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Values as Predictors of Judgments and Behaviors: The Role of Abstract and Concrete Mindsets

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This research makes strides toward reconciling mixed findings in the value–behavior relation by positing that values are abstract representations of ideal end states that are more likely to influence behavior when individuals think abstractly (vs. concretely) and focus on high- (vs. low-) level motivations for interpreting their actions. In 6 experiments, the authors measured the importance of values (or made them salient via a priming procedure) and simultaneously manipulated accessible mindsets (abstract vs. concrete), and assessed their effect on judgments and behaviors. An abstract (and not a concrete) mindset led participants to engage in judgments or behaviors that were consistent with a broad range of values, including power, benevolence, universalism, self-direction, individualism, and collectivism. These results support the notion that values are more likely to be expressed through value-congruent judgments and behaviors when individuals think abstractly about their actions, and not when they think concretely. Two of the experiments examined the process underlying these effects.

Keywords: values, mindsets, behavior

One recurring theme in personality psychology is the relative influence of values on judgments and behaviors. Values are conceptions of desirable end states that reflect what is important to us in our lives (Feather, 1990, 1995; Schwartz & Bilsky, 1987, 1990). For instance, an individual might think of him- or herself as a person who values equality and social justice. The natural way to live up to these values is by behaving in ways that express them—such as by devoting time to improve the life of others. Although numerous empirical studies support a value–behavior relation (e.g., Rokeach, 1973; Schwartz, 1996), the variability in the size of this relationship across different value domains suggests that its strength may be impacted by facilitating or impeding factors (see Bardi & Schwartz, 2003). This research tries to reconcile reported inconsistencies in the strength of the value–behavior relation by studying the effect of abstract and concrete ways of thinking on the expression of values. A mechanism is proposed to predict the conditions under which values will be expressed through value-congruent judgments and behaviors.

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We argue that the strength of the value–behavior relation is affected by the accessibility of cognitive operations, or mindsets (see Gollwitzer, 1996), that facilitate (or impair) defining a situation in terms of relevant values (e.g., as one in which social justice is involved). The accessibility of cognitive operations that facilitate defining or construing a situation in terms of relevant values should lead to value-congruent judgments and behaviors. In contrast, the activation of cognitive operations that impair construing a situation in terms of values should lead to judgments and behaviors dissociated from these values. The main objective of this research is to analyze the effect of making readily accessible cognitive operations that facilitate (impair) the focus on the values that may be involved in a particular situation on the expression (or not) of these values through value-congruent judgments and behaviors. More specifically, we analyze in the present research the interplay between the accessibility of cognitive operations to focus on the abstract or concrete aspects of a situation (i.e., abstract or concrete mindsets), and the self-reported importance (or temporary accessibility) of a variety of values (e.g., universalism, benevolence, or power), for determining people's judgments and behaviors.

In six experiments, we measured the importance of values (or made them salient via a priming procedure), manipulated accessible mindsets (abstract or concrete), and assessed their effect on judgments and behaviors. Results show that values reliably predict judgments and behaviors when individuals are induced to think abstractly but not when they are induced to think concretely. Both behavioral intentions and actual behaviors associated with a variety of values are used to provide converging evidence for the hypothesized effects. We discuss implications to research on the value–behavior link, value conflicts, and interpersonal behavior.

What Are Values?

Values are abstract representations about desired end states that are hierarchically organized in terms of their importance to the

self (Bardi & Schwartz, 2003; Feather, 1990, 1995; Schwartz & Bilsky, 1987, 1990). Values are motivational constructs that involve the beliefs that people hold about desirable goals that can be applied across contexts and time.[1] Schwartz (1992; Schwartz & Bilsky, 1987, 1990) identified 10 different types of values that are distinguishable by people in most cultures. Each value type represents a different motivational content and is associated with different types of abstract goals. For instance, benevolent values are associated with the abstract goal of enhancing the welfare of people with whom one is in frequent personal contact, whereas power values are associated with the abstract goal of dominating other people. Values may guide the evaluation of events by their associations with these abstract goals (e.g., Feather, 1990; Rohan, 2000). Thus, we consider values as motivational constructs that may define a situation (e.g., as one in which helpfulness is involved), elicit goals (e.g., enhance the welfare of ones close to us), and guide action (e.g., help a friend move to a new apartment) (see Lewin, 1952; Verplanken & Holland, 2002, for a similar view).

Values and Behavior

Do values predict behavior? There is disagreement about the role of values in guiding behavior. Although the natural way to pursue important values is to think and behave in ways that express them, empirical evidence suggests that the value–behavior relation is frequently weak and moderated by several factors (see Maio, Olson, Bernard, & Luke, 2003, for a discussion). Verplanken and Holland (2002) found that value activation resulted in value-congruent behavior if the value was central to the self-concept. Interactions among social values can also impact the value–behavior link. For instance, people high (vs. low) in conformism have been found to be more reluctant to transgress against perceived social norms and to be more likely to behave in a way that is inconsistent with their personal values (Lonnqvist, Leikas, Paunonen, Nissinen, & Verkasalo, 2006). Maio, Olson, Allen, and Bernard (2001) suggested that generating reasons to support the importance of values increases value-congruent behavior over and above the effect of making the value salient. They argue that making reasons for a value salient helps individuals to overcome the obstacles produced by situational factors and facilitates the expression of the value through value-congruent behavior.

As we just indicated, situational factors can impact the strength of the value–behavior relation. For example, in one famous experiment, theological seminary students who were late for a talk failed to help an ailing person while on the way to give their talk (Darley & Batson, 1973). This effect persisted even when the seminarians had been asked to give a talk on the parable of the Good Samaritan, which made helpfulness salient. The authors argued that such a value-incongruent behavior was in part due to the inability of some participants to perceive the situation as one in which being helpful was involved. Participants reported noticing the victim as in reflection but did not work this impression out to identify the larger meaning of the situation (i.e., realize the victim's possible distress). Their failure to define the situation in terms of personally important (and even salient) values led to behaviors that did not express those values. These findings are congruent with the prediction from action identification theory (Vallacher & Wegner, 1987) that failure to identify the larger meaning and significance of a situation leads to behaviors devoid of self-defining significance. The theory further proposes that the ability to identify the larger meaning of an act will result in the implementation of self-defining values and interests. Thus, whether a given action is defined (or not) in terms of its larger meaning and significance will be an important factor affecting congruency of values and behaviors.

Action Identification Theory and Value-Induced Representations

Action identification theory holds that the identification of any action is just one choice from among many possibilities, ranging from low-level identities that specify how the action is performed to high-level identities that signify why the action is performed (Vallacher & Wegner, 1987, 1989). These potential identifications of one's actions are conceived as a hierarchical arrangement of cognitive representations from lower to higher levels of abstraction. *Higher level identities* are abstract representations that refer to the general understanding, or meaning, of the action, whereas *low-level identities* are concrete representations related to the details of the action.

A high- (vs. low-) level identification of an action is more likely to involve values that are relevant to the situation. Because values apply to broad ranges of behaviors and situations (Schwartz, 1992; Schwartz & Bilsky, 1987), they are abstract, high-level mental constructs likely to be used when construing an abstract representation of an action. In contrast, a low-level identification of an action that focuses on detailed aspects and concrete experiences is less likely to include relevant values. For example, traveling to a new country is more likely to be represented as an opportunity to explore and be independent (i.e., in terms of self-direction values) when construing the situation at a high level of abstraction. Whereas the same situation can be represented in terms of the preparations and logistic procedures one would have to undergo when construing it at a low level of abstraction. Focusing on a situation's high-level or low-level contents would directly influence the definition of the situation in terms of relevant values. Independent of information specific to a particular situation, the accessibility of cognitive operations, or mindsets, can influence the level of abstraction at which an individual defines a situation (Freitas, Gollwitzer, & Trope, 2004). We turn next to the effect of mindset activation on the strength of the value–behavior link.

Mindsets and Value–Behavior Relationships

People can be induced to temporarily think abstractly or concretely and to focus on either the abstract aims or the concrete aspects of a situation (see Freitas et al., 2004; Freitas, Salovey, & Liberman, 2001; Fujita, Trope, Liberman, & Levin-Sagi, 2006).

[1] Values should be distinguished from simple knowledge structures such as categories that may also be hierarchically arranged (Mervis & Rosch, 1981). The two constructs differ in that values include a motivational component and are intimately connected with a person's sense of self (Feather, 1995). Values should also be distinguished from attitudes (see Maio & Olson, 1994; Rohan, 2000; Rokeach, 1973). As opposed to attitudes, values are transsituational, hierarchically ordered in terms of importance, and form a uniform structure of correlated constructs (e.g., Schwartz, 1992, 1996).

We focus here on the induction of abstract and concrete ways of thinking via mindset activation. The concept of a mindset was introduced by the Würzburg school of thought (see Gollwitzer, 1996) to describe general cognitive operations with distinct features that facilitate a given task. As cognitive operations, mindsets are subject to activation (Bargh & Chartrand, 2000). Once activated, there is increased likelihood that these operations will be used in upcoming tasks to interpret new information (Freitas et al., 2004; Higgins, 1996). Among different mindsets studied in the literature, this research focuses on abstract and concrete mindsets.

