

Motivated Decision Making: Effects of Activation and Self-Centrality of Values on Choices and Behavior

Bas Verplanken
University of Tromsø

Rob W. Holland
University of Nijmegen

Six studies examined the value–behavior relation and focused on motivational properties of values, the self, and value activation. Priming environmental values enhanced attention to and the weight of information related to those values, which resulted in environmentally friendly consumer choices. This only occurred if these values were central to the self-concept. Value-congruent choices were also found in response to countervalue behavior in an unrelated context. Donating behavior congruent with central altruistic values was found as a result of enhanced self-focus, thus demonstrating the importance of the self in the value–behavior relation. The external validity of the value-centrality measure and its distinction from attitudes were demonstrated in the prediction of voting. Values were thus found to give meaning to, energize, and regulate value-congruent behavior, but only if values were cognitively activated and central to the self.

It might be flattering to think of values as a fundamental characteristic of human beings. But when and how do values affect choices and behavior? Values are conceptions of desirable ways of behaving or desirable end states—for example, friendship, respect for tradition, living healthily, equality, ambition, or preserving the natural environment (e.g., Feather, 1990, 1996; Rokeach, 1968, 1973; Schwartz, 1992). Most values are culturally shared, but individuals differ in how they rank the importance of specific values. Values may form important ingredients of a person's self-concept and thus contribute to a person's sense of identity. For example, a person might consider himself or herself as being honest and might thus mention this value when asked to describe himself or herself. Values are sometimes shared with others and might constitute the basis of group, professional, political, or cultural identities. Particular values may form the basis of moral and ethical rules of conduct, which are sometimes explicitly formulated, such as the Hippocratic Oath or the Ten Commandments.

Although values can be considered as relatively stable constructs, people do not always think about their values while making everyday decisions. For instance, the person who values honesty might be creative in filling out his or her tax form. There might be many reasons for this discrepancy. Honesty might not be a sufficiently central value for this person, he or she might not interpret a tax return situation as one in which honesty applies as a value, or

he or she might enact a competing value (e.g., materialism). Similar to the inconsistency in the attitude–behavior relationship, we may think of such an inconsistency in the value–behavior relationship. In general, whereas a substantial literature exists on the relationship between attitudes and behavior, we know less about when and how values influence behavior. Research has identified a number of variables that might be involved in this relation, including constructs like personal norms (e.g., Ajzen & Fishbein, 1972), the self (e.g., Steele & Lui, 1983), personal involvement (Stern & Dietz, 1994), level of moral reasoning (e.g., Kristiansen & Hotte, 1996), attitudes or preferences (e.g., Feather, 1995; Feather, Norman, & Worsley, 1998; Furnham, 1984; Stern, Dietz, Kalof, & Guagnano, 1995), attitude function (Maio & Olson, 1994, 1995, 2000), and attitude strength (Holland, Verplanken, Smeets, & van Knippenberg, 2001). In the present series of studies, we investigate in more detail processes that might be involved in the value–behavior relationship (i.e., when and how values come into action). Two fundamental issues are of central interest in this article. The first concerns motivational properties of values, in particular the relationship between values and the self. The second concerns the activation of values and the conditions under which value activation influences behavior. We first address the distinction between values, goals, and attitudes. We then discuss the relationship between values and choices, values as a motivational and self-related construct, and value activation, and, finally, give an overview of the present research.

Values, Goals, and Attitudes

Values are motivational constructs: Living up to a value fulfill a particular, highly abstract goal. Thus, honesty, helpfulness, and loyalty are three values that fulfill the goal of benevolence. Schwartz (1992; Schwartz & Bilsky, 1987, 1990) presented a comprehensive model of values in which 10 different types of values are distinguished. Each value type contains a number of single values that serve a distinct goal, such as hedonism (served

Bas Verplanken, Department of Psychology, University of Tromsø, Tromsø, Norway; Rob W. Holland, Department of Social Psychology, University of Nijmegen, Nijmegen, the Netherlands.

This project was supported by Norges Forskningsråd (Project No. 135852/330). We thank Joke Harte, Sander Koole, Greg Maio, David Silvera, and Ola Svenson for their helpful comments on earlier versions of this article and Ina Sas for collecting the data for Study 1.

Correspondence concerning this article should be addressed to Bas Verplanken, Department of Psychology, University of Tromsø, N-9037 Tromsø, Norway. Email: verplanken@psyk.uit.no

by, e.g., enjoying life), security (served by, e.g., maintaining social order), achievement (served by, e.g., being ambitious), or benevolence (served by, e.g., being honest). Such higher order goals might also be framed in terms of ideal self- or world views (Austin & Vancouver, 1996) or general life goals (Oettingen & Gollwitzer, 2001). Values may guide the selection of actions and the evaluation of people and events by their associations with these abstract goals (e.g., Feather, 1990; Rohan, 2000; Rokeach, 1973; Schwartz, 1999). Although values are sometimes referred to as abstract goals themselves, we feel more comfortable with Lewin's (1952) view on values:

Values influence behavior but have not the character of a goal (i.e., of a force field). For example, the individual does not try to "reach" the value of fairness, but fairness is "guiding" his behavior. . . . In other words, values are not force fields, but they "induce" force fields. (p. 41)

We thus consider values as cognitions that may define a situation (e.g., as one in which honesty is involved), elicit goals (e.g., benevolence), and guide action (e.g., tell one's spouse that one made a mistake).

Values should be distinguished from attitudes (e.g., Maio & Olson, 1994; Oskamp, 1991; Rohan, 2000; Rohan & Zanna, 2001; Rokeach, 1973; Rosenberg, 1960; Schwartz, 1995). The two constructs differ in that values transcend specific situations or objects, are hierarchically ordered in terms of importance, and form an integrated system (e.g., Schwartz, 1992, 1996; Devos, Spini, & Schwartz, in press). Behavior thus often involves a trade-off between competing values (e.g., Schwartz, 1996). The way values and attitudes are measured also points to an important difference: Whereas the core characteristic of an attitude is its variation on an evaluative dimension (favorable–unfavorable), the distinctive aspect of a value is its variation in importance (e.g., Maio & Olson, 1994; Rokeach, 1973; Schwartz, 1992). For instance, Kerlinger (1984) showed that liberals and conservatives adhered to different values but did not consider the other group's values to be negative. Although attitudes and values are distinct constructs, particular attitudes may be functionally related to values. In fact, attitude theorists traditionally distinguish a number of functions that attitudes may fulfill, among which is the expression of a value (e.g., Eagly & Chaiken, 1993; Johnson & Eagly, 1989; Katz, 1960; Maio & Olson, 1994, 1995, 2000). In Study 6 we pitted a measure of environmental values against a measure of attitude toward the environment in the prediction of voting for "green" parties in general elections in the Netherlands.

Values and Choices

How do values affect choices? Feather (1990, 1992, 1995; Feather et al., 1998) approached this issue from an expectancy-value perspective. In this framework, antecedents of behavior are modeled in terms of subjective expected utilities of outcomes (Feather, 1982; Fishbein & Ajzen, 1975). A choice alternative in a decision problem is thus characterized by the perceived likelihood of an outcome, which has a certain degree of attractiveness. Values may influence a choice by determining the attractiveness of outcomes that are relevant to those values (Ball-Rokeach & Loges, 1996; Feather, 1990, 1992; Verplanken & Svenson, 1997). For instance, a student who makes a choice between working for an

exam and going out with friends may decide according to which value he or she finds more important (i.e., being ambitious vs. maintaining friendships). Feather (1995) presented a comprehensive study that demonstrated relationships among values, attractiveness of outcomes, and choice for a large variety of values and related choice problems. This study showed that the attractiveness of choice options was systematically correlated with related values.

