all). The self-enhancement values include *hedonism* (pleasure-seeking), *achievement* (personal achievement and competitive success), and *power* (status, and control over people and resources). Sample items are provided in Appendix 1.

Priming values

In experiment one, in order to prime and increase the salience of values, we have the participants answer the Schwartz value questionnaire, followed by a surprise recall task that asks them to write down as many items as they can remember. Participants then play the dictator game in the same experiment session. In experiment two, the aim is to keep the salience of the values relatively low as compared with experiment one. We therefore have the participants answer the value questionnaire in a separate session 7–10 days before the second session in which they play the dictator game. The value

questionnaire is administered together with a number of other questionnaires so it does not stand out, and there is no recall task.

Priming the self

The participants are asked to circle certain words from formatted texts or sets of random words. In the condition in which the self is primed, the word to circle is the Chinese character that means "I" and "me" (one character represents both in Chinese). In the control condition, the target word is the Chinese character equivalent to "of." Tasks of this type are reported to have successfully enhanced the participants' self-focus and self-awareness (Silvia and Duval, 2001; Verplanken and Holland, 2002).

Dictator game

Each game session consists of 16–20 individuals and takes place in a large classroom. Through lottery draws, the participants are ostensibly placed into anonymous pairs (i.e. a person does not know with whom he or she is paired) and assigned into either "role A" (the dictator) or "role B" (the passive receiver). In reality, all players are assigned to role A, as only the dictator's decision provides the information the study requires. As player A, the participant is instructed to freely decide how much is to be allocated to him- or herself and to B. Everyone is paid accordingly at the end of the experiment. (More details on the game are provided in the section on procedure.)

Hypotheses

The first set of hypotheses concerns the predictive power of self-reported values on sharing behavior in the dictator game. As discussed earlier, we predict that participants' self-transcendence values positively predict their other-regarding behavior, whereas their self-enhancement values negatively predict such behavior.

> *Hypothesis 1*: Players' self-transcendence values, i.e. benevolence and universalism, positively predict the amount of money they allocate to the other player in the dictator game; whereas their self-enhancement values, i.e. hedonism, achievement, and power, negatively predict the amount of money they allocate to the other player.

The second set of hypotheses concerns the effect of manipulating the salience of the values. We predict that when primed and made more salient, values should have stronger impacts on behavior than when they are not

primed. That is, priming the values should strengthen the correlation between values and behavior.

As we also manipulate another factor in the study, i.e. the salience of the self, we need to ask whether the effect of priming the values varies across the different self-salience conditions. We are inclined to think that the effect of priming the values may be strong only when the self is not primed and made salient, because if the self is already salient, the values embedded in it are also likely to be salient and cognitively "switched on." To activate them one more time can be analogous to trying to switch on lights that are already on, and may not bring much additional effect. That is, a double activation might be redundant. On the other hand, we acknowledge that it is theoretically possible to argue that the effects of the two activations can be additive, or even multiplicative. We treat it as an open question and state both possibilities for empirical testing.

Hypothesis 2a: Priming the values increases the impacts of values on behavior, but the effect is strong only when the self is not primed and made salient.

Hypothesis 2b: Priming the values increases the impacts of values on behavior, and the effect is equally strong or even stronger when the self is primed and made salient compared to when it is not.

The third set of hypotheses focuses on the effects of manipulating the salience of the self. We predict that when the self is primed and made more salient, individuals tend to exhibit more value-congruent behavior, because the values that are embedded in the self also become more salient. In other words, activating the self serves as an alternative route to activating the values internalized in it, and should have the similar effect of strengthening the correlation between values and behavior.

We also consider whether the effect of priming the self varies in different value-salience conditions. Again, we lean toward the position that since the two manipulations, value-priming and self-priming, are alternative pathways to achieving the same goal—cognitive activation of the values, utilizing one route effectively would make the other redundant. So the effect of priming the self should be pronounced only when the values are not yet salient. But as before, we recognize that it is theoretically possible to argue the other way, i.e. a double activation may be more powerful than a single one. We state both hypotheses for empirical examination.

Hypothesis 3a: Priming the self increases the impacts of values on behavior, but the effect is strong only when values are not primed and made salient.

Hypothesis 3b: Priming the self increases the impacts of values on behavior, and the effect is equally strong or even stronger when values are primed and made salient compared to when they are not.