Freitas et al. (2004) found that after activating (or priming) an abstract mindset, people defined a subsequent, unrelated situation in terms of relevant high-level goals (e.g., abstract self-improvement goals). Whereas priming a concrete mindset led to a definition in terms of concrete experiences of the same situation (e.g., immediate comfort in social interactions). The authors argue that the primed cognitive operations were used by individuals when construing the subsequent, unrelated situation, and either facilitated defining the situation in terms of abstract-relevant goals (in the case of an abstract mindset prime) or in terms of concrete experiences (in the case of a concrete mindset prime). Because values are high-level constructs associated with abstract goals, we anticipate that priming an abstract (and not a concrete) mindset should facilitate defining a subsequent, unrelated action in terms of relevant values. In turn, this will determine whether the intention to engage in the action will be predicted by values. Priming an abstract (and not a concrete) mindset will facilitate the expression of relevant values through value-congruent judgments and behaviors and will lead to strong value–behavior relationships. We argue that the level of abstraction at which individuals construe given events is an important moderator of the value–behavior relation. As discussed in detail in the General Discussion section, multiple factors can induce the focus on high- (vs. low-) level aspects of a situation, which can impact the expression of salient values through value-congruent actions.

The Present Experiments

We conducted six experiments to test the hypothesis that the activation of an abstract mindset facilitates the expression of relevant values through value-congruent judgments and behaviors. We either measured the importance of values at the individual level (Experiments 1, 2, 4, and 6) or made values salient via a priming procedure (Experiments 3 and 5). We then primed either an abstract or a concrete mindset (a control condition in which no mindset was primed was also included for comparison purposes in several experiments) using well-established manipulations (see Agrawal, 2006; Freitas et al., 2004; Fujita et al., 2006) and observed the carryover effects of the interaction between personally relevant (or temporarily accessible) values and accessible mindset on subsequent ostensibly unrelated judgmental and behavioral tasks. We examined the effect of abstract and concrete mindsets on the strength of the value-behavior relation in Experiments 1 and 2 by measuring behavioral intentions (Experiment 1) and actual behavior (Experiment 2) in situations conducive to the expression of a variety of personally important values (e.g., power or universalism). We extended the research to primed (instead of personally relevant) values in Experiment 3. We explored the mechanism that presumably underlies the effect of a mindset prime on the value–behavior relation in Experiments 4 and 5 by manipulating the likelihood that a situation may be construed at a low- (vs. high) level of abstraction and by directly measuring the types of goals that participants use to define a situation. Finally, evidence for the effects was provided in Experiment 6 with a mindset manipulation different from that used in Experiments 1–5, and information-processing tendencies were explored.

Experiment 1: Measured Values and Behavioral Intentions

Overview

In Experiment 1, we tested the hypothesis that people are more likely to express their values through value-congruent behaviors after being primed with an abstract (and not a concrete) mindset. To test this prediction, we first measured participants' value priorities (e.g., benevolence) and then, following several filler tasks, measured their likelihood of performing value-relevant behaviors (e.g., helping a friend move; see Verplanken & Holland, 2002, for a similar procedure) after being primed with either an abstract or a concrete mindset. We predicted that values would better predict the corresponding behavioral intentions in the abstract mindset condition than in the concrete condition. A control condition in which no mindset was primed was also included for comparison purposes.

Method

Participants

Seventy-five introductory business students participated in the experiment for course credit. Tabulation of demographic data revealed that 49% of the respondents were men, 87% were Caucasians, 6% Asian, and 2% Asian Americans. The average age of participants was 20.9 years.

Procedures

Participants were tested in groups of 10–30 by male and female experimenters unaware of the conditions. Within each group, participants were randomly assigned to one of the three mindset prime conditions (abstract, concrete, or control). As a cover story, participants were told that they would be completing several independent tasks during a 30-min session.

Value measurement. Schwartz's (1992) value survey was adapted, which originally contained 56 value items, and participants' endorsement of 28 values (e.g., power or equality) was measured. The participants rated the importance of each value as a guiding principle in their lives on a scale ranging from −1 (*opposed to my principles*) to 7 (*of supreme importance*). Power (i.e., social status and prestige, control or dominance over people and resources) and benevolence values (i.e., preservation and enhancement of the welfare of people with whom one is in frequent personal contact; Schwartz & Bardi, 2001) were of primary interest. The items used to measure these values were presented interspersed among other items (e.g., achievement, hedonism, self-direction, and universalism). Participants then worked for 20 min on a series of unrelated filler tasks.

Mindset manipulation. Immediately after completing the filler tasks, participants were presented with the mindset manipulation

task (Freitas et al., 2004). The task was ostensibly described as a thought exercise about how one's actions relate to one's ultimate life goals (abstract mindset condition), about how ultimate life goals can be expressed through specific actions (concrete mindset condition), or about general facts in a passage (control condition). Participants in the abstract mindset condition were presented with a hypothetical activity ("Convey your thoughts more effectively") and were asked to think about the goals that could be fulfilled by engaging in the activity. After that, they were presented with a diagram of five vertically aligned boxes that began at the bottom of the page and were connected by upward arrows labeled *Why?* The box at the very bottom of the diagram was filled in with the statement "Convey my thoughts more effectively." Participants were asked to write a response in the box immediately above the bottom box, answering the question of why they would convey their thoughts more effectively. The diagram prompted participants to repeat this process three more times, answering why they would engage in the response they had just indicated in the box immediately below (see Freitas et al., 2004, for details on this manipulation). Participants provided a total of four responses in this manner. Past research has demonstrated that considering questions of "why" are effective in procedurally priming an abstract mindset (e.g., Freitas et al., 2004; Fujita et al., 2006).

In the concrete mindset prime condition, participants generated answers in terms of how they would accomplish the action. They were presented with the question, "How would I convey my thoughts more effectively?" Participants were then presented with a diagram of five vertically aligned boxes. These boxes, however, began at the top of the page and were connected by downward arrows labeled *How?* The box at the top of the diagram was filled in with the statement "Convey my thoughts more effectively." Participants were asked to write a response in the box immediately below the top box, answering the question of how they would convey their thoughts more effectively. The diagram prompted participants to repeat this process three more times, answering how they would engage in the response they had just indicated in the box immediately above (see Freitas et al., 2004, for details). Participants provided a total of four responses in this manner. Past research has demonstrated that considering questions of "how" are effective in procedurally priming a concrete mindset (e.g., Freitas et al., 2004; Fujita et al., 2006).

In the control condition, participants were presented with a passage including general facts about grasshoppers. They were asked to think about the ideas discussed in the passage and were then presented with a diagram of five boxes. The box in the center included the word *grasshoppers*, and the other four boxes were connected to the box in the center by outward arrows. Participants were asked to include in those boxes ideas or elements perceived to be related to grasshoppers (e.g., worms or backyards).

Measure of behavioral intention. Finally, participants were presented with two vignettes of hypothetical situations commonly faced by students (e.g., helping a friend move to a new apartment and persuading a group of peers to go along with one's preferences). Each vignette depicted a potential behavior that past research has found to be conducive to the expression of one of the values measured at the beginning of the session (e.g., benevolence or power; see Bardi & Schwartz, 2003). Each vignette included contextual information in which the behavior was embedded. This information described the context for the behavior such as details of the location, people involved, precise timing, and so forth. This information was included to allow the construal of the situation on the basis of factors other than relevant values (see also Sagristano, Eyal, Trope, Liberman, & Chaiken, 2008). For example, the description of the opportunity to help a friend move to a new apartment (conducive to the expression of benevolent values) read as follows:

> Imagine that a classmate who is a friend of yours has rented a moving truck and is moving into a new apartment. At 3 p.m. on Wednesday afternoon, that person gives you a call asking if you can help them move at 2 p.m. on Saturday afternoon. There is one bedroom filled with boxes and some medium-sized furniture that needs to be moved. The old and new apartments are a 15-minute drive from one another, and you will probably need to make two trips to move everything. In all, the move should take around two and a half hours to complete. The old apartment is on the second floor, so everything will need to be carried down one flight of stairs to get it out to the moving truck.

After reading each vignette, participants provided their intention to perform the proposed behavior on a scale ranging from 1 (*not at all likely*) to 9 (*very likely*). Finally, they answered demographic questions, were debriefed, and dismissed.

Results

Manipulation Checks

We verified the effectiveness of the mindset manipulation in a separate pretest using 45 introductory business students who did not participate in the main experiment.[2] Participants completed either the abstract or concrete mindset priming manipulation. Two judges who were unaware of the conditions rated each participant's level of construal on the basis of the abstractness of his or her responses to the *why* versus *how* manipulation (see Fujita et al., 2006; Liberman & Trope, 1998, for details on the rating procedure). Higher ratings indicated higher levels of construal. The ratings by the two judges were highly correlated (κ coefficient = .94). Participants exposed to why questions ($M = 2.82$, $SD = 1.84$) generated responses that reflected higher levels of construal compared with those exposed to how questions ($M = -2.52$, $SD = 1.68$), $t(43) = 10.18$, $p < .001$, $d = 3.03$.

Value–Behavior Relation

We computed the average benevolence and power value scores by averaging the score of the related value items (five items for benevolence and three items for power; coefficient αs = .79 and .70, respectively). For each mindset condition, we computed the value–behavioral intention correlations for each of the two value domains (i.e., benevolence and power). We then pooled the two correlations into a single measure of the value–behavior relationship in each mindset condition by means of a meta-analytic technique that accounts for the possibility that the measures of each subject are correlated (Gleser & Olkin, 1994). We first converted

[2] An additional separate pretest was used to verify that participants perceived the mindset manipulation tasks similarly in terms of level of difficulty. Results from this pretest are available from Carlos J. Torelli and Andrew M. Kaikati upon request.

each correlation using Fisher's (1925) variance stabilizing z transformation and then computed a pooled value-behavior measure as a linear combination of the two transformed correlations. The weights used in this linear combination were estimated from the inverse covariance matrix of the vector of transformed correlations by dividing the sum of the elements in each column by the total of all elements in the matrix (see Gleser & Olkin, 1994, for details about the methodology). As depicted in Table 1, and congruent with our predictions, the value–behavior correlations for each value domain and the pooled correlation were positive and significantly different from zero in the abstract mindset condition. In contrast, these correlations were nonsignificantly different from zero in the concrete mindset condition. Further analysis confirmed that the pooled correlation in the abstract mindset condition was significantly higher than that in the concrete mindset condition ($z = 2.70$, $p < .01$).[3] For the control condition, both the individual value–behavior correlations and the pooled correlation were nonsignificantly different from zero. In addition, the pooled correlation in the abstract mindset condition was found to be significantly higher than that in the control condition ($z = 2.14$, $p < .05$).