The present studies also focus on the relationship between values and choices. In Studies 1–4, multiattribute choice problems were used, in this case choices between 20 alternatives (television sets) that were described in terms of seven attributes (e.g., screen quality, sound quality, instruction). The attractiveness of an alternative is determined by the quality of attributes and their relative importance (decision weight). A decision maker might arrive at a choice through a variety of choice rules, and decision weights play a crucial role in most of these (e.g., Bettman, Johnson, & Payne, 1991; Payne, Bettman, & Johnson, 1992; Svenson, 1992). Values may determine the importance of an attribute and, hence, its decision weight. In the present choice problems, *environmental aspects* was one of the seven attributes. It was thus assumed that the importance of environmental values would, under certain conditions that we discuss below, determine the weight of this attribute. The task was arranged such that this weight could implicitly be inferred from the choices participants made. In addition, in Study 3 we looked in more detail at the choice process by observing participants' information acquisition behavior and tested the assumption that attention to value-relevant information mediates the relationship between values and choices. In Study 5 the choice consisted of whether to donate money to a human rights organization. In this case, adhering to altruistic values was supposed to enhance the attractiveness of the decision of whether to donate. Study 6 focuses on voting in general elections. Political parties might be associated with different values, and a voting decision might thus be dependent on the perceived importance of these values. Taken together, in these studies we assumed that values relate to choices and behavior by influencing the weight of information related to those values and, thus, the attractiveness of choice alternatives.

Values, Motivation, and the Self

Although most values are widely shared, it can be assumed that only a small subset of central values have the capacity of actually driving behavior. Values are central when they make up part of one's self-definition and, thus, contribute to one's sense of identity. We prefer to use the term *value centrality*, in the sense of centrality to the self, over *importance* because the latter term is much broader. For instance, a value might be perceived as important not only because it is part of a person's self-concept but also because of social norms or self-presentation motives or as a rationalization strategy. A person might define himself or herself in terms of central values—for instance, as being a liberal, an advocate of equal rights, or someone who cares for the environment. We propose that central values are the ones that make an individual define and interpret a situation (e.g., interpret a work conflict as an equal rights issue), attend to value-related information (e.g., salaries of men vs. women in a particular position), enhance the weight of such information (e.g., compared with information about work load), and elicit a motivation to act (e.g.,

sign a petition). The centrality of a particular value (i.e., the degree to which an individual has incorporated this value as part of the self) varies between individuals. Individuals thus vary in the propensity to act in value-consistent ways as a function of value centrality. This assumption was tested in Studies 2–6. It was expected that a value would only lead to value-congruent choices (Studies 2–4) or actual behavior (Studies 5 and 6) among individuals for whom that value was central.

Thus, an overarching assumption underlying the present studies is that the self is a crucial structure in the relationship between values and behavior and that values may acquire motivational properties by making up part of the self. We investigated the role of the self in three different fashions. First, as outlined above, in five of the six studies we included a measure of the degree to which a value makes up part of one's self-concept (i.e., value centrality). Furthermore, Study 4 tests the assumption that if someone realizes that he or she fails to live up to a central value or acts contrary to what such a value would imply, this person is motivated to restore or compensate for the experienced failure if an opportunity to do so arises. Various perspectives on self-regulation have described such processes (e.g., Bandura, 1991; Carver & Scheier, 1981, 1990; Gollwitzer & Moskowitz, 1996; Higgins, 1996; Steele, 1988; Wicklund & Gollwitzer, 1982). Finally, in Study 5 we investigate whether enhancing self-focus leads to behavior that is congruent with central values. The hypothesis in this study was that self-focus would activate values that are central to the self.

Value Activation

As do all knowledge structures, values need to be activated to affect information processing and behavior (e.g., Higgins, 1996; Kruglanski, 1996). Activation of course occurs automatically when values are the primary focus of attention. For instance, in discussions of the legalization of abortion, values related to the prolife and prochoice viewpoints are the main issues of the discussion and are thus automatically activated. Values may also be activated if they are implied by the situation or by the information a person is confronted with. For instance, a choice between studying and going out with friends might activate the values of being ambitious and maintaining friendships. Another way values might become activated is when the self is activated, as we have argued above. There have been various demonstrations suggesting that enhanced self-focus leads to enhanced accessibility of self-related attitudes, traits, or norms and thus to an increased likelihood of behavior that is consistent with these constructs (e.g., Diener & Wallbom, 1976; Gibbons, 1978; Snyder & Swann, 1976; Stapel & Tesser, 2001; Wicklund & Duval, 1971). Thus, if a central value makes up part of the self, an enhancement of self-focus should activate that value and put it into action when an appropriate situation occurs and, thus, instigate value-congruent behavior. We test this in Study 5.

Although it is conceivable that for some individuals a particular value might be chronically accessible, it can be assumed that for most people values need to be activated in one way or another to exert an influence, even if the value is central. In most of the contexts discussed so far (e.g., the abortion discussion or the choice between studying and going out with friends), value activation and its subsequent influence on choices and behavior occur simultaneously and therefore cannot empirically be distinguished.

To demonstrate more explicitly the activation assumption, we used priming paradigms in which activation occurred outside the context in which it is supposed to influence behavior. The crucial aspect of value activation might be the activation of a motivation rather than a cold concept (cf. Kruglanski, 1996). Once this motivation is activated, goal-directed cognitive and behavioral processes may follow spontaneously (e.g., Bargh, 1990). The assumption tested in the present studies is that priming a value (or enhancing self-focus in Study 5) only affects information processing, choices, and behavior if that value is central to the self. Although others have demonstrated that priming motivational constructs (e.g., goals) may affect judgments and behavior, the present studies are new in testing the hypothesized interaction of priming and centrality to the self.

Overview

Six studies were conducted. In Study 1 we provide a demonstration of the value activation effect by investigating the effect of priming environmental values on a subsequent multiattribute consumer choice task. We expected that priming environmental values would enhance the weight of environment-related information in the choice task and thus influence choices in an environmentally friendly direction. Study 2 provides a replication using a different priming task. In addition, this study tests the value centrality assumption that a value prime is only effective if the activated value is central to the self-concept. Study 3 tests whether attention to value-relevant information mediates the effects of value priming and value centrality on choices. We measured attention to information by observing information acquisition behavior during the decision-making process. Studies 4 and 5 further test the self-related aspect of values. In Study 4, action against environmental values was manipulated and its effect on subsequent choices was measured. In Study 5, self-focus (rather than value activation) was manipulated and the occurrence of value-congruent behavior was observed. This study also generalizes the previous findings to another set of values (i.e., altruistic values) and focuses on actual behavior, in this case donating money to a human rights organization. Studies 4 and 5 again test the value centrality assumption. Finally, Study 6 establishes further external validity of the value centrality measure and empirically demonstrates the distinct contributions of values and attitudes in the prediction of voting behavior.

Study 1

Study 1 tests the value activation hypothesis. Using a priming paradigm, we either primed or did not prime environmental values in a first task, and we observed effects on the degree to which environmentally friendly choices were made in a subsequent and allegedly unrelated multiattribute choice task.

Method

Participants and design. Participants were 40 undergraduate students at the University of Nijmegen, the Netherlands, who received a small monetary reward for participation. The study had a single-factor (value prime: present vs. absent) between-subjects design.