Experiments and results

Procedure

Experiment one. A total of 145 undergraduate students at a large public university in Hong Kong were recruited through campus email advertisements. Each experiment session consisted of 16–20 individuals and was carried out in a large classroom that can normally accommodate more than 80 students. To ensure privacy, the participants sat in pre-assigned seats that were positioned as far away from one another as possible. They were told that they would perform several different and unrelated experimental tasks. They first answered the Schwartz PVQ. After the questionnaires were collected, they were asked to perform a surprise recall task—to write down as many items that appeared in the questionnaire as they could remember.

The participants then performed a task that was supposedly about linguistic processing. It required them to go through a few short texts formatted with different font sizes, line spacing, and text orientations, to find and circle certain words as thoroughly and rapidly as possible. In the condition that primes the self, the word to be looked for was the Chinese equivalent to "I" and "me." In the control condition, the target word was the Chinese character representing "of."

Finally, the participants played the dictator game, which was labeled as an "allocation decision-making task." The game stake was 50 Hong Kong dollars (about seven US dollars), which is equal to the hourly wage students receive for campus work and about twice the legal minimum wage in Hong Kong. Through lottery draws, participants were supposedly assigned into anonymous pairs and different roles. Each participant believed that he or she was paired with someone else in the room without knowing who that person was. The participants were told that there were two roles in each pair. The dictator role was labeled as "role A" and the receiver role as "role B." In reality, all players were assigned to the role of the dictator. The participants then received decision sheets with written instructions which explained that when in role A, one's task was to "decide how to allocate the available 50 HK dollars between you and player B." They were told that they could choose any amount between 0 and 50 (including 0 and 50) and that player B had no decision power but to accept the result. It was made clear that the game payoff was real, and that it was in addition to the fixed participation fee of 50 HK dollars everyone would receive. They were given five minutes

to make the decisions and write them down on the decision sheets provided. A research assistant then collected the sheets and handed out the post-experiment questionnaire probing for doubts and suspicions. A total of 7 participants expressed confusion or suspicion regarding the rules and/or payoff realism and were excluded from the analysis. The participants received cash payments in separate envelopes delivered by the research assistant to their seats before leaving.

Experiment two. A total of 129 Hong Kong students from the same university were recruited as in experiment one. The students first participated in a questionnaire session, in which they filled out a set of questionnaires including the Schwartz PVQ. Then, 7–10 days later, they attended a second session. Participants first did a filler task on geometric shapes, and then a word-search task similar to the one used in experiment one for manipulating self-salience. Finally, participants played the dictator game. The game was in the same format as in experiment one, except that the stake was raised to 100 HK dollars (about 13 US dollars). The adjustment was made because the fixed-amount participation fee for participants in experiment two (which consists of two sessions) was 100 HK dollars, as opposed to 50 HK dollars in experiment one (which only consists of one session). To minimize the changes that might be induced by a "wealth effect," we raised the game stake in proportion. Post-experiment questionnaires were used to probe for doubts and suspicions. A total of 10 participants expressed confusion or suspicion about the game and were excluded from the analyses.

Descriptive statistics

The other-regarding behavior in the dictator game is measured by the proportion of endowment allocated to the other person (other-allocation). Table 2 displays the distribution of other-allocation. It shows substantial heterogeneity in individuals' decisions. The two largest groups are at the two ends: those who evenly split the money (29.57%) and those who give nothing to the alter (27.63%). The remaining participants share some of the endowment but less than an even split. On average, about 26% of the total endowment is transferred to the other player. These numbers are in line with previous results reported for dictator games using similar single-blind formats, indicating no apparent differences of our Hong Kong participants from those in other studies.

We also note that both experiment one and experiment two exhibit the same bi-modal distribution pattern described here and no significant

Table 2. Other-allocation behavior in the dictator game.

Allocation to other (percent of endowment)	Number of players	Percent of all players
0	71	27.63
2	1	0.39
5	1	0.39
10	24	9.34
14	1	0.39
15	1	0.39
20	26	10.12
24	1	0.39
25	1	0.39
30	19	7.39
35	3	1.17
40	32	12.45
50	76	29.57
Mean = 25.68	N = 257	Total = 100%

Table 3. Summary statistics of the values.