Discussion

Results of Experiment 1 provide initial evidence that inducing an abstract mindset leads to a stronger value–behavior relationship than inducing a concrete mindset or not inducing a mindset at all (control condition). Values significantly predicted their corresponding behavioral intentions only when an abstract mindset was induced. We argue that cognitive procedures to focus on the high-level representations of the actions facilitated construing the two situations as ones in which important values were relevant. This led to an expression of the relevant values through value-congruent behavioral intentions. In contrast, values were uncorrelated with their corresponding behavioral intentions when a concrete mindset was induced. Participants in this condition may have failed to construe the situations in terms of relevant values and may have defined them instead in terms of concrete details of the situation. This may have prevented them from expressing important values through value-congruent behavioral intentions. Participants in the control condition also failed to express their values through value-congruent behavioral intentions. This finding suggests that an abstract mindset may facilitate expressing relevant values through value-congruent behaviors not only relative to a concrete mindset condition but also relative to a baseline condition in which no mindsets are primed. The effects of an abstract mindset on the value–behavior relation were simultaneously found for two different and opposing types of values (i.e., power and benevolence; see Schwartz, 1992), which suggests that the priming of cognitive procedures (as opposed to conceptual priming) should underlie the effects. In Experiment 2, we extend these findings to a different value type and measure actual behavior instead of behavioral intentions.

Table 1
Pooled and Individual Value-Behavioral Intention Correlations as a Function of Mindset Condition in Experiment 1

	Correlation		
Mindset condition	Benevolence domain	Power domain	Pooled
Abstract	.43** (27)	.41** (27)	.42**
Concrete	.06 (27)	−.20 (27)	−.07
Control	.04 (27)	−.03 (27)	.01

Note. Sample size appears in parentheses.
** $p < .01$.

Experiment 2: Measured Values and Actual Behavior

Overview

The objective of Experiment 2 was to extend the results of Experiment 1 to actual behavior in a different value domain. As before, we expected values to be better predictors of corresponding behavior after activating an abstract (vs. a concrete) mindset. As in the previous experiment, we first measured participants' value priorities and then, following several filler tasks, measured their behavior right after being primed either with an abstract or with a concrete mindset. A control condition in which no mindset was primed was also included for comparison purposes. In this experiment, we were concerned with universalism values and behaviors to protect the welfare of outgroup members. We selected this value–behavior relation because readiness to protect the welfare of outgroup members is distinctively relevant to abstract goals associated with universalism values (i.e., protection for the welfare of all people; see Sagiv & Schwartz, 1995). We predicted that universalism values would be better predictors of the corresponding behavior in the abstract mindset condition than in the concrete condition.

Method

Participants

Seventy-five introductory business students participated in the experiment for course credit. Tabulation of demographic data revealed that 37% of the respondents were men, 82% were Cau-

[3] A similar analyses on the nontransformed raw correlation coefficients yielded the same results. An additional analysis was conducted to estimate the slope coefficient of the value–behavior relation in each mindset condition using a linear mixed model with random effects. The model considered the two repeated value–behavior observations within individuals, who were in turn assigned to three mindset conditions. The model can be described by the following equation: $Beh.\ Int. = (\gamma_0 + u_0) + (\gamma_1 + u_1)\ Domain\ dummy + (\gamma_2 + u_2)Value + r$, in which *Domain dummy* is coded as 1 for the power domain and equals 0 for the benevolence domain. The dependent variable is the behavioral intention reported by Participant i ($i = 1, n_j$) for value domain D ($D = 0, 1$) in mindset condition j ($j = 1, 2, 3$). There is one intercept term and two independent variables with slope terms on the right-hand side. Each term consists of a constant part (γs) and a random part (us) that varies across the three mindset conditions. Substantively, our interest lies in the variation of the value–behavior slope coefficient between the abstract and concrete mindset conditions. These parameters were estimated using the software package provided by Raudenbush and Bryk (2002). Results showed that the slope coefficient was higher in the abstract (slope = .51), $t(27) = 2.87$, $p < .001$, compared with the concrete mindset condition (slope = −.10), $t(26) = .51$, *ns*; (slope difference = .61), $t(55) = 3.27$, $p < .0025$.

casians, 7% Asian, and 1% Asian Americans. The average age of participants was 21.2 years.

Procedures

Participants were tested in groups of 10–30 by male and female experimenters who were unaware of the conditions. Within each group, participants were randomly assigned to one of the three mindset prime conditions (abstract, concrete, or control). As a cover story, participants were told that they would be completing several independent tasks during a 30-min session.

Value measurement. Values were measured using the same instrument as that in Experiment 1. However, this time, universalism values were the focus. Participants then worked for 20 min on a series of unrelated filler tasks.

Mindset manipulation. Immediately after completing the filler tasks, participants were presented with the same mindset manipulation task used in Experiment 1. They received either the abstract, concrete, or control conditions.

Measure of behavior. After the mindset manipulation, participants were told that the experiment had ended and thanked for their participation. However, before leaving their seats, the experimenter introduced them to an unrelated volunteer program sponsored by the Business School (see Experiment 2, Maio et al., 2001, for a similar procedure). Participants read a flyer reminding them of past socially oriented programs conducted by the Business School and describing a new upcoming program aimed at assisting refugee immigrants from East Africa with their reading and writing skills in English.[4] The description of the program emphasized the ultimate objective of helping the refugees to acquire the basic English skills that would improve their daily lives (e.g., read medicine labels and fill out employment applications), but it also included details about the refugees (e.g., their age range, time in the United States, and literacy skills) and the implementation of the program (e.g., when and where classes were going to be held). Participants were then prompted to indicate the time they would volunteer for the program in the next 2 weeks. They did so by writing in an actual sign-up sheet, included at the bottom of the flyer, the number of minutes they would devote to each of four activities in need of volunteers (e.g., "Interact with refugee students to improve their speaking skills" and "Search the library for class learning material"). To increase the believability of the story, they were reminded that before leaving the room, they should check their names and e-mail addresses on a list. The experimenter probed for suspicion by asking participants whether there were any questions about the program. Just before leaving the room, participants were told that the program was fictitious and were fully debriefed about the goals of the study and dismissed.

Results and Discussion

In general, participants in every session asked few questions about the program (e.g., when or by whom were they going to be contacted), which were promptly answered by the experimenter. There were no signs of suspicion about the believability of it. The total number of minutes for which participants offered to volunteer (computed by adding the number of minutes indicated for each activity) was used as a measure of behavior. We computed the average universalism value score by averaging the score of the eight related value items (e.g., broadmindedness, equality, and the like; coefficient $\alpha = .88$). To analyze the difference in value–behavior relationships across the three mindset conditions (abstract, concrete, and control), we conducted a regression analysis with the total number of minutes as a dependent variable ($M = 166.3$, $SD = 104.7$) and the average universalism value score ($M = 4.97$, $SD = 1.23$), two dummy variables for the mindset conditions (one for each of the control and concrete conditions, using the abstract condition as a reference), and the interactions between these dummy variables and the average value score as predictors. The predicted Value × Concrete Mindset interaction was significant ($b = -57.5$), $t(70) = -2.31$, $p < .025$. The coefficient for the average universalism score was also significant ($b = 67.3$), $t(70) = 3.63$, $p < .001$, suggesting a positive and significant relationship between universalism value and its corresponding behavior in the abstract mindset condition. There was also a significant coefficient for the Value × Control Condition interaction ($b = -68.8$), $t(70) = -2.95$, $p < .005$, as well as significant coefficients for the concrete mindset and control dummy variables ($b = 263.9$), $t(70) = 2.06$, $p < .05$; and ($b = 312.4$), $t(70) = 2.63$, $p < .01$, respectively. To further interpret these effects, we computed simple slopes (Preacher, Curran, & Bauer, 2006) for the different mindset conditions. As depicted in Figure 1, and congruent with our predictions, the simple slope for the abstract mindset condition was positive and significantly different from zero (slope = 67.3), $t(70) = 3.63$, $p < .001$, whereas that for the concrete condition was not (slope = 9.8, $p > .5$). The slope for the control condition was also nonsignificantly different from zero (slope = −1.5, $p > .9$). The value-behavior correlation coefficients for the different conditions were $r_{\text{abstract}} = .65$ ($p < .001$), $r_{\text{concrete}} = .11$ ($p > .6$), and $r_{\text{control}} = -.02$ ($p > .9$).

Results from Experiment 2 extended the findings from the previous experiment to actual behavior associated with a different value domain (universalism). Participants primed with an abstract mindset were the only ones for whom behaviors (in terms of signing up for volunteering work) to protect the welfare of outgroup members were predicted by universalism values. There was no relationship between the value and corresponding behavior following a concrete mindset prime or in the control condition in which no mindset was primed. We argue that a high-level representation of the action prompted by the activation of an abstract mindset facilitated construing the situation as one in which universalism values were relevant. This facilitated the expression of important universalism values through value-congruent behaviors. This was not the case in the concrete mindset or control conditions, in which participants presumably failed to construe the situation as one in which universalism values were relevant, which prevented the expression of the value through value-congruent behavior.

Experiments 1 and 2 showed that personally important values predict behavior after individuals are primed with an abstract (and not a concrete) mindset. In Experiment 3, we extend these findings to values that are made temporarily salient via a priming procedure.

[4] There is a refugee center near the Business School that was well-known to participants.