Procedure. Participants were involved in two allegedly independent studies that were introduced as studies on how we form impressions of

other people and on consumer choice behavior, respectively. The first task contained the manipulation of value activation. The second task was a multiattribute choice task and contained the dependent variables. Both tasks were in paper-and-pencil format. Participants were told that the studies were combined because each took relatively little time to accomplish. In addition, letter types and layouts were different in each task. Participants were probed for suspicion of a relationship between the two tasks. No one had been aware of this relation. Participants were then debriefed, paid, thanked, and dismissed.

The value activation manipulation. Under the cover story of an impression formation task, participants were presented with 20 values, which were briefly described. They were asked to form an impression of a person who adheres to these values. There were two conditions. In the priming condition, 12 of the 20 values were in some way related to the environment (e.g., preserving nature, caring for future generations, living in a healthy place). To avoid a straightforward semantic priming effect, we did not use the Dutch equivalent of the word *environment* (which was used in the choice task; see *Dependent measures* section). In the control condition, all values were unrelated to the environment (e.g., perfectionism, respecting other people, enjoying the good things of life). The instructions were as follows:

We want you to form an impression of a person whom we will call Mark. Mark is 22 years old. On the next page you will find a list of values that Mark adheres to. Consider this as a "profile" of Mark. Each value is stated and briefly described. Read the list of values, and while doing so try to form an accurate impression of Mark. For instance, try to imagine his profession, hobbies, main character traits, political views, and so on.

After reading the 20 values, participants wrote down their impression of the target person. They were then thanked for their participation and were presented with the consumer choice task.

Dependent measures. The consumer choice task consisted of making a choice between 20 television sets. The television sets were described by seven attributes: screen quality, screen quality in direct sunlight, sound quality, remote control, environmental aspects, programming facilities, and user instructions. This information was provided in the form of a 20×7 matrix (the rows consisted of 20 television sets, the columns of seven attributes). Each cell contained one of five symbols ($-$, $-$, 0 , $+$, or $++$) indicating how favorable or unfavorable a particular television set was on a particular attribute. The television sets were referred to using letters of the alphabet ranging from *A* to *T*. The complete matrix is presented in the Appendix. The attributes were briefly explained in the instructions for this task. Environmental aspects were said to refer to electricity use, the presence of environmentally hostile materials, and the presence of materials that can be recycled. Participants were asked to indicate which television set they would choose if they were to buy one, assuming that prices were approximately equal. As can be seen in the Appendix, the choice matrix was constructed in such a way that the five possible attribute ratings for environmental aspects ($-$, $-$, 0 , $+$, and $++$) were equally distributed across the 20 television sets. Thus, 4 television sets were rated as very unfavorable on environmental aspects (*B*, *I*, *Q*, and *S*), 4 television sets were rated as unfavorable (*C*, *J*, *O*, and *P*), 4 television sets were rated as reasonable (*E*, *F*, *G*, and *K*), 4 television sets were rated as favorable (*A*, *H*, *L*, and *M*), and 4 television sets were rated as very favorable (*D*, *N*, *R*, and *T*). Consequently, choosing a particular television set implied a score on a 5-point scale ranging from -2 to 2 , indicating the favorability of the chosen alternative on the environmental dimension. This score is referred to as the *environmental status of the chosen alternative*. The measure indicated the degree to which environmental aspects had been taken into account in participants' choices and thus represented an implicit measure of environmental attribute weight. After participants made their choice, they were presented with the same matrix and were asked to indicate which alternatives were acceptable. The mean favorability scores of the accept-

able television sets on the environmental dimension was taken as the *environmental status of acceptable alternatives* and was an additional dependent variable. After the choice task, participants indicated how important each of the seven attributes had been for their choice on 7-point scales ranging from 1 (*not at all important*) to 7 (*very important*).

Results and Discussion

We expected that participants who were primed with environmental values would put more weight on environmental aspects in the consumer choice task and would thus choose a television set that was more favorable on environmental aspects, as compared with participants in the control condition. In line with this prediction, the mean environmental status of the chosen alternative was significantly higher in the priming condition than in the control condition ($M = 1.20$ and $M = 0.40$, respectively), $t(38) = 2.25$, $p < .03$. Also, the mean environmental status of acceptable alternatives was significantly higher in the priming condition than in the control condition, ($M = 0.52$ and $M = 0.24$, respectively), $t(38) = 2.04$, $p < .05$. To test whether perceived attribute importance mediated this effect, we regressed the environmental status of the chosen alternative on both the prime versus no-prime condition and attribute importance. Mediation was demonstrated by a statistically nonsignificant beta weight of prime versus no prime ($\beta = .14$) and a significant beta weight of attribute importance ($\beta = .59$, $p < .001$). The reduction in the effect of the priming manipulation due to attribute importance was statistically significant ($Z = 1.99$, $p < .05$; e.g., Kenny, Kashy, & Bolger, 1998). The same result was obtained when the environmental status of acceptable alternatives was regressed on condition and attribute importance ($\beta = .09$, *ns*, for condition, and $\beta = .64$, $p < .001$, for attribute importance). This mediation effect also was statistically significant ($Z = 2.05$, $p < .05$).

Priming environmental values thus made participants make value-congruent choices in a context that was perceived as unrelated to the priming task. Perceived importance of the environmental attribute mediated this effect. These results suggest that an activated value may influence choices by enhancing the weight of information that is related to that value. Study 2 replicates and extends these results.

Study 2

This study extends the previous study in two ways. First, a different priming method was used. Second, this study investigates whether individual differences in value centrality determine how participants respond to the value prime. We expected that only participants for whom this value was central would respond to the prime by making a value-congruent choice.

Method

Participants and design. Participants were 99 undergraduate students at the University of Nijmegen who received a small monetary reward for participation. The study had a 2 (value prime: present vs. absent) \times 2 (value centrality: central vs. not central) mixed design. Value prime was manipulated, and value centrality was measured.

Procedure. The study consisted of two sessions, which were separated by a week. During the first session, participants responded to the Schwartz Value Survey (Schwartz, 1992), in which the centrality of environmental values was measured. Participants returned to the laboratory a week later.

Only those who scored in the highest or the lowest quartile of the distribution of value centrality ($n = 52$) participated in the follow up to the present study. The remainder of the participants went to participate in an unrelated experiment that was conducted at the same time. The second session consisted of a priming task, which was introduced as a language and communication test and was followed by the consumer choice task that was used in Study 1. Participants were told that the studies were combined because each took relatively little time to accomplish. Participants were probed for suspicion concerning the relationship between the two tasks, and no one was aware of this relation. Participants were then debriefed, paid, thanked, and dismissed.

Measurement of value centrality. The centrality of environmental values was measured in the first session by an adapted version of the Schwartz Value Survey, which contains 56 items assessing a wide range of values. The values were presented by catchwords (e.g., "respect for tradition"), which were followed by a brief extension (e.g., "preservation of time-honored customs"). The items were randomly presented on a computer. Two items measured environmental values: unity with nature and protecting the environment.¹ It could be assumed that the presence of a large diversity of values prevented participants from paying particular attention to the environmental values. In addition, we assumed that by presenting a large number of potentially important life values, we diminished the tendency to respond in a socially desirable fashion to the environmental items. The two environmental items were averaged into a measure of centrality of environmental values (coefficient $\alpha = .76$). All items were accompanied by an 11-point response scale, ranging from 1 (*this does not describe me at all*) to 11 (*this describes me very well*). We used this response format rather than the one in the original instrument because we wished to operationalize value centrality as the extent to which a value is part of one's self-concept. On the basis of the distribution of the measure of the centrality of environmental values, participants in the highest and lowest quartiles were retained in the actual experiment.