Variable	N	Mean	Std. Dev.	Min	Max
Benevolence	257	0.18	0.62	−1.43	2.60
Universalism	257	0.24	0.52	−1.32	1.64
Achievement	257	0.06	0.84	−2.10	2.43
Power	257	−0.53	0.84	−2.83	1.53
Hedonism	257	0.59	0.79	−1.56	2.50

Note: Values are measured with the Schwartz Pictorial Value Questionnaire. The Schwartz scale normalizes each item response by subtracting from it the mean response of the respondent to all questions, to correct for a person's overall tendency to give relatively positive or negative answers. The measurement of a value is then constructed by averaging the normalized item responses associated with the value. Larger numbers indicate stronger endorsement of the values.

difference in the means (m_1=27.75%, m_2=24.15%, t=1.398). This indicates that raising the game stake in absolute terms in experiment two (to keep it constant relative to the fixed participation fee) does not produce significant changes in the overall behavioral pattern.

Table 3 displays the summary statistics of the five values measured by the Schwartz PVQ in this study.[2] We further standardize the value measures in all the regression analyses that follow.

Table 4. Coefficients from bivariate Tobit regressions of other-allocation on values.

	Dependent variable: Other-allocation
	(N = 257)
Benevolence	8.11*** (p = .006)
Universalism	11.90*** (p = .000)
Achievement	−10.04*** (p = .001)
Power	−7.76*** (p = .009)
Hedonism	0.19 (p = .947)

***p < .01, **p < .05, *p < .1; two-tailed test.
Note: Value measures are standardized in the regression models.

Values and behavior

We first examine if individuals' behavior is predicted by their values measured by the Schwartz PVQ. We hypothesize that the self-transcendence values positively predict the amount allocated to the other player, whereas the self-enhancement values negatively predict the amount shared. The hypotheses are supported for four out of the five values, namely benevolence, universalism, achievement, and power, with hedonism being the only exception. Table 4 presents the bivariate regression estimate of the effect of each value on other-allocation from Tobit models.[3] The benevolence value and the universalism value exhibit significant positive effects, whereas the achievement value and power value show significant negative impacts. The effect sizes appear to be substantial. For instance, for the benevolence value, an increase of one standard deviation in the value measure is estimated to increase the proportion of the endowment transferred by about 8.11 percentage points (in a range between 0 and 50).

The fact that hedonism, i.e. pleasure-seeking, shows no discernible effect on behavior is unexpected. This may be because the hedonism value, as placed by the Schwartz value scheme (see Figure 1), is on the border between the self-enhancement dimension and the openness-to-change dimension. Since it shares motivational elements from both domains, its relevance to the other-regarding behavior may not be as strong as other values in the self-enhancement dimension.[4] Or it could be that pleasure or pleasure-seeking has different meanings for different individuals and thus shows no clear effect at the aggregate level. We leave the issue to additional analysis later.

Table 5. The effects of values on behavior when values are primed vs. when values are not primed, under the condition that the self is not primed.

	Values not primed		Values primed	
	(N = 61)		(N = 66)	
Benevolence	−3.92	(p = .274)	15.99**	(p = .010)
Universalism	11.14 ***	(p = .002)	19.07***	(p = .009)
Achievement	0.66	(p = .868)	−15.47**	(p = .009)
Power	−0.82	(p = .833)	−14.18**	(p = .014)
Hedonism	−4.09	(p = .304)	−9.43	(p = .130)

***$p < .01$, **$p < .05$, *$p < .1$; two-tailed test.
Note: (a) Coefficients are from bivariate Tobit regressions of other-allocation on each value.
(b) Value measures are standardized in the regression models.

Priming values

We proceed to examine whether priming the values strengthens the value–behavior correlation. We hypothesize that when values are primed, their impacts on behavior increase. We also suggest that this effect may depend on whether the self is already primed and made salient, and it may only be pronounced when the self is not already salient.

We first assess the effect of priming the values when the self is not salient. As Table 5 shows, in this condition, priming the values appears to produce sizable increases in the regression coefficients of values on behavior for the four values—benevolence, universalism, achievement, and power—that have shown overall significant effects on behavior in the previous analysis. To determine whether the observed increases in the coefficients of the values are statistically significant, we test whether there are significant interaction effects between the values and value-priming using Tobit regression models. For each value, we regress other-allocation on the value measure, the value-priming dummy, and the interaction term between the value measure and value-priming. The coefficients of the interaction terms are statistically significant for benevolence ($p=.006$) and achievement ($p=.041$), marginally significant for power ($p=.087$), but insignificant for universalism ($p=.681$).