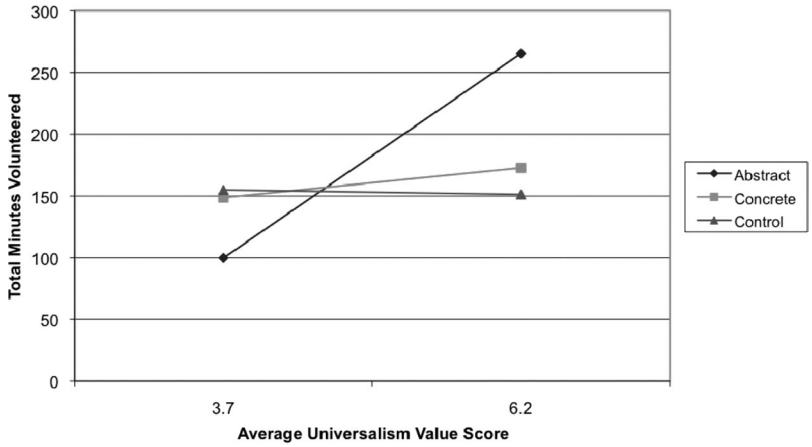

Figure 1. Total minutes volunteered as a function of universalism values and mindset condition in Experiment 2. One standard deviation below and above the mean universalism value score is plotted.

Experiment 3: Salient Individualism–Collectivism Values and Intentions to Seek Information about Value-Congruent (-Incongruent) Products

Overview

Experiment 3 was designed to measure the value–behavior relation for values that were made temporarily accessible. Because most values are positively regarded, they can be primed and thus be more likely to affect behavior (e.g., Verplanken & Holland, 2002). In this experiment, we primed the broad value dimensions of individualism (IND) or collectivism (COL) (Hofstede, 1980; Triandis, 1995), which refer to the emphasis on the attainment of values that serve the individual (e.g., self-direction, hedonism) or the collective (e.g., universalism, benevolence), respectively (Gardner, Gabriel, & Lee, 1999; Schwartz, 1990; Triandis, McCusker, & Hui, 1990), and subsequently induced an abstract or a concrete mindset. We then observed the carryover effect of value-congruent behavior on a subsequent, unrelated task. We also introduced another change in the design. In the past two experiments, we had provided participants with contextual information that was neutral (e.g., details about the location or the people involved). In this experiment, we wanted to assess whether the hypothesized effects would extend to situations in which the contextual information would negatively impact engaging in the behavior. Because negative information tends to be more salient and to receive a higher weight when making decisions (i.e., negativity bias; see Rozin & Royzman, 2001), including such information would provide a stronger test of our hypothesis.

To assess the expression of salient IND–COL values through value-congruent behaviors, participants indicated their intentions to seek information about a product congruent (vs. incongruent) with their salient values. The product was also described negatively in terms of concrete features of the product (e.g., price and availability, similar to Liberman & Trope, 1998, Study 2). Half the participants read information about a Waverunner described positively in terms of features instrumental for individualistic goals (e.g., "For unique individuals like you"). The other half read information about the same Waverunner, but described positively in terms of features instrumental for collectivistic goals (e.g., "For spending quality time with friends and family"). All participants also read information describing the Waverunner negatively in terms of price and availability. There were then two groups of participants in terms of congruity between primed values and product description: (a) those who read information about a product congruent with the primed values (individualistic prime-individualistic description or collectivistic prime-collectivistic description) and (b) those who read information about a product incongruent with the primed values (individualistic prime-collectivistic description or collectivistic prime-individualistic description).

We anticipated that participants primed with an abstract (and not with a concrete) mindset would construe the situation in terms of the readily accessible primed values, which would lead to behavioral intentions to seek more information concerning a value-congruent (vs. value-incongruent) but "unfeasible" product (i.e., a very expensive and/or unavailable product).

Method

Participants

One hundred thirteen introductory business students participated in the experiment for course credit. Tabulation of demographic data revealed that 46% of the respondents were men, 38% were Caucasians, 2% African Americans, 14% Asian Americans, and 36% East Asians.

Procedures

Participants were tested in groups of 20–30 by male and female experimenters who were unaware of the conditions. Within each group, participants were randomly assigned to conditions representing four combinations of mindset activation (abstract vs. concrete mindset) and congruity between primed value orientation and product description (congruent vs. incongruent) in a between-subjects full factorial design. As a cover story, participants were told that they would be completing several independent tasks during a 30-min session.

IND–COL value orientation manipulation. Participants first completed an IND–COL value orientation priming manipulation

(Oyserman & Lee, 2007; Torelli, 2006; Trafimow, Triandis, & Goto, 1991), which was ostensibly described as a story evaluation task. Participants were asked to read a story about Sostoras, a warrior in ancient Sumer who was forced to send a detachment of soldiers to fight for Sargon I (ruler of all Mesopotamia). Those assigned to the salient individualistic values condition read that Sostoras sent a talented general who would increase his prestige and the chance that he would be rewarded by Sargon I. Participants assigned to the salient collectivistic values condition read that Sostoras sent a family member who would increase the family's prestige and that would benefit the family. To be congruent with the initial description of the task, participants were asked to indicate whether they admired Sostoras or not.

Mindset manipulation. Immediately after, participants were presented with the same mindset manipulation task used in previous experiments. They received either the abstract or concrete condition (the control condition was omitted in this experiment).

Measure of behavioral intention. After completing the mindset prime manipulation, participants were presented with an ostensibly unrelated task about consumer situations. They were asked to imagine themselves browsing the main Web page of a new Waverunner. The product was described positively, and the information was framed either with an individualistic or with a collectivistic appeal (see Han & Shavitt, 1994, for features of individualistic and collectivistic product messages). The individualistic appeal described the Waverunner as "specially designed for unique individuals like you who want to go where others can't," whereas the collectivistic appeal described it as "specially designed for spending quality time with friends and family." In both types of appeals, participants also read that the price of the Waverunner was well above that of competitors and that product availability in their area was limited (i.e., negative concrete information). Participants were asked about their intentions to find out more information congruent with the description of the Waverunner. More specifically, in the individualistic framing of the product message, participants indicated their intentions to click a hyperlink to find out more information "about how stylish and unique the design is, and to show you how the product surpasses the competition in those features critical to help you perform at the top." In the collectivistic framing of the message, participants indicated their intentions to click a hyperlink to find out more information "about design features to provide excellent comfort for rear passengers, and to show you how the product surpasses the competition in security and ergonomic features to provide a better experience for friends and family riding with you." Participants indicated their behavioral intentions by answering two items. The two items asked, "How likely would it be that you click the hyperlink on the web page?" and "How important would it be for you to find out about these product features?" Participants responded using 9-point Likert scales ranging from 1 (*very unlikely/not at all important*) to 9 (*very likely/very important*).

Results and Discussion

Participants' ratings of how likely it was that they would click the hyperlink and how important it was to find out more information were averaged to form an index of their intentions to seek information congruent with the description of the Waverunner. The reliability between these two items was satisfactory (coefficient $\alpha = .81$). This index was subject to an analysis of variance (ANOVA), with mindset prime (abstract or concrete) and congruity between primed values and product description (congruent or incongruent) as fixed factors.[5] The analysis yielded a significant Mindset Prime × Congruity interaction, $F(1, 109) = 6.05$, $p < .025$, $\eta^2 = .05$, and a significant main effect of congruity between primed values and product description, $F(1, 109) = 5.59$, $p < .025$, $\eta^2 = .05$. The main effect of mindset prime was not significant ($p > .9$). Simple contrasts indicated that participants in the abstract mindset condition exhibited a higher intention to seek information for products that were congruent with the primed values ($M = 6.59$, $SD = 1.59$) than they did for products that were incongruent with these values ($M = 4.85$, $SD = 2.29$), $t(50) = 3.19$, $p < .0025$, $d = 0.88$. In contrast, participants in the concrete mindset condition exhibited similar intentions to seek information about products congruent and incongruent with the primed values ($M = 5.71$, $SD = 1.71$ and $M = 5.75$, $SD = 2.01$, respectively, $p > .9$).[6]

The results of Experiment 3 provide additional evidence for the effect of the interplay between salient values and primed mindset on value-congruent behavioral intentions. Individuals who read information about a product that was instrumental (vs. noninstrumental) to their salient values expressed a greater intention to seek more information about the product upon being primed with an abstract (and not a concrete) mindset. We argue that participants primed with an abstract (and not a concrete) mindset construed the situation in terms of the temporarily salient values, which facilitated the expression of the values through value-congruent behavioral intentions (i.e., intention to seek more value-congruent information). This effect occurred even when the more concrete

[5] Three separate pretests using introductory business students who did not participate in the main experiment were conducted to check the value-congruent nature of the product description, the assumption that price and availability issues are concrete aspects of a shopping situation, and to verify that the value manipulation did not interfere with the mindset manipulation. In the first pretest, participants were presented with the individualistic/collectivistic product descriptions and indicated the degree to which the messages would be appealing to consumers with individualistic and collectivistic values. In the second pretest, participants indicated reasons why they would buy a series of products and concrete issues related to the experience of buying these products. Participants in the third pretest completed either the individualistic or collectivistic value prime followed by either the abstract or concrete mindset prime. More information about the procedures and results from these pretests is available from Carlos J. Torelli and Andrew M. Kaikati upon request.