The value activation manipulation. In the follow-up session 1 week later, participants were presented with a scrambled sentence test (e.g., Bargh & Chartrand, 2000; Srull & Wyer, 1979). Thirty scrambled sentences were presented, each consisting of five words. Participants had to remove one word and compose a grammatically correct sentence of the remaining four words. In the prime condition, 20 sentences contained one word (which was not the one that should be removed) that referred to the environment (e.g., *green, ecological, earth, nature, forest, climate*). In the control condition these words were replaced by ones that were unrelated to the environment.

Dependent measure. Participants were presented with the same choice task as was used in Study 1. This time they were only asked to indicate their most preferred television set. The dependent variable was the environmental status of the chosen alternative, which thus could vary from -2 to 2 .

Results and Discussion

The environmental status of the chosen alternative was subjected to 2 (value centrality: central vs. not central) \times 2 (value activation: value prime vs. control) analysis of variance. The main effect of value centrality was highly significant, $F(1,48) = 15.44$, $p < .001$. The value activation main effect and the Value Centrality \times Value Activation interaction were marginally significant, $F(1, 48) = 3.81$, $p < .06$, and $F(1, 48) = 3.79$, $p < .06$, respectively. The pattern of means related to the interaction was as expected and is presented in Table 1. Student–Newman–Keuls post hoc tests ($p < .05$) indicate that the high-value-centrality primed participants chose television sets that were relatively environmentally friendly, and they differed statistically significantly from all other participants. These results thus show that priming a value only resulted in value-congruent behavior if the value was central to the self-concept. The results also show that value acti-

Table 1
Environmental Status of the Chosen Alternative as a Function of Priming and Value Centrality in Study 2

Condition	Value centrality	
	Not central	Central
Prime	−1.08 _b	0.85 _a
No prime	−1.08 _b	−0.43 _b

Note. Higher values indicate value-congruent (environmental) choices. Means with different subscripts differ significantly, $p < .05$.

vation was a necessary condition: Those for whom environmental values were central but were not primed did not show value-congruent behavior. The fact that high- and low-value-centrality participants responded differently to the priming manipulation suggests that the priming effect was not a semantic priming effect or a general goal-prime effect.

Study 3

The next study extends the previous two studies by using an information-display-board paradigm, which provided the opportunity to monitor participants' information acquisition behavior during decision making (e.g., Bettman et al., 1991; Jacoby, Jaccard, Kuss, Troutman, & Mazursky, 1987). Whereas participants in the previous two studies were simultaneously presented with all the attribute information of all options in the choice task (i.e., the matrix shown in the Appendix), participants in the present study were required to actively acquire the information they wished to inspect. The hypothesis tested is that attention to value-relevant information (measured as the proportion of value-relevant information acquired from the information board) mediates the effect of value activation on the degree of making value-congruent choices. Like in Study 2, we hypothesized that this effect would only be present for high-value-centrality participants.

Method

Participants and design. Participants were 105 undergraduate students at the University of Nijmegen who received a small monetary reward for participation. The centrality of participants' environmental values was measured, and value activation was manipulated. The design of the study was thus a 2 (value centrality: central vs. not central) \times 2 (value prime: present vs. absent) mixed model.

Procedure. This study was run in a single session. Participants were asked to participate in four allegedly independent studies, which were introduced as studies on what people think are important things in life, the development of a new questionnaire, impression formation, and consumer choice behavior, respectively. As in the previous studies, participants were told that the studies were combined because each took relatively little time to accomplish. In addition, different letter types and layouts were used for each task. Participants were taken to a cubicle, where they were seated in front of a computer. The first task consisted of the Schwartz Value Survey, which was the same as the one used in Study 2. The second task consisted of a small paper-and-pencil questionnaire and was used as a filler task,

¹ The literal Dutch translation we used was "acting in favor of a better environment."

which we do not discuss further. The third task contained the priming manipulation, which in this case was the person impression task used in Study 1. The final task was a computerized version of the multiattribute choice task that was used in the previous two studies. In this case, however, participants acquired information before making a choice. The program provided all instructions for the choice task, presented the task and additional questions, and recorded information search behavior and all further responses. Participants were probed for suspicion concerning a relationship between the four tasks. Two participants spontaneously expressed suspicion of an intended relationship between the studies (less than 2%) and were removed from the data set, leaving 103 participants. Finally, participants were debriefed, paid, thanked, and dismissed.

Measurement of value centrality. The measurement of centrality of environmental values was identical to the one used in Study 2. Coefficient alpha of the two environmental items was .76. Participants were designated as low or high on value centrality on the basis of a median split.

The value activation manipulation. Participants were provided with the same impression formation task that was used in Study 1. This task contained the manipulation of activation of environmental values.

Dependent measures. Participants were presented with a computerized information-display board by which they could actively acquire the information they wished to consider. The choice matrix that was used in the previous two studies was now presented on the computer, but the attribute information itself remained covered. Participants acquired information by clicking the mouse on the cells of the matrix, which thus disclosed the information about particular Option \times Attribute combinations. The information disappeared as soon as another cell was opened. Participants were free to inspect and reinspect as many pieces of information as they wished. The computer kept track of which information had been acquired. Participants were instructed to leave the matrix by clicking a special button as soon as they felt they could make a choice. The content of the matrix was similar to the content of the one in the Appendix.

As in the previous two studies, the choice for a particular television set implied a score on the environmental aspects attribute, which thus provided the main dependent variable (i.e., the environmental status of the chosen alternative). With respect to information acquisition, the proportion of acquired number of information pieces concerning environmental aspects was a second dependent variable that was tested as a mediator in the value centrality-choice relation. We used a proportion to control for individual differences in information acquisition in general. The measure was based on information items that were inspected for the first time; thus, we ignored reinspections. However, the results were identical in terms of patterns of means and significance levels if reinspections were included.

After the choice task, participants indicated how important each of the seven attributes had been for their choice on 7-point scales ranging from 1 (*not at all important*) to 7 (*very important*).

Results

Each dependent variable was subjected to a 2 (value centrality: central vs. not central) \times 2 (value activation: value prime vs. control) analysis of variance. The main effect of value centrality was significant for the environmental status of the chosen alternative, $F(1, 99) = 4.41, p < .04$, and marginally significant for proportion of acquired number of information pieces concerning environmental aspects, $F(1, 99) = 3.46, p < .07$. Central-value participants acquired more environment-related information and made more environmentally friendly choices. There were no significant main effects of value activation, $F(1, 99) = 2.59$, and $F(1, 99) = 0.44$, respectively. However, the Value Centrality \times Value Activation interaction was marginally significant for the environmental status of the chosen alternative, $F(1, 99) = 3.55, p < .07$, and significant for the proportion of acquired number of informa-

tion pieces concerning environmental aspects, $F(1, 99) = 7.63, p < .001$. Table 2 shows the cell means and the post hoc contrasts. As expected, reliable priming effects were only obtained for participants for whom environmental values were central. These participants, as compared with participants in all other cells, acquired a higher proportion of environment-related information and made more environmentally friendly choices. This was confirmed by significant contrasts between the critical cell (primed participants with central environmental values) and each of the other cells separately (Student-Newman-Keuls, $ps < .05$ for all contrasts).