On the other hand, in the condition that the self is primed and salient, we perform similar analyses and find none of the values have significant interactions with value-priming (p-value for the interaction term associated with each value: benevolence $p=.685$, universalism $p=.436$, achievement $p=.869$, power $p=.399$, hedonism $p=.294$). That is, priming values when the self is already salient does not induce significant changes in the effects of the values on behavior.

Table 6. The effects of values on behavior when self is primed vs. when self is not primed, under the condition that values are not primed.

	Self not primed		Self primed	
	(N = 61)		(N = 58)	
Benevolence	−3.92	(p = .274)	16.27**	(p = .033)
Universalism	11.14***	(p = .002)	5.33	(p = .435)
Achievement	0.66	(p = .868)	−13.77*	(p = .085)
Power	−0.82	(p = .833)	−13.56*	(p = .083)
Hedonism	−4.09	(p = .304)	15.76**	(p = .041)

***p < .01, **p < .05, *p < .1; two-tailed test.
Note: (a) Coefficients are from bivariate Tobit regressions of other-allocation on each value.
(b) Value measures are standardized in the regression models.

Taken together, the results lend support to hypothesis 2a. For values that show predictive power of behavior, enhancing their cognitive salience increases their effects on behavior, especially when the self-concept is not already salient. The evidence is reasonably clear for the values of benevolence, achievement, and power, but somewhat inconclusive for the universalism value, as its coefficient changes in the right direction but the difference is not statistically significant.

Priming the self

We move to examine the effect of priming the self. It is hypothesized that activating the self-concept serves to indirectly activate the values and will boost the influence of values on behavior as well. We also argue that, symmetric to the previous analysis, the effect of priming the self is likely to only be pronounced when values are not yet salient.

We first examine the effect of priming the self when values are not salient. In this condition, we observe that cognitively activating the self seems to strengthen the impacts of values on behavior for four out of the five values, namely benevolence, achievement, power, and hedonism. As Table 6 demonstrates, the coefficients of the four values increase in size when the self is primed. When we use Tobit regressions to test the interaction terms between the value measures and the self-priming dummy, we find that the interaction terms are significant for benevolence ($p=.013$) and hedonism ($p=.021$). For achievement and power, the p-values of the interaction terms do not reach statistical significance but are small ($p=.12$ and $p=.17$, respectively).

On the other hand, when values are already salient, priming the self does not seem to affect the value-behavior relation. In that condition, Tobit regressions reveal that none of the values interact significantly with self-priming in predicting behavior (*p*-values for the interaction terms: benevolence *p*=.623, universalism *p*=.463, achievement *p*=.921, power *p*=.265, hedonism *p*=.094).[5]

To summarize, when values are not salient, we observe that priming the self strengthens the value–behavior relation for four out of five values, though statistical significances are not equally strong across them. The evidence seems to support hypothesis 3a, albeit with limitations, that activating the self-concept induces behavioral changes that are consistent with individuals' value priorities, especially when values are not yet salient.

We also examine how well the competing theory and its prediction fare in light of the empirical results. The alternative theory, based on the assumption that the self is selfish, predicts that priming the self would lead to more selfish behavior. The prediction is not supported by the data. The self-primed group exhibits a similar, in fact somewhat higher, level of other-allocation compared with the self-not-primed group (m_1=27.28, m_2=24.04, t=1.27). The difference is not statistically significant and is opposite to the predicted direction. Taken together, the evidence is clearly in favor of the argument that the self is value-laden, as opposed to being simply selfish.

We also observe that there are some unexpected findings regarding the values of universalism and hedonism. Priming the self seems to affect the universalism value differently than other values. The hedonism value shows a surprising positive effect on other-allocation when the self is primed. Both warrant some discussion.

Universalism. When values are not yet salient, priming the self increases the impacts of all values on other-allocation to varying degrees, except for the universalism value (Table 6). In fact, its coefficient appears to have shrunk, though the difference is not statistically significant (*p*-value for the interaction term: 0.16). One possible explanation is that the universalism value may have a more distant relationship with the self-concept than other values such as benevolence. After all, the universalism value, centered on notions of justice and equal treatment to all, is about rules and standards that are impersonal and universalistic. In comparison, the value of benevolence, which focuses on caring for and helping others around oneself, may be more strongly anchored in an individual's personal feelings and particularistic sentiments. It is thus plausible that values such as benevolence are more closely linked to a person's particularistic sense of who he or she is than the universalism value. The more distant relationship between universalism and

the personal self may explain why priming the self affects it differently than other values.