[6] Separate ANOVAs conducted for each type of value primed showed that when COL was primed, participants in the abstract mindset condition exhibited a higher intention to seek information for products described in collectivistic terms ($M = 6.82$, $SD = 1.20$) than they did for products described in individualistic terms ($M = 3.86$, $SD = 2.36$), $t(24) = 3.94$, $p < .001$, $d = 1.58$). In contrast, participants in the concrete mindset condition exhibited similar intentions to seek information about products described in collectivistic and individualistic terms ($M = 5.62$, $SD = 1.33$ and $M = 6.07$, $SD = 2.29$, respectively, $p > .5$). However, the effects for the IND values prime, although in the right direction, did not reach significance. These nonsignificant results may be attributed to tendencies among participants to associate the Waverunner more easily with individualistic than with collectivistic attributes, which may have increased the interest on the Waverunner under the IND values prime for both type of description conditions. Results from the pretest showed that participants rated the individualistic message higher in terms of appealing to people with individualistic values than they rated the collectivistic message in terms of appealing to people with collectivistic values ($M = 6.3$ and 5.5), $t(44) = 5.89$, $p < .001$, $d = 0.46$. We replicated the IND values prime condition using another product as stimuli (a Web site service) and found statistically significant results congruent with the predictions in this research.

information included in the consumer situation described the product negatively (i.e., priced high and possibly unavailable), which could have potentially introduced a negativity bias that might have prevented participants from defining the action in terms of values. The findings in this experiment are congruent with those from past research suggesting that when information depicts a situation as unfeasible (i.e., negative concrete information), interest in desirability information (i.e., instrumentality for one's goals) is higher when individuals think about the situation in the distant (vs. the near) future (Sagristano, Trope, & Liberman, 2002). Thinking about situations in the distant (vs. near) future leads to more abstract representations of the situation, which is conceptually similar to the abstract representations elicited here via abstract (vs. concrete) mindset priming (see Freitas et al., 2001; Fujita et al., 2006; Trope & Liberman, 2003).

Results of this experiment, together with the results of Experiments 1 and 2, demonstrate that relevant values (personally important or temporarily accessible) predict value-congruent behavior when participants construe the action at a high level of abstraction upon the activation of an abstract mindset. The lack of relationship between values and their corresponding behaviors in the concrete mindset condition are attributed to participants' focus on concrete aspects of the situation, which prevent them from construing the action in terms of relevant values and from expressing the values through value-congruent behaviors. In Experiment 4, we more directly examined the mechanism that is assumed to underlie the effect of mindset activation on the value–behavior relationship.

Experiment 4: Value–Behavior Relation and Likelihood of Construing an Action at Low Levels of Abstraction

Overview

Experiment 4 was designed to more directly assess the focus on concrete aspects of a situation that presumably underlies the lack of a value–behavior relation upon the activation of a concrete mindset. The situations that participants experienced in past experiments included contextual information (e.g., setting for the behavior, timing, details of location, and the like) in which the behavior was embedded. This information was provided to allow the construal of the situation on the basis of factors other than relevant values. Such situations are also ecologically valid in the sense that real behaviors are frequently embedded in a complex web of contextual details that can be used to define the situation. However, removing contextual information and providing a gist of the situation as related to relevant values should facilitate the focus on these values and lead to value-congruent behaviors even when a concrete mindset is activated. Under the absence of concrete details, a concrete mindset prime should not interfere with the use of relevant values for defining the action. We predict that, when only the gist of the situation as related to relevant values is provided, values will predict behavioral intentions regardless of the mindset prime. To test this prediction, we followed a procedure similar to that used in Experiment 1 (without the control condition) but including conditions with or without contextual information. The design was then a 2-mindset condition (abstract or concrete) $\times$ 2 descriptions of situations (contextual information included or gist of the situation) $\times$ 2 value domains (universalism and self-reliance) in which the mindset condition and the description of situations were between-participants factors and value domain was a within-participants factor. We expected to replicate the findings from Experiment 1 in the conditions that included contextual information but to find a significant value–behavior relation in the conditions that included only the gist of the situation as related to values regardless of the mindset prime.

Method

Participants

One hundred and sixty-two introductory business students participated in the experiment for course credit. Tabulation of demographic data revealed that 44% of the respondents were men, 83% were Caucasians, 9% Asian, and 1% Asian Americans. The average age of participants was 20.8 years.

Procedures

Participants were tested in groups of 10–30 by male and female experimenters who were unaware of the conditions. Within each group, they were randomly assigned to one of the four combinations of mindset prime (abstract or concrete) and type of description (contextual information included or gist of the situation). As a cover story, participants were told that they would be completing several independent tasks during a 30-min session.

Value measurement. Values were measured as in Experiment 1. However this time, the focus was on universalism (i.e., understanding, appreciation, tolerance, and protection for the welfare of all people and of nature) and self-direction values (i.e., independent thought and action choosing, creating, and exploring; Schwartz & Bardi, 2001) rather than on power and benevolence. Participants then worked for 20 min on a series of unrelated filler tasks.

Mindset manipulation. Immediately after completing the filler tasks, participants were presented with the same mindset manipulation task used in previous experiments. However, this time participants responded to the why and how questions as they relate to "speaking a second language fluently" instead of "conveying your thoughts more effectively."

Measure of behavioral intention. Finally, participants were presented with two vignettes of hypothetical situations (e.g., recycling a battery and exploring a new city). Each vignette depicted a potential behavior that past research has found to be conducive to the expression of one of the values measured at the beginning of the session (e.g., universalism or self-direction; Bardi & Schwartz, 2003). These vignettes either included contextual information in which the behavior was embedded (as in Experiment 1) or simply described the gist of the situation as related to values. For example, the description of an opportunity to perform an environmentally concerned behavior (conducive to the expression of universalism values) read as follows, with the version including contextual information in parenthesis:

> Imagine that you are getting a new cell phone. Your old phone is (2 ½ years old and is) obsolete, so you are planning to throw it away. You read a news story (in the evening on foxnews.com) that cell phone batteries contain hazardous materials and can be harmful to the environment. There is a local place where you can take your cell phone battery to be recycled, instead of throwing it away. This place

is around five miles from where you live. (To drive there, you would need to get on I-35W North for 3 miles. You would then take Exit 231 and make an immediate left. You would stay on that road for 2 miles, and the battery recycling place will be on your right hand side next door to a BP station.)

After reading each vignette, participants provided their intention to perform the proposed behavior on a scale ranging from 1 (*not at all likely*) to 9 (*very likely*). Finally, they answered demographic questions, were debriefed, and dismissed.

Results and Discussion

We computed the average universalism and self-direction value scores by averaging the score of the related value items (eight items for universalism and five items for self-direction; coefficient $\alpha = .91$ and .86, respectively). For each mindset-type of description condition, we computed the value–behavioral intention correlations for each of the two value domains (i.e., universalism and self-direction). We then pooled the two correlations into a single measure of the value–behavior relationship in each condition by means of the same meta-analytic technique used in Experiment 1. As depicted in Table 2, and congruent with our predictions, the value–behavior correlations for each value domain and the pooled correlation were positive and significantly different from zero in the abstract mindset conditions, both when the description included contextual information and when the description included only the gist of the situation. Replicating past findings, value–behavior correlations were not significantly different from zero when contextual information was included in the description of the situation and a concrete mindset was primed. However, there were value–behavior correlations significantly different from zero after priming a concrete mindset when only the gist of the situation as it relates to values was presented to participants. Further analysis confirmed that, when contextual information was included in the description of the situation, the pooled correlation in the abstract mindset condition was significantly higher than that in the concrete mindset condition ($z = 2.29$, $p < .025$). This latter correlation was also significantly lower than those in the abstract and concrete mindset conditions when only the gist of the situation was included ($z = 1.97$, $p < .05$ and $z = 2.15$, $p < .05$, respectively). There were no differences between the pooled correlation in the concrete mindset condition when only the gist of the situation was included and those in the abstract mindset conditions (ps $> .7$).[7]

Table 2
Pooled and Individual Value-Behavioral Intention Correlations as a Function of Mindset Condition and Type of Description in Experiment 4

Mindset-type of description condition	Correlation		
	Universalism domain	Self-direction domain	Pooled
Abstract-contextual information	.52** (42)	.37* (42)	.45**
Abstract-gist of situation	.42** (41)	.37* (41)	.39**
Concrete-contextual information	.06 (41)	.02 (41)	.04
Concrete-gist of situation	.55** (38)	.30* (38)	.44**

Note. Sample size appears in parentheses.
* $p < .05$. ** $p < .01$.

These findings support our prediction that a concrete mindset interferes with the definition of a situation in terms of relevant values, and consequently with the expression of these values, by directing attention to contextual aspects of the situation. When these contextual aspects were removed from the description of the situation (i.e., only the gist of the situation as it relates to values was included), a concrete mindset did not interfere with the expression of relevant values through value-congruent behaviors. Results of Experiment 4 shed some light on the processes underlying the effect of mindset priming on the value–behavior relationship. In Experiment 5, we further explored these processes by directly measuring the goals that participants use to define a situation.