Two sets of mediation analyses were conducted (i.e., concerning information acquisition and attribute importance as mediators, respectively). It was first hypothesized that information acquisition mediates the relationship between (activated) values and choice behavior. An overall test of the reduction of the effect of the Value Activation \times Value Centrality interaction on choice due to the inclusion of the Value Activation \times Information Acquisition interaction yielded a marginally significant effect, $Z = 1.90, p < .06$. To explore this effect in more detail, we conducted mediation analyses separately within the priming and control conditions. Mediation was thus expected in the priming condition and not in the control condition. The results of path analyses testing these assumptions are presented in Figure 1. In the control condition, value centrality was not significantly correlated with choice behavior (see Figure 1, control condition), and the conditions for mediation thus were not satisfied. In the priming condition, value centrality, information acquisition (i.e., the proportion of acquired number of information pieces concerning environmental aspects), and choice behavior (i.e., the environmental status of the chosen alternative) were significantly correlated. When choice was regressed on both value centrality and information acquisition, the beta weight of information acquisition remained highly significant, whereas the beta weight of value centrality was not significant (see Figure 1, priming condition). The reduction in the effect of value centrality caused by information acquisition was statistically significant, $Z = 2.74, p < .01$. It can therefore be concluded that information acquisition mediated the value centrality-choice relation in the priming condition but not in the control condition.

Similar analyses were conducted with the importance ratings of the environmental attribute. The overall test of the reduction of the effect of the Value Activation \times Value Centrality interaction on

Table 2
Proportion Acquired Value-Relevant Information and Environmental Status of the Chosen Alternative as a Function of Priming and Value Centrality in Study 3

Condition	Value centrality	
	Not central	Central
Proportion acquired information on environmental aspects		
Prime	10.99 _b	21.98 _a
No prime	14.60 _b	12.23 _b
Environmental status of the chosen alternative		
Prime	-0.64 _b	0.32 _a
No prime	-0.52 _b	-0.56 _b

Note. Higher values indicate value-congruent (environmental) responses. Means with different subscripts differ significantly, $p < .05$.

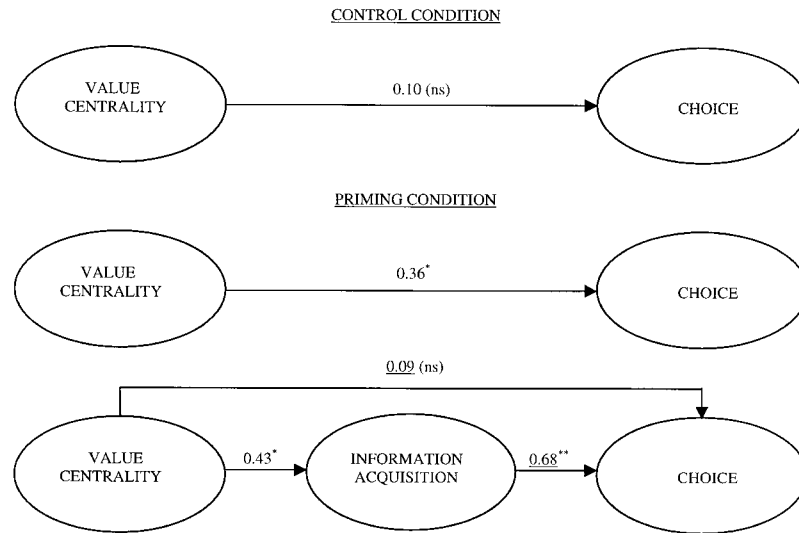


Figure 1. Path analyses testing information acquisition as a mediator in the relationship between value centrality and choice in the control condition and the priming condition in Study 3. Beta weights are underlined; all other values are correlations. * $p < .01$. ** $p < .001$.

choice due to the inclusion of the Value Activation \times Attribute Importance interaction yielded a statistically significant effect, $Z = 4.88$, $p < .001$. Separate analyses for the two activation conditions revealed that no mediation was present in the control condition because value centrality was not significantly correlated with choice behavior. In the priming condition, where there was a statistically significant relation between value centrality and choice behavior (see Figure 1), attribute importance was significantly related to both value centrality, $r = .48$, $p < .001$, and choice behavior, $r = .38$, $p < .006$. Regressing choice behavior on value centrality and attribute importance resulted in a nonsignificant beta weight of value centrality, $\beta = .09$, and a significant beta weight of attribute importance, $\beta = .61$, $p < .001$, suggesting that attribute importance mediated the centrality–choice relation among primed participants. The reduction of the effect of value centrality due to attribute importance was statistically significant, $Z = 3.79$, $p < .001$.

Discussion

The information acquisition paradigm provides the opportunity to look more closely at the choice process. We found that information acquisition mediated the relationship between value centrality and making value-congruent choices, under the condition that value activation had taken place. Without an explicit activation, value centrality was not related to the acquisition of value-relevant information or, for that matter, to making value-congruent choices. Thus, even if a value is central to a person, activation determines whether this value will lead to action. As in Study 2, the fact that the priming effect was confined to those for whom the value was central suggests that this was not a general semantic or goal-prime effect but a demonstration of a value as a self-related motivational construct.

Study 4

When someone's actions violate an important value, it can be expected that this person is motivated to restore or compensate for this violation if an opportunity to do so arises. According to symbolic self-completion theory (Wicklund & Gollwitzer, 1982), commitments to achieve certain goals might make up part of someone's self-definition (e.g., a goal to be a member of a particular club, to become the best student, or to preserve the natural environment). This commitment elicits a motivation to gather evidence that one possesses attributes that represent such a self-defining goal; these attributes are referred to as symbols of completeness. Symbols of completeness may take various forms: for instance, physical objects (e.g., wearing a button), events (e.g., winning a prize), or behavior (e.g., conscientiously separating garbage). Recognizing a shortcoming in achieving self-defining goals motivates a person to make up for this failure and thus to restore a sense of completeness (e.g., Braun & Wicklund, 1989; Brunstein & Gollwitzer, 1996; Gollwitzer & Wicklund, 1985; Gollwitzer, Wicklund, & Hilton, 1982; Schiffmann & Nelkenbrecher, 1994; Wagner, Wicklund, & Shaigan, 1990; Wicklund & Gollwitzer, 1982). The essence of this process is that a person who experiences such a failure is motivated to restore this if an opportunity to do so arises. In the present study, participants were presented with the task of proposing budget cuts in the state's expenditures. We manipulated the need for self-completion by arranging the task such that in the experimental condition participants were forced to propose budget cuts that implied dropping a number of environment-protecting measures. In the control condition there was no need to do that. As in the previous two studies, centrality of environmental values was included as a factor. The hypothesis tested was that those for whom environmental values were central and who had to act against these values would restore a sense of completeness by making environmentally friendly choices in the consumer choice task.

Method

Participants and design. Participants were 66 undergraduate students at the University of Nijmegen who received a small monetary reward for participation. Value centrality was measured, and need for self-completion was manipulated. The design of the study thus was a 2 (value centrality: central vs. not central) \times 2 (need for self-completion: present vs. absent) mixed model.