Hedonism. We expect a negative relationship between hedonism and the sharing behavior. But we find that, overall, there is no significant relationship between hedonism and sharing (see Table 4). Furthermore, hedonism exhibits a positive effect on sharing when the self is primed and made salient (see Table 6). How can hedonism, a value about pleasure-seeking, increase one's tendency to be generous with others? A possible explanation is that what constitutes pleasure, joy, or happiness for a person is shaped by that person's self-concept and the values embedded in it. For some, e.g. those who hold strong benevolence values in their self-concepts, it may be pleasurable to act generously and be kind to others. And the tendency may become especially strong when their self-concepts are made salient. To investigate, we divide the participants in the self-primed condition into high-benevolence and low-benevolence groups, using the median as the cutting point. Indeed, the positive effect of hedonism on sharing holds only for the high-benevolence group ($\beta=17.41$, $p=.021$). For the low-benevolence group, hedonism does not show a positive impact on sharing at all ($\beta = -1.05$, $p=.869$). This supplementary analysis gives some support to the argument that for individuals who have strong benevolence values, being generous and helpful to others may be a pleasurable thing to do. And this tendency becomes more pronounced when the self-concept, which contains one's value priorities and understandings of what constitutes pleasure and happiness, is made more salient.

Discussion and conclusion

In this research, our goal is to test whether value beliefs have important causal influences on behavior. Overall, the findings support the argument that they do. Most of the values we examine show significant correlations with the sharing behavior in the dictator game. Furthermore, the two experimental manipulations, priming the values and priming the self, generate the predicted effects of strengthening the influences of values on behavior, albeit with some variation across different values.

More specifically, we find that four out of the five values in the self-transcendence vs. self-enhancement dimension, namely benevolence, universalism, achievement, and power, significantly predict individuals' behavior in the dictator game. Second, priming the values increases their impacts on behavior, for the values of benevolence, achievement, and power, when the self is not yet salient. Third, priming the self also strengthens values' influence on behavior, for benevolence, hedonism, and possibly

achievement and power, when values are not yet salient. These results suggest that cognitively activating the values helps to actualize their influences on behavior and that the activation can be achieved through either of the two pathways: increasing the salience of the value beliefs directly or increasing the salience of the self-concept. It is especially intriguing that the latter, i.e. priming and making salient the self, can activate the values. It provides experimental evidence for an important argument in sociological theory—that the self is not necessarily selfish, but value-laden. Furthermore, since priming the self does not involve the use of cues related to values or morality, its effect of promoting value-congruent behavior cannot be easily explained by demand characteristics. From a methodological point of view, the observed effect constitutes strong evidence supporting the sociological theory on values.

Our results also suggest that utilizing both pathways at the same time seems to bring little additive effect on strengthening the value–behavior relation. The highly symmetric structure of the pattern—i.e. the effect of priming either factor is contingent on the other factor being non-salient—indicates that it is unlikely to be a result from random fluctuation.

In the study we focus on whether values, as part of the internal motivational structure of the actor, can causally influence behavior. But our finding that the cognitive activation of the values makes a difference is also compatible with the growing literature on the importance of contextual influences on behavior. It suggests that, in addition to the diverse contextual factors that have been shown to affect behavior in games, such as the possibility of reciprocity (e.g. Fehr and Gintis, 2007), knowledge about other players (e.g. Charness and Gneezy, 2008), or the anonymity of one's own decisions (e.g. Franzen and Pointner, 2012; Hoffman et al., 1996), factors affecting the cognitive aspects of the actor's motivational process are also important contextual variables to consider. One implication is that environmental signals that prime and activate certain values or motives will be useful in promoting the corresponding behavior. So, for instance, displaying verbal or imagery cues of prosocial values in a setting may have salutary effects in inducing cooperative behavior. The significance of cognitive activation is also reflected in our finding that values, when not activated, seem to only have weak influences on behavior in the dictator game. We believe this is partly due to the fact that the dictator game is an unfamiliar form of interaction to which individuals do not readily know what appropriate schema to apply. For situations and tasks that are novel, priming may be especially important. In real-life settings, one way to do it without being manipulative is to provide individuals with the opportunity to engage in moral deliberations, which can facilitate the selection of the appropriate framework and help make salient the relevant values.