Experiment 5: Salient Values and Goals Ascribed to Others

Overview

Experiment 5 was designed to study the goals that people use to define a situation and to further explore the mental processes underlying the effects found in previous experiments. If mindset priming affects the value–behavior relationship by making more or less likely that an action will be defined in terms of relevant values, then we should expect participants primed with an abstract mindset to define a subsequent action in terms of the abstract goals associated with the values that are relevant in the situation. In contrast, participants primed with a concrete mindset should define the situation in terms of low-level goals and concrete experiences of the same situation. To explore this mechanism, we primed either individualistic or collectivistic values (as in Experiment 3) and then immediately made either an abstract or a concrete mindset salient, using the same manipulation from Experiments 1–3. After that, participants were asked to make inferences about the goals being pursued by a hypothetical individual in a purchase situation. The description of the purchase situation provided contextual information in which the behavior was embedded (e.g., details about price, product availability, knowledge about the product, and the like). We reasoned that participants would use the abstract goals associated with the temporarily salient individualistic or collectivistic values to define the hypothetical shopping situation

[7] A similar analyses on the nontransformed raw correlation coefficients yielded the same results. An additional analysis using a linear mixed model with random effects similar to that used in Experiment 1 showed that the estimate of the slope coefficients for the abstract mindset conditions were both significantly different from zero: $\text{slope}_{\text{contextual info.}} = .93$, $t(40) = 6.30$, $p < .001$; $\text{slope}_{\text{gist of sit.}} = .55$, $t(39) = 3.74$, $p < .001$. In contrast, this coefficient for the concrete mindset condition was significantly different from zero only in the gist of the situation condition (slope = .81), $t(36) = 5.03$, $p < .001$, and not in the contextual details one (slope = .12), $t(39) = .92$, $p > .3$. Further analyses revealed that the slope coefficient was significantly lower in the concrete mindset condition when contextual details were included compared with all other conditions (ps $< .005$) and that there were no differences between the slope coefficient in the concrete mindset condition when only the gist of the situation was included and those in the abstract mindset conditions (ps $> .1$).

only when primed with an abstract mindset. Participants in the abstract mindset condition with temporarily accessible collectivistic values would perceive that others pursue collectivistic goals of preserving ingroup integrity, interdependence of members, and harmonious relationships, whereas those with temporarily salient individualistic values would perceive that others pursue individualistic goals of feeling good, being distinguished, and being independent (see Triandis, 1995). In contrast, participants primed with a concrete mindset would not use the abstract goals associated with the salient IND–COL values to define the situation, as they would focus instead on low-level goals and concrete experiences (e.g., product availability, price, and so forth). In addition, we measured the amount of elaboration en route to judgments.

Method

Participants

Ninety-nine introductory business students participated in the experiment for course credit. Tabulation of demographic data revealed that 59% of the respondents were men, 75% were Caucasians, 4% African Americans, 6% Asian Americans, and 8% East Asians.

Procedures

Participants were tested in groups of 20–30 by a male experimenter unaware of the conditions. Within each group, they were randomly assigned to conditions representing four combinations of primed value orientation (individualistic vs. collectivistic) and mindset activation (abstract vs. concrete mindset) in a between-subjects full factorial design. As a cover story, participants were told that they would be completing several independent tasks during a 30-min session.

IND–COL value orientation manipulation. Participants first completed an IND–COL value orientation priming manipulation similar to that used in Experiment 3.

Mindset manipulation. Immediately after the value orientation priming task, participants completed either the abstract or the concrete mindset manipulation used in Experiments 1–3.

Measurement of judgments about others' goals. After completing the mindset prime manipulation, participants were presented with an ostensibly unrelated task about consumer situations and a person's choices. They read a story about a hypothetical consumer (John) who was shopping in an electronics store. The situation indicated that John was moving to a job in a different city in which he was going to interact with new people and would leave behind family and friends. He had the chance to buy a video camera for an upcoming trip with friends, a stylish, new Smartphone with very attractive advertising targeting successful people, or a convenient PC. For each product, the story mentioned multiple concrete issues related to price, sale offers, availability, budget constraints, and John's degree of knowledge about the product. To encourage elaboration prior to making their judgments, participants were asked to write down what they thought went through John's mind during the shopping situation. They were provided with half a letter-sized piece of paper to write down their thoughts with no time limit. After that, they were asked to indicate up to five goals that they believed John was pursuing in this shopping trip. The goals assigned to John were coded as to whether they were congruent with individualistic or collectivistic values or as to whether they were associated with concrete aspects and experiences of a shopping situation (e.g., price/budget issues, convenience, and product knowledge). The percentages of individualistic, collectivistic, and concrete goals were recorded for each participant. Finally, participants answered demographic questions, were debriefed, and dismissed.

Results

Goals Pursued by John

The goals that participants ascribed to John were coded by two judges who were blind to the conditions ($\kappa = .85$). The judges coded goals in terms of whether they were congruent with individualistic or collectivistic values or whether they were associated with concrete aspects and experiences of a shopping situation (e.g., budget maximization, convenience, and product knowledge). Goals congruent with individualistic values referred to abstract goals that serve the self by making the self feel good, being distinguished, and being independent (hedonism, status and prestige, personal success, and self-direction), whereas those congruent with collectivistic values referred to abstract goals that serve the ingroup by preserving ingroup integrity, interdependence of members, and harmonious relationships (harmony, enhancement of the welfare of others, and stability of relationships; Schwartz, 1992). Examples of the former type of goals are "Do what makes him feel the best" or "Be an impressive professional"; examples of the collectivistic goals are "Keep close connection with friends" or "Get something that will make others happy"; and examples of the concrete goals are "Make the best deal" or "Buy something he knows about." Participants in both mindset prime conditions reported a similar total number of goals ($M_{abst.} = 4.5$, $SD = 0.84$ and $M_{conc.} = 4.2$, $SD = 1.00$, $p > .2$).

We computed the proportion of each type of goal by dividing the number of goals from each type by the total number of goals indicated by participants. Because proportions tend to be nonnormally distributed, we arcsine transformed the proportions of individualistic, collectivistic, and concrete goals ascribed to John by participants before submitting the data to a repeated measures ANOVA, with primed value orientation (individualistic vs. collectivistic) and mindset prime (abstract vs. concrete) as fixed factors and goal type (individualistic/collectivistic/ concrete) as the within-subjects factor. The analysis yielded a main effect of goal type, $F(2, 190) = 65.19$, $p < .001$, $\eta^2 = .36$, driven by an overall higher percentage of concrete goals (46.2%) versus individualistic (17.6%) and collectivistic goals (7.6%) ascribed to John by participants. More importantly, and as predicted, there was also a significant Goal Type ×Mindset Prime interaction, $F(2, 190) = 16.10$, $p < .001$, $\eta^2 = .09$. All the other interactions were not significant ($ps > .1$). As shown in Figure 2, participants induced to think abstractly indicated a higher percentage of collectivistic goals when primed with collectivistic (vs. individualistic) values (14.1% and 5.5%, respectively), $t(52) = 2.26$, $p < .05$, $d = 0.61$, whereas those primed with individualistic (vs. collectivistic) values indicated a higher percentage of individualistic goals (29.4% and 12.7%, respectively), $t(52) = 2.85$, $p < .01$, $d = 0.79$. In contrast, these effects did not occur among participants primed with a concrete mindset. Those primed with individualistic and

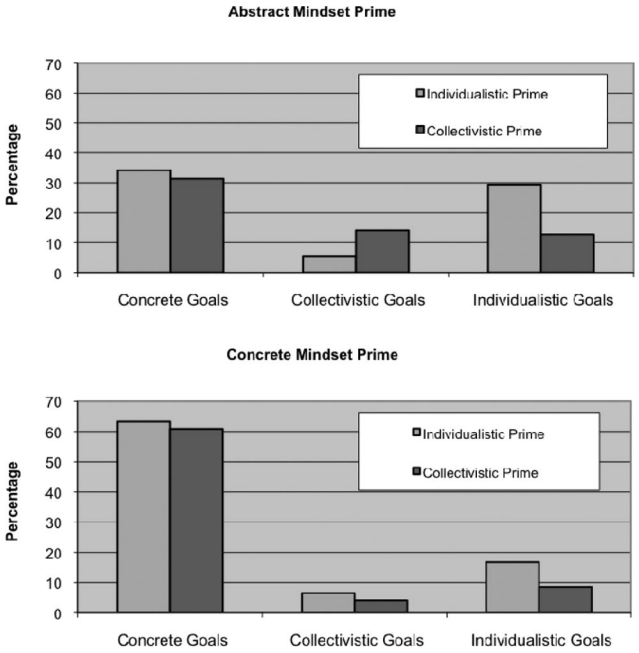

Figure 2. Percentage of individualistic, collectivistic, and concrete goals by primed value orientation and mindset primes in Experiment 5.

collectivistic values reported similar percentages of individualistic (16.7% and 8.6%, respectively, $p > .2$) and collectivistic goals (6.5% and 4.1%, respectively, $p > .4$). As expected, participants induced to think concretely focused primarily on concrete aspects and experiences of the situation and ascribed to the hypothetical consumer similar percentages of concrete goals when primed with individualistic and collectivistic values (63.3% and 60.9%, respectively, $p > .7$). Furthermore, they ascribed a significantly higher percentage of concrete goals than their counterparts primed with an abstract mindset, both when individualistic ($M = 34.2$), $t(50) = 3.37$, $p < .001$, $d = 0.95$, and collectivistic ($M = 31.4$), $t(45) = 3.57$, $p < .001$, $d = 1.05$, values were primed.

Thoughts About What Went Through John's Mind

We counted the number of complete ideas that participants wrote when prompted to think about what went through John's mind as a measure of the degree of elaboration prior to making their judgments. We submitted this measure to an ANOVA, with primed value orientation and primed mindset as fixed factors. Participants in both mindset prime groups reported a similar total number of thoughts ($M_{abst.} = 2.1$, $SD = 1.15$ and $M_{conc.} = 2.3$, $SD = 1.05$, $p > .25$). These findings suggest that participants in all groups engaged in the same degree of elaboration prior to making their judgments about the goals pursued by John.

Discussion

Results from Experiment 5 shed further light on the mechanisms underlying the effects of a mindset prime on the value–behavior relation. An abstract mindset facilitated defining a hypothetical situation in terms of abstract collectivistic goals when collectivistic (vs. individualistic) values were salient, and in terms of abstract individualistic goals when individualistic (vs. collectivistic) values were salient. In contrast, these effects were absent among participants induced to think concretely. The focus of these participants on concrete experiences of the situation impaired the definition of the situation in terms of salient values and facilitated its definition in terms of concrete goals instead.