Procedure. The study was run in a single session. Participants were asked to participate in four allegedly independent studies, which were introduced as a study on what people think are important things in life, a test for a new study on memory, a study on political decisions, and a study on consumer choice behavior, respectively. Participants were told that the studies were combined because each took relatively little time to accomplish. Different letter types and layouts were used for each task. Participants were taken to a cubicle, where they were seated in front of a computer. The first task consisted of the Schwartz Value Survey, which we used in the two previous studies. The second task was a filler task and consisted of a request to reconstruct one's family tree in 5 min. The third task contained the manipulation of need for self-completion. The fourth task was the multiattribute consumer choice task that we used in the previous studies. Participants were probed for suspicion concerning a relationship between the four tasks. No one was aware of this relation. Finally, participants were debriefed, paid, thanked, and dismissed.

Measurement of value centrality. The measurement of centrality of environmental values was identical to the one in Studies 2 and 3. Coefficient alpha of the two environment-related items was .91. A median split was again used to designate participants as low or high on value centrality.

The state budget-cut game. To manipulate need for self-completion, we presented participants with the state budget-cut game. They were asked to propose budget cuts in the state's expenditures up to an amount of at least Dutch guilders (DFL) 750 million. A list of 12 departments was shown on a computer screen. For each department, the screen indicated how much money could be cut down if that department was included in the proposal. The amounts varied from DFL 10 to 175 million. In addition, a brief description was provided as to the specific consequences of the proposed budget cut for each department. A box accompanied each department, which could be ticked if participants wished to include that department in the budget-cut proposal. A counter in the corner of the screen indicated the total amount of proposed cuts in DFL, given the departments selected so far. Participants could also undo selected departments, which thus gave them the freedom to try out any combination of departments and associated budget cuts. Once they made their selection of departments and fulfilled the DFL 750 million requirement, the task was finished. There were two versions of the game, which differed in the possible budget cuts associated with the Department of Housing and Environment and with the Department of Defense. The budget cuts for the Department of Housing and Environment concerned dropping a number of measures against contribution to the greenhouse effect and ground pollution, whereas those for the Department of Defense consisted of a reduction in personnel. In the experimental condition, in which the need for self-completion was enhanced, the potential budget cuts for the Department of Housing and Environment and for the Department of Defense were DFL 175 million and DFL 10 million, respectively. In the control condition, these figures were reversed. The distribution of possible budget-cut figures was arranged such that to reach the total required amount of DFL 750 million, participants had no choice but to select the DFL 175 million department. This was the Department of Housing and Environment in the experimental condition and the Department of Defense in the control condition. In the experimental condition, participants were thus implicitly forced to propose anti-environmental measures. Meanwhile, apart from the amounts of money that could be cut, participants in both conditions were exposed to exactly the same stimulus material.

Dependent variables. Participants were presented with a computerized version of the choice task. In this case the full matrix (see Appendix) was

shown, thus allowing an immediate and complete overview of the available information. As in the previous studies, the choice of a particular television set implied a score on the environmental aspects attribute, which thus served as the environmental status of the chosen alternative. After the choice task, participants indicated how important each of the seven attributes had been for their choice on 7-point scales ranging from 1 (*not at all important*) to 7 (*very important*).

Results and Discussion

Manipulation check. At the end of the experimental session, participants were asked to indicate for each of the 12 departments in the state budget-cut game the extent to which they had felt uncomfortable concerning the consequences of their proposal on an 11-point scale ranging from 1 (*absolutely not uncomfortable*) to 11 (*very uncomfortable*). This item was subjected to a 2 (value centrality: central vs. not central) \times 2 (need for self-completion: present vs. absent) analysis of variance. A significant main effect of need for self-completion suggested that the manipulation had been successful. Participants in the experimental condition felt significantly more uncomfortable ($M = 8.66$) than did participants in the control condition ($M = 5.88$), $F(1, 61) = 8.22, p < .006$. There was no significant main effect of value centrality, $F(1, 61) = 1.38$, nor a significant Value Centrality \times Need for Self-Completion interaction, $F(1, 61) = 1.53$.

Dependent variables. Environmental status of the chosen alternative was subjected to a 2 (value centrality: central vs. not central) \times 2 (need for self-completion: present vs. absent) analysis of variance. The main effect of value centrality was significant, $F(1, 62) = 10.03, p < .002$. Participants for whom environmental values were central made more environmental choices than did participants for whom these values were not central. The main effect of need for self-completion was also significant, $F(1, 62) = 4.72, p < .04$. In the high-need-for-self-completion condition, participants made more environmentally friendly choices than did participants in the low-need-for-self-completion condition. It is important to note that the main effects were qualified by a significant Value Centrality \times Need for Self-Completion interaction, $F(1, 62) = 4.30, p < .05$. Table 3 shows the cell means and post hoc contrasts. As hypothesized, only those participants in the high-need-for-self-completion condition who held relatively central environmental values made more environmentally friendly choices. This was confirmed by significant contrasts between the critical cell (high-need-for-self-completion participants with central values) and each of the other cells separately (Student-Newman-Keuls, $ps < .05$ for all contrasts).

Table 3
Environmental Status of the Chosen Alternative as a Function of Value Centrality and Need for Self-Completion in Study 4

Need for self-completion	Value centrality	
	Not central	Central
High	-0.77 _b	0.85 _a
Low	-0.80 _b	-0.46 _b

Note. Higher values indicate value-congruent (environmental) choices. Means with different subscripts differ significantly, $p < .05$.

Finally, as was done in Studies 1 and 3, attribute importance was tested as a mediator of the effect of value centrality on choice. The overall test of the reduction of the effect of the Value Activation \times Value Centrality interaction on choice due to the inclusion of the Value Activation \times Attribute Importance interaction yielded a statistically significant effect, $Z = 4.71$, $p < .001$. To further explore this effect, we regressed the environmental status of the chosen alternative on both value centrality and the importance rating of the environmental attribute within the low- and high-need-for-self-completion conditions separately. No mediation was present for low-need-for-self-completion participants, as they showed no statistically significant relation between value centrality and the environmental status of the chosen alternative, $r = .17$. Mediation was present, however, for high-need-for-self-completion participants. In this condition, significant correlations were found between value centrality and the environmental status of the chosen alternative, $r = .56$, $p < .001$, value centrality and attribute importance, $r = .51$, $p < .001$, and attribute importance and the environmental status of the chosen alternative, $r = .76$, $p < .001$. Regressing the environmental status of the chosen alternative on both value centrality and attribute importance resulted in a nonsignificant beta weight for value centrality, $\beta = .23$, and a significant beta weight for attribute importance, $\beta = .65$, $p < .001$, suggesting that attribute importance mediated the value centrality–choice relation. The reduction of the effect of value centrality due to attribute importance was statistically significant, $Z = 2.91$, $p < .01$.

These results suggest that individuals who act against a self-defining goal, such as those goals associated with central values, might compensate for this later in an unrelated context. The effects of the manipulation of need for self-completion were expected and found to be dependent on value centrality.² These results thus demonstrate the self-related and motivational nature of values.

Study 5

This study tests more directly the hypothesis that the self is involved in the relationship between values and behavior by manipulating degree of self-focus. It was expected that enhancing self-focus would activate central values, which would then lead to value-congruent behavior. In other words, rather than directly activating a value (as we did in Studies 1–3), we used the self as a broad activation category. An important extension in this study is that we focused on different values (i.e., altruistic values) and observed actual behavior (i.e., donating money to a human rights organization). We expected that enhanced self-focus would lead to more value-congruent behavior (i.e., donating). As in the previous studies, this effect was only expected among participants for whom altruistic values were central.

Method

Participants and design. Participants were 75 undergraduate students at the University of Nijmegen who received a small monetary reward for participation. The study had a 2 (self-focus: low vs. high) \times 2 (value centrality: central vs. not central) mixed design. Self-focus was manipulated, and value centrality was measured.