We find differences across different values and some unexpected patterns as well, suggesting that the relationships among values, the self, and behavior are also complex. In particular, there are signs that values may not all have identical relations with the self-concept, and that a particular value's meaning may be influenced by other values an individual holds.

The universalism value seems to be affected by heightened self-salience differently than other values. This indicates that universalism may have a more remote relationship with one's self-concept than other values such as benevolence. We suggest the reason may be that the universalism value is about standards that are universal and common to all, as opposed to criteria that are important for a unique or particular person. This distinction between the two types of values—the universal vs. the personal—echoes an important debate in moral philosophy between the view that moral values are based on impersonal and categorical imperatives (Kant, [1788] 1997) and the view that they are anchored in personal sentiments and feelings such as empathy for other people (e.g. Hume, [1739] 1978). Relatedly, the moral development literature also differentiates between two types of moral reasoning: "justice-oriented" ethical thinking which focuses on abstract principles and "care-oriented" ethical thinking which is more personal and relational (Gilligan and Attanucci, 1988; Kohlberg, 1969). Our speculation that the universalism value is more Kantian and justice-oriented and thus tends to have a more distal relationship with the self-concept is certainly tentative. It warrants future investigations.[6]

The hedonism value also presents some unexpected patterns. Most notably, it *positively* correlates with the amount of sharing when the self is primed and made salient. This is contrary to the expectation that hedonism promotes egoistic behavior. Further analysis of the data reveals that the positive effect of hedonism on sharing only holds for individuals who score high on the value of benevolence. This suggests that for those individuals, helping and sharing with others may be more pleasurable than maximizing their own profits at the expenses of others. The finding, though still preliminary, has important theoretical implications as it prompts us to rethink the notion of pleasure. Should pleasure be simply equated to sensual or material gratification? In fact, the *Homo sociologicus* theory would argue that, just as one's self is not biologically given but shaped by one's value beliefs, so is what the self finds pleasurable. The idea is not new. Aristotle (2004: 1099a) made the argument many of us may have forgotten: "[E]ach person finds pleasure in that of which he is said to be fond … a horse-lover finds it in a horse … a person with virtue finds pleasure in what accords with virtue."

Finally, we note that the study is conducted with Chinese students in Hong Kong. Although the data give no apparent indication that the behavioral patterns of our subjects systematically differ from those reported for

western subjects, future replication of the findings in other cultures would be valuable.

Notes

1. It is possible that some of the values in the openness–conservation axis have tangential influences on the other-regarding behavior. But it is clear that the axis as a whole and most of its values do not have direct theoretical relationships with the concerned behavior. To avoid picking single values arbitrarily out of any axis, we employ the disciplined strategy of choosing ex ante the axis that is most theoretically relevant and examining all values it contains.
2. The Schwartz scale first normalizes each item response by subtracting from it the respondent's mean response to all items, to correct for a person's overall tendency to give relatively positive or negative answers. The measurement of each value is then constructed by averaging the normalized item responses associated with the value.
3. The Tobit method is used because the dependent variable is bounded at both ends, as players cannot go below 0 and generally do not go above the equal split. Standard OLS estimates are known to be biased when the dependent variable is truncated. We use the Tobit method for all regression analyses throughout this paper.
4. We thank Schwartz for making the suggestion in a personal correspondence.
5. Here only for hedonism the interaction term appears marginally significant (p=.094), which we refrain from reading too much into, since hedonism does not have a significant main effect on behavior in either the self-salient or the self-non-salient condition when values are not salient.
6. There is emerging evidence (Lan et al., 2010) that the universalism value indeed has a closer relationship than other values to Kohlberg's moral reasoning stages that are commonly viewed as representing the "ethics of justice" approach.

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Appendix I. Sample items for the self-transcendence and self-enhancement values from the Schwartz Portrait Value Questionnaire (Schwartz et al., 2001).

Dimension	Value	Sample Item
Self-transcendence	Benevolence	It's very important to him to help the people around him. He wants to care for their well-being.
	Universalism	He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life.
Self-enhancement	Achievement	Being very successful is important to him. He likes to impress other people.
	Power	It is important to him to be in charge and tell others what to do. He wants people to do what he says.
	Hedonism	He seeks every chance he can to have fun. It is important to him to do things that give him pleasure.