One issue with the procedure used in Experiment 5 is that participants were presented with varied information about multiple products that matched their salient values to different degrees. Although this is a very common shopping scenario, the multiple sources of information may have overwhelmed participants and facilitated the focus on concrete aspects of the situation. In other words, the amount of information may have increased the complexity of the task leading to a low-level identification of the situation (see Vallacher, Wegner, & Frederick, 1987). Although this interpretation would not explain the value-congruent judgments in the abstract mindset condition, it could account for the findings in the concrete mindset condition and for the generally higher percentage of concrete goals ascribed to John across conditions. The analysis of the total number of complete ideas written by participants also suggested that the mindset primes do not affect the degree of elaboration en route to judgments. Experiment 6 was designed to provide a more direct measure of information processing by participants primed with abstract or concrete mindsets, using a different mindset priming technique.

Experiment 6: Value–Behavior Relationship and Information Processing

Experiment 6 was designed to examine the types and amount of information sought by participants primed with either abstract or concrete mindsets. We predicted that participants would exhibit information search behavior consistent with their concerns with the welfare of nature associated with universalism values (i.e., search for information on the "environmental aspects" of products; see Bardi & Schwartz, 2003; Verplanken & Holland, 2002) only when primed with an abstract (and not a concrete) mindset. Importantly, we used a different mindset manipulation than in the previous experiments, in which participants generated superordinate categories (abstract) and subordinate exemplars (concrete) (adopted from Fujita et al., 2006). A control condition was included again for comparison purposes. In addition, we also measured the total amount of information examined to corroborate the Experiment 5 finding that participants in abstract and concrete mindsets do not differ in amount of elaboration.

Method

Participants

Eighty-nine introductory business students participated in the computer-based experiment for course credit. Tabulation of demographic data revealed that 46% of the respondents were men, 84% were Caucasians, 2% Asian Americans, and 6% Asians.

Procedures

Participants were tested in groups of 20–30 by a male experimenter unaware of the conditions. Within each group, they were randomly assigned to one of the three mindset prime conditions

(abstract, concrete, or control). As a cover story, participants were told that they would be completing several independent tasks on the computer during a 30-min session.

Value measurement. Values were measured as in Experiment 1. However, this time the focus was on universalism values. Participants then worked for 20 min on a series of unrelated filler tasks.

Mindset manipulation. After the filler tasks, participants completed either the abstract or the concrete mindset manipulation. This mindset manipulation (adopted from Fujita et al., 2006) was different from that used in previous experiments and was based on the idea that the cognitive process of superordinate categorization is associated with high-level construal (abstract mindset), whereas the process of subordinate categorization is associated with low-level construal (concrete mindset). Participants were presented with 40 words (e.g., *singer*, *king*, *painting*, *soap opera*). For each word, participants in the abstract mindset condition generated superordinate category labels by answering the question, "___ is an example of what?" whereas those in the concrete mindset condition generated subordinate category labels by answering the question, "An example of ___ is what?" In the control condition, participants generated synonyms of the 40 words.

Measurement of information search behavior. After completing the mindset manipulation, participants were presented with an unrelated study on information search behavior. They were shown television sets that might be available for purchase, along with seven attributes of each. They were asked to examine the information on the television sets as if they were shopping to purchase one. The seven attributes were listed and described as screen quality (vividness of colors and pixels), screen quality in sun (amount of glare on the screen in sunlight), sounds quality (sound for watching movies and sporting events), remote control (number of devices and functions that can be controlled), environmental aspects (environmental-friendliness and recyclability of television components), prechoice facilities (distance to the store and speed of delivery after purchase), and quality of the instructions (clarity of the instructions on television setup and operation). Participants were informed that for each TV, each attribute would receive one of five ratings: very favorable (+ +), favorable (+), reasonable (0), unfavorable (−), or very unfavorable (− −). On the next screen, a 20 (television, named A through T) × 7 (attribute) matrix was presented in which participants could actively acquire the information that interested them (see Verplanken & Holland, 2002). The ratings for each attribute were covered so that participants could only see the information if they clicked on the particular cell that interested them. Participants were free to take as much time as they needed to inspect the televisions and their attributes. The computer unobtrusively kept track of their information search behaviors. When participants felt that they had sufficiently examined the information, they proceeded to the next screen to complete some demographic questions. They were then debriefed and dismissed.

Results

Universalism Values and Environmentally Concerned Behavior

We computed the average universalism value score by averaging the score of the eight related value items (e.g., broadmindedness, equality, and the like; coefficient $\alpha = .87$). We used as dependent variables for the analysis the time that participants spent reviewing the cells that included environmentally related information (as a proportion of all the time spent reviewing product information) and the number of cells that included environmentally related information that participants clicked (as a proportion of all the cells clicked). These two variables showed high intercorrelation (coefficient $\alpha = .86$) and were thus averaged to form a single index of participants' interest in environmentally related information. We used the arcsine transformation of this index as the measure of environmentally concerned behavior as an expression of universalism values. A regression analysis of this measure as a dependent variable ($M = 0.098$, $SD = 0.05$) and the average universalism value score ($M = 4.45$, $SD = 1.09$), two dummy variables for the mindset conditions (one for each of the control and concrete conditions using the abstract condition as a reference), and the interactions between these dummy variables and the average value score as predictors showed that the predicted Value × Concrete Mindset interaction was significant ($b = -.027$), $t(83) = -2.23$, $p < .05$. The coefficient for the average universalism score was also significant ($b = .02$), $t(83) = 2.47$, $p < .025$, suggesting a positive and significant relationship between universalism value and its corresponding behavior in the abstract mindset condition. No other coefficients were significant (all ps $> .1$). To further interpret these effects, we computed simple slopes (Preacher et al., 2006) for the different mindset conditions. As depicted in Figure 3, and congruent with our predictions, the simple slope for the abstract mindset condition was positive and significantly different from zero (slope = .02), $t(83) = 2.47$, $p < .025$, whereas that for the concrete condition was not (slope = −.007), $p > .4$. The slope for the control condition was also nonsignificantly different from zero (slope = .002, $p > .8$). The value–behavior correlation coefficients for the different conditions were $r_{\text{abstract}} = .36$ ($p < .05$), $r_{\text{concrete}} = -.14$ ($p > .4$), and $r_{\text{control}} = .07$ ($p > .7$).

Total Amount of Time Spent Searching for Information

To explore information-processing tendencies among participants primed with different mindsets, we conducted an ANOVA on the total amount of time (in seconds) that participants spent searching for information, with mindset condition as a fixed factor and universalism values scores as a covariate. Participants in all groups spent a similar amount of time searching for information ($M_{abst.} = 76.3$, $SD = 26.07$, $M_{conc.} = 78.2$, $SD = 36.2$, and $M_{control.} = 81.9$, $SD = 39.0$, $p > .8$). These results refute systematic differences in overall information-processing tendencies among the different groups.

Discussion

Results of Experiment 6 extend to those from previous experiments and suggest that universalism values predict environmentally concerned behaviors only when an abstract (and not a concrete) mindset is induced. This finding was obtained using a different mindset induction technique and using a measure of information search behavior. In addition, findings from this experiment suggest that participants primed with different mindsets process similar total amounts of information. Participants primed with an abstract mindset did not use information-processing shortcuts and processed as much information as those in other condi-

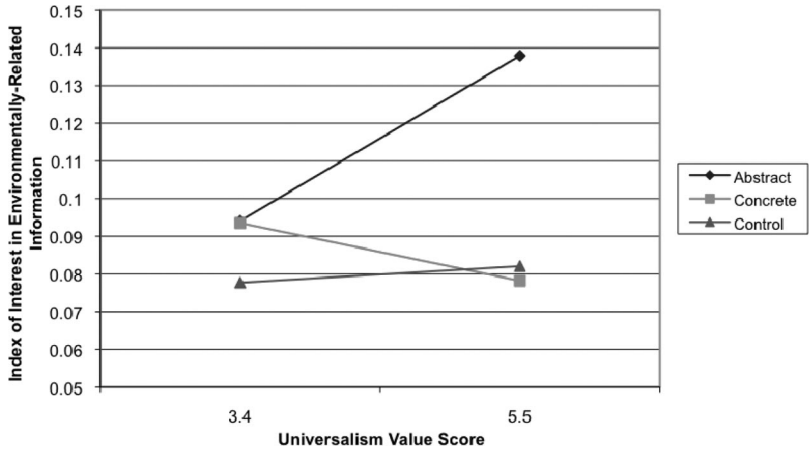

Figure 3. Index of interest in environmentally related information as a function of universalism values and mindset condition in Experiment 6. One standard deviation below and above the mean universalism value score is plotted.

tions. However, participants primed with an abstract mindset, and who presumably construed the situation as one in which universalism values were relevant, paid relatively more attention to environmentally relevant information (as a proportion of all the information processed) than those in the concrete mindset condition. In combination, results from the six experiments provide converging evidence for the moderating role of abstract and concrete mindsets on the strength of the value–behavior relation.

General Discussion

The studies reported here were designed to test the hypothesis that thinking about the abstract aims of a situation facilitates construing an action in terms of relevant values, which in turn facilitates the expression of these values through value-congruent judgments and behaviors. We examined a broad range of values, including power, benevolence, universalism, self-direction, and IND-COL, across these studies. These values were either measured (Experiments 1, 2, 4, and 6) or primed (Experiments 3 and 5), and a control condition was included for comparison purposes in multiple experiments. In the case of priming (Experiments 3 and 5), individualistic and collectivistic values were made salient using widely accepted priming procedures (see Oyserman & Lee, 2007). Abstract and concrete ways of thinking were induced using one of two well-established mindset priming manipulations (Agrawal, 2006; Freitas et al., 2004; Fujita et al., 2006). Supporting our predictions, in Experiment 1, participants primed to think abstractly reported intentions consistent with their benevolence and power values, but participants primed to think concretely did not. In Experiment 2, we used a measure of actual behavior. Participants in the abstract mindset condition behaved in accordance with their universalism values and signed up to spend time helping an outgroup member, whereas participants in the concrete mindset did not. In Experiment 3, participants primed with an abstract, and not with a concrete, mindset expressed a greater intention to seek product information that was congruent with their primed individualistic or collectivistic values compared with information that was incongruent with these values.