Procedure. The study consisted of two sessions, which were separated by a week. During the first session, participants responded to the Schwartz Value Survey, which we used in the previous studies. In this case, the

Table 4
Donating Behavior as a Function of Value Centrality and Self-Focus in Study 5

Self-focus	Value centrality	
	Not central	Central
High	0.11 _a	0.75 _b
Low	0.44 _{a,b}	0.29 _{a,b}

Note. Donating (value-congruent behavior) was coded 1; not donating was coded 0. Means with different subscripts differ significantly, $p < .05$.

centrality of altruistic values was measured. As in Study 2, only those who scored in the highest or the lowest quartile of the distribution of value centrality ($n = 33$) participated in the follow up of the present study. The remainder of the sample participated in an unrelated experiment. During the second session, 1 week later, participants were asked to participate in three independent studies. The first and last tasks were indeed unrelated to the present study. The second study was introduced as a language study and contained the manipulation of self-focus. After the third task participants were thanked and the dependent variable was taken.

Measurement of value centrality. The measurement of centrality of altruistic values consisted of five single values taken from the Schwartz Value Survey: helpful, social justice, equality, friendship, and love. These items were averaged to form a measure of centrality of altruistic values (coefficient $\alpha = .69$).

Manipulation of self-focus. Under the cover story of a language study, participants were presented with a short travel story, which consisted of approximately 160 words. In the high-self-focus condition, participants were asked to circle the Dutch equivalents of the words *I*, *me*, *my*, and *mine* in this text; these words appeared 14 times. In the control condition the same text was presented, but participants were asked to circle the Dutch equivalents of the words *the*, *it*, *a*, and *an* (cf. Brewer & Gardner, 1996).

Dependent variable. After participants finished the third task, which was unrelated to this study, they were told that the department had volunteered to support a human rights organization (i.e., Amnesty International) and were asked whether they wished to donate some money to this organization. The dependent variable consisted of whether participants donated.

Results and Discussion

Donating versus not donating was dummy coded as 1 and 0, respectively, and was subjected to a 2 (self-focus: low vs. high) \times 2 (value centrality: central vs. not central) analysis of variance. The main effects of self-focus and value centrality were not statistically significant, $F(1, 32) = 0.17$, and $F(1, 32) = 2.26$, respectively. However, the Self-Focus \times Value Centrality interaction was significant, $F(1, 32) = 2.94$, $p < .02$. The means are presented in Table 4. Student–Newman–Keuls post hoc tests ($p < .05$) indicated that in the high-self-focus condition, participants for whom altruistic values were central donated more frequently than did participants for whom altruistic values were not central. In the low-self-focus condition, such a difference was absent.

² Although the content of the information was kept constant in the high- and low-need-for-self-completion conditions, which should have resulted in equal levels of activation on confrontation with this information, it is conceivable that value activation was further enhanced in the high-need-for-self-completion condition when participants dealt with their inability to avoid countervalue behavior.

These results suggest that although altruistic values were not directly primed, they were activated and led to donating behavior under the high-self-focus condition. This can only be expected if such values make up part of the self-concept. This result strongly suggests that the self is an important component of the value-behavior relationship.

Study 6

The final study is meant to illustrate value-congruent behavior using the same measure of value centrality that was used in Studies 2–4. The study serves two main purposes. The first is to strengthen the external validity of the previous studies by showing that the value centrality measure used in these experiments has predictive power concerning behavior in a real-life situation. The second purpose is to empirically distinguish values from attitudes in the prediction of behavior. Although empirical distinctions between values and attitudes have been provided previously—for instance, in the prediction of intentions to donate money (Maio & Olson, 1995)—the present study involves a measure of actual behavior (i.e., voting). Political voting behavior has often been found to be strongly influenced by attitudes (e.g., Schuman & Johnson, 1976). Voting is, however, also related to values and ideologies. In this study, we predicted voting behavior in national elections in the Netherlands. The study focuses in particular on the prediction of voting for parties that explicitly position themselves as promoting the protection of the environment from a measure of centrality of environmental values, on the one hand, and environmental attitudes, on the other hand.

Method

Participants and procedure. One hundred forty undergraduate students at the University of Nijmegen were presented with a computerized survey 3 weeks before the 1998 Dutch national elections. In the survey, the centrality of environmental values and attitudes toward the environment were measured. The study was set up such that participants returned to the laboratory immediately after the election day. During that session, their voting behavior was registered.

Measures. The survey contained the adapted version of the Schwartz Value Survey, which we used to elicit the value centrality measure, and an attitude scale. We measured centrality of environmental values, as we did in Studies 2–4, by averaging the two environment-related items of the Schwartz Value Survey (i.e., unity with nature and protecting the environment; coefficient $\alpha = .72$).

Attitudes toward the environment were measured using a revised version of the New Environmental Paradigm Scale (Dunlap, Van Liere, Mertig, & Emmet-Jones, 2000). This is a 15-item Likert scale (e.g., Himmelfarb, 1993) concerning attitudes toward nature and the environment. Sample items are “Humans are severely abusing the environment,” “We are approaching the limit of the number of people the earth can support,” and “Humans have the right to modify the natural environment to suit their needs.” Items were accompanied by 11-point *agree–disagree* response scales and were coded such that high numbers indicated favorable environmental attitudes. Coefficient alpha of the scale was .84.

When participants returned to the laboratory 1 or 2 days after the elections, they were asked whether they had voted. If they had voted, they were asked which party they had voted for. One hundred twenty-nine of the original participants (92%) returned. Amongst the range of parties that competed in the elections, two “green” parties were present (i.e., parties that explicitly positioned themselves as promoting the protection of the environment). We used the value and attitude measures to predict whether participants had voted for one of these two parties.

Results and Discussion

Both the value centrality measure and the attitude measure were strongly related to voting for one of the green parties, $r = .39$ and $r = .40$, respectively, $ps < .001$. Voting green was regressed on both predictors simultaneously. Although the two predictors correlated significantly ($r = .56$, $p < .001$), both beta weights were statistically significant, $\beta = .23$, $p < .03$, and $\beta = .25$, $p < .02$, for the value centrality and attitude measures, respectively. This suggests that each contributed uniquely to the prediction of voting behavior. The results were similar when we used logistic regression analysis, as was indicated by the Wald statistic, which was 4.42, $p < .04$, for value centrality and 5.18, $p < .03$, for the attitude measure.³

These results suggest that the measure of value centrality, which was also used in the previous studies, was valid on the basis of its ability to predict voting behavior. Participants for whom environmental values were central were more likely to enact these values by voting for a green party. In this case, value activation, which was demonstrated as a necessary condition for values to be enacted, was likely to have been elicited by the voting context. Also, the results strengthen the suggestion that the measures of value centrality and attitude have discriminant validity.