In Experiments 4 and 5, we explored the mechanism underlying the effects of mindset activation on the value–behavior relationship. Results of these experiments suggest that an abstract mindset leads to value-congruent behavior by facilitating construing a situation in terms of relevant values. In contrast, a concrete mindset interferes with the expression of values through value-congruent behavior by directing attention to contextual details and away from the values that may be relevant in the situation. In Experiment 4, only when participants were given the opportunity to construe the situation on factors other than relevant values did a concrete mindset lead to behavioral intentions dissociated from the measured universalism and self-direction values. Furthermore, we showed in Experiment 5 that an abstract mindset facilitated defining a shopping situation in terms of the goals associated with the primed individualistic or collectivistic values, whereas a concrete mindset facilitated defining it in terms of concrete goals related to convenience or budget maximization.

Finally, we replicated the findings from previous experiments in Experiment 6 using a different mindset manipulation. Participants induced to think abstractly by means of a superordinate categorization task were more likely to seek out product information that was consistent with their universalism values than were participants induced to think concretely by means of a subordinate categorization task. Furthermore, results of Experiment 6, and to a lesser extent those of Experiment 5, showed no differences in the total amount of information processing between participants in the abstract and concrete mindset conditions, which present an argument against overall differences in the total amounts of information processed among mindset-primed groups.

Experiments 3 and 5 showed that simultaneous priming of values and accessible mindsets predictably affect responses to varied judgmental and behavioral measures. The pattern of results in these experiments mirrored that of other experiments in which values were measured and not primed. Although we were cautious in the selection of priming procedures, and in the sequence of introducing the priming tasks to participants, we cannot rule out the possibility that the abstract mindset prime may have strength-

ened the potency of the value manipulation by facilitating drawing on the recently primed values information while completing the mindset task. The concrete mindset manipulation may have also interfered with the value manipulation by hastening the decay of the accessibility of the recently primed values through requiring a focus on different content during the mindset induction. Potential order effects of simultaneously manipulating values and mindsets for determining behavior await further research.

Implications for Research Concerning the Value–Behavior Relation

The findings here suggest that factors that systematically change the level of abstraction at which an individual represents a particular action may affect the expression of relevant values (personally important or temporarily salient) through value-congruent judgments and behaviors. In this research, we focused on the role of abstract and concrete ways of thinking via mindset activation. However, multiple contextual factors can affect the level of abstraction at which an individual construes a situation. For example, research has suggested that people presented with familiar (unfamiliar) situations tend to focus on the abstract aims (concrete aspects) of the situation (Vallacher & Wegner, 1989; Vallacher et al., 1987). Task complexity is another factor that can affect the level of abstraction that receives focal attention. Individuals who perform simple (vs. complex) tasks are more likely to represent the action at a high (vs. low) level of abstraction (Vallacher et al., 1987). Our findings suggest that individuals may be more likely to act in accordance with their values when confronted with familiar (vs. unfamiliar) situations, or when performing simple (vs. complex) tasks. This argument is congruent with past findings suggesting that the use of hypothetical scenarios that promote a more abstract way of thinking can lead to stronger value–behavior relations (see Bardi & Schwartz, 2003).

More generally, engaging in any cognitive procedure that induces a high- (vs. low-) level representation of an action, such as thinking about distant- (vs. near-) future events (Freitas et al., 2001) or chronic dispositions to construe actions at high- (vs. low) levels of abstractions (Vallacher & Wegner, 1989) may lead to the same results reported in this research. A major class of variables that may determine the level of abstraction at which individuals construe a situation is the psychological distance of an event (Fujita et al., 2006; Trope & Liberman, 2003). Social stimuli that are distant (vs. proximal) on any psychological dimension (e.g., time, space, social, hypotheticality) lead to abstract (vs. concrete) representations. Distal (vs. proximal) events should more easily lead to the expression of values through value-congruent judgments and behaviors. This prediction is congruent with recent findings suggesting that it may be easier to express values through behavioral intentions to take place in the distant (vs. near) future (Sagristano et al., 2008). The systematic study of contextual factors that impact the expression of values seems to be a fruitful area for further investigation.

Research about the relations between personal values, valences, and actions suggests that personal values influence a person's subjective definition of a situation so that certain elements can become attractive or aversive, which have consequences for their subsequent choice behaviors (Feather, 1988, 1992, 1995). Results here further suggest that the influence of values on the extent to which particular objects or events are seen as attractive or aversive would be higher when individuals think abstractly (vs. concretely) about the event. The effects from an abstract mindset may extend beyond the actual choice behaviors to the subsequent evaluations of these choices. Thinking abstractly (vs. concretely) may lead to more positive evaluations, and to experience more positive affect, of a choice that was congruent with one's core values (e.g., volunteer to promote social justice). This effect could occur even if the choice had negative consequences in terms of nonvalue-related aspects (e.g., sacrifice in terms of time and effort). The opposite may be true when thinking concretely about the same situation.

Interestingly, we did not find evidence in this research of a significant value–behavior relationship in the control conditions in which mindsets were not primed. This is not such an uncommon situation, and past research has documented varied instances in which, in the absence of facilitating conditions, values do not predict corresponding behaviors. In a context similar to that used in Experiment 6, Verplanken and Holland (2002) found that control participants who were not primed with environmental values neither made value-congruent product choices nor searched for value-congruent information. Darley and Batson (1973) also found a lack of correlation between values and helping behavior among theological seminary students who were on their way to give a talk. Sagiv and Schwartz (1995) found no support for the hypothesized correlation between the endorsement of collective values and the readiness of members of minority groups for contact with members of a majority group. Finally, in about one fourth of Feather's (1995) scenarios involving hypothetical choices in a variety of common situations, values did not predict the corresponding behavioral intentions. These findings reinforce the notion that the value–behavior relation is frequently moderated by multiple factors such as those discussed earlier (e.g., task familiarity or task complexity).

We do not claim that an abstract mindset is always necessary for values to predict behavior. On the contrary, the notion that people tend to be sensitive to the larger meanings of what they are doing (Vallacher & Wegner, 1987) suggests that values should predict behavior in a variety of situations (e.g., when people can easily focus on relevant values, as per results in Experiment 4). However, in many common situations, values may not be readily accessible, and people may fail to focus on them for interpreting their actions. We extend past findings suggesting stronger value–behavior relations upon the conceptual priming of self-relevant values (e.g., Verplanken & Holland, 2002) and show that thinking abstractly can help individuals to focus on their abstract goals for interpreting and planning their actions, which can strengthen the value–behavior relation. Our findings are congruent with those from Maio and colleagues (Maio & Olson, 1998; Maio et al., 2001), suggesting that closing the gap in the level of abstraction between values and behaviors facilitate value–behavior relationships. Maio and colleagues achieve this by making values more concrete, whereas we achieved the same end by making people construe behavior in a more abstract way. Findings in this research add to researchers' understanding of the interplay between the self-relevance of values, the presence (or absence) of value reminders, and the level at which an action is construed for determining behavior.

Implications for Research Concerning Value Conflicts

Values are hierarchically organized in terms of their importance to the self (Schwartz & Bilsky, 1987, 1990). Schwartz and Inbar-Saban (1988) suggest that whenever two values are key for guiding an action, the value that is higher (vs. lower) in a person's importance hierarchy will have more impact on behavior. Results from this research suggest that this assertion may be more true when participants think abstractly (vs. concretely) about the action. Furthermore, a concrete way of thinking may sensitize people about the attractiveness of features instrumental for values that are lower (vs. higher) in a person's importance hierarchy, which may lead to behaviors congruent with these low-level values. This prediction is partially supported by recent findings suggesting that an abstract (vs. a concrete) way of thinking leads to greater self-control by facilitating the weighting of high-level goals over low-level considerations of an action (Fujita et al., 2006). Exploring these ideas seems a fruitful area for future research.

Implications for Research Concerning Interpersonal Behaviors

Interpersonal behavior is frequently explained as a function of both people's own interpersonal dispositions (e.g., values or traits) and their partner's behaviors (e.g., Locke & Sadler, 2007). The behavior of one person invites or evokes a complementary reaction in the other person (Kiesler, 1983). This complementary response may be enacted or not depending on the person's own salient motivations (e.g., yielding vs. refusing; Horowitz et al., 2006) and the person's confidence in his or her ability to perform the behavior successfully (Bandura, 1997). Providing meaning to a partner's behavior becomes, then, very important for successfully coordinating responses in interpersonal situations. Our findings suggest that people may be more likely to define the response to a partner's behavior in terms of relevant values when they think abstractly (vs. concretely) about the situation. Results in this research further suggest that value-congruent behaviors may be anticipated even when the person is doubtful about his or her ability to successfully enact the behavior. The identification of a situation as one in which relevant values should be pursued (e.g., help a communication partner in distress) can provide the necessary motivation to overcome anticipated difficulties performing the behavior (e.g., past unsuccessful attempts). The role of abstract and concrete ways of thinking on value-congruent interpersonal behavior awaits further investigation.

Conclusions

This research posits that values are abstract representations of ideal end states that are more likely to influence behavior when people think abstractly (vs. concretely) and focus on high- (vs. low-) level motivations for interpreting their actions. We showed that a broad range of values (power, benevolence, universalism, self-direction, IND, and COL) is more likely to predict judgments and behaviors when individuals are primed with an abstract (vs. a concrete) mindset. That is, an abstract (concrete) mindset facilitates (impairs) the focus on personal or salient values that can be subsequently expressed through value-congruent actions. The study of the interplay between values and accessible mindsets suggests ways of advancing researchers' understanding of the value–behavior relation.

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