General Discussion

Six studies investigated the relationship between values and choices or behavior. The studies identified two important conditions for values to influence choices and behavior: A value must be cognitively activated and should be central to an individual's self-concept. It was shown that activating a value in an allegedly unrelated task resulted in subsequent value-congruent responses. We accomplished value activation in Studies 1–3 by using priming manipulations, in Study 4 by manipulating previous value-incongruent behavior, and in Study 5 by manipulating self-focus. Studies 1–4 focus on environmental values, and value-congruent responses consisted of making environmentally friendly choices in multiattribute consumer choice problems. In Study 5, altruism was the target value, and a value-congruent response consisted of donating money to a human rights organization. The choice studies also show that attention to value-relevant information and the weight of attributes that referred to the primed values mediated this relationship. There have been other demonstrations of effects of

³ Because the attitude measure consisted of a set of specific beliefs referring to protecting the environment, one might question whether the value centrality and attitude measures assessed different constructs. First, the items were accompanied by different instructions and scale anchors. The value centrality items asked for the degree to which the content described oneself, whereas the attitude items were accompanied by *agree–disagree* scales. The items of both measures were also subjected to a principle-components analysis (note that both items had 11-point response scales) with an Oblimin rotation. Five factors with eigenvalues over 1.00 emerged, accounting for 62% of the variance. The first factor was determined by the two value centrality items (both factor loadings .88). One item from the attitude measure loaded on this factor as well (.40) but did so equally strongly on the fifth factor. The pattern of results was identical for the pattern and structure matrices as well as for a Varimax rotated solution. The fact that the attitude items determined factors other than the value items thus strengthened the distinction between the two measures.

primed motivational constructs. For instance, Bargh and colleagues (e.g., Bargh, 1990; Bargh & Barndollar, 1996; Bargh & Gollwitzer, 1994) have shown that priming goals can lead to goal-congruent behaviors. However, the present studies were unique in that values were primed and priming effects were only obtained among those for whom the primed value was central to the self-concept. The importance of the self in the value-behavior relation was further demonstrated in Study 5, which found that enhanced self-focus resulted in behavior that was congruent with central values. Finally, Study 6 provides additional evidence both for the external validity of the value centrality measure and for the distinction between values and attitudes by showing that the respective measures uniquely predicted voting behavior.

What exactly drives the crucial Activation \times Centrality interaction? It should first be noted that in the present experiments value activation was manipulated. In everyday life, such as the elections in Study 6, value activation is often inherent in the situation, and value centrality will thus emerge as a main effect. The assumption underlying the present Activation \times Centrality interaction was that activating a central value results in the elicitation of a motivation to act in accordance with that value (e.g., Feather, 1990, 1992, 1995; Schwartz, 1992). One way to look at the activation-action relationship is by focusing on the information processing that accompanies decision making. The information-search data in Study 3 show that attention to value-related information mediated the value centrality-choice relation if that value was activated (i.e., primed), whereas there was no such mediation in the no-prime condition. In addition, the perceived importance of the value-related information was found as a mediator in the three studies in which this variable was measured. The results thus suggest that primed participants were made more aware of value-relevant information and thus enhanced the weight of such information. At a more general level, it can be suggested that the Value Activation \times Centrality interaction rested on the involvement of the self. Study 4 provides a demonstration of the role of the self by showing that value-congruent behavior was triggered after participants acted against that value; this was predicted on the basis of symbolic self-completion theory (Wicklund & Gollwitzer, 1982). We assumed that a central value might function as a self-defining symbol. If a person acts against such a symbol, self-completion might be restored by subsequent value-congruent behavior if an opportunity to do so arises, which in the present case was the consumer choice task. As was the case in the priming studies, this effect was only obtained among those for whom environmental values were central. Study 5 provides more direct evidence for the suggestion that the self is involved in the value-behavior relation. This study shows that enhanced self-focus triggered value-congruent behavior, which only occurred if that value was central to the self-concept. It can thus be concluded that the self might function as a crucial structure that mediates between values and behavior. In other words, values that "work" are those that make up part of the self-concept.

What does it mean that a value is central, and where do the motivational properties that make values potentially powerful in driving behavior stem from? McClelland (1980; McClelland, Koestner, & Weinberger, 1989) made a distinction between implicit and self-attributed motives. Implicit motives refer to basic dispositions or needs that people usually are not aware of and that are developed at early stages in life, such as the need to achieve, the need to affiliate, or the need for power. Self-attributed motives,

on the other hand, are the attitudes, motives, and values that one explicitly expresses when asked to do so. In terms of behavior, according to McClelland et al. (1989), "implicit motives predict spontaneous behavioral trends over time, whereas self-attributed motives predict immediate specific responses to specific situations or choice behavior" (p. 691). Thus, living up to a value might serve motives implied by the immediate situation (e.g., conforming to social norms) or more implicit motives. The more a value is expressed in different behaviors in different contexts (e.g., making environmentally friendly choices in various domains, behaving in an altruistic fashion in a variety of social situations), the more probable it is that this value has been associated with an implicit motive. Thus, an intriguing hypothesis might be that implicit motives form the basis of central values. More generally, values, including those that become central to a person, might be acquired in various stages in life. Parents, peer groups, professional milieus, and culture in general may all serve as sources of values. Whereas some values might be merely adopted as social norms or truisms (Maio & Olson, 1998; Rohan, 2000), only a few values may become central and part of one's self-concept. As suggested above, the association with implicit motives might be a key factor in this process. Central values are therefore likely to be accompanied by strong feelings, as was suggested by Maio and Olson (1998). Thus, individuals most likely adopt only a few central values, which qualifies the general claim that values (in the sense of a large range of values) are integral to the self (e.g., Rokeach, 1973). Maio and Olson (1998) also suggested that behavioral information might make up part of the representations of central values. Central values are the ones that are likely to have been enacted repeatedly in the past. Central values might therefore in some cases manifest themselves as general habits. Contrary to specific habits, which form in narrowly defined situations (e.g., taking the 8 o'clock bus to go to work), a person may develop a general habit that expresses an overall motivation, in this case a central value, and that is enacted in a variety of situations (e.g., Verplanken & Aarts, 1999; Verplanken, Aarts, van Knippenberg, & van Knippenberg, 1994). For instance, a person for whom environmental values are central might take the bus, separate garbage, save electricity, and so on. In other words, this person might have developed the habit of behaving in an environmentally friendly fashion, which is thus rooted in central environmental values. The behavioral representations that accompany central values are also likely to be the reason that priming procedures succeeded in instigating value-congruent behavior, even though participants were unaware of the activation process itself (cf. Bargh, 1990).

It might be possible that the relationship between value centrality and value activation is curvilinear. That is, it could be that the value priming effect in our studies was only present for those with moderately central values and that when a value was extremely central it was chronically accessible and thus did not need external activation.⁴ Because in Study 3 the full range of the value centrality measure was included, we could inspect the means of the environmental status of the chosen alternative for the lowest, middle, and highest portions of the centrality measure distribution. These were -0.42 , -0.52 , and 0.45 , respectively, in the prime

⁴ This interesting argument was suggested by one of the anonymous reviewers.

condition, and -0.72 , -0.53 , and -0.33 in the no-prime condition. This pattern does not support a curvilinear effect. However, people with extreme value centrality levels might have been underrepresented. These are individuals who, for instance, interpret any social issue as an equality, environmental, or religious issue, depending on which value is central. In any case, the present studies show that the self is important in the value-behavior relation and that values influence behavior only if they are sufficiently central to a person's self-concept.

Study 6 provides some empirical evidence that values and attitudes are distinct concepts, in addition to a further validation of the value centrality measure. As was argued in the introduction section, some attitudes might be functionally linked to the self and to central values. Such attitudes have been designated as embedded attitudes (Pomerantz, Chaiken, & Tordesillas, 1995). Embedded attitudes may have motivational properties that are similar to those of central values and in fact may derive those properties from the values they are embedded in. Recently, Holland, Verplanken, van Knippenberg, and Dijksterhuis (2001) found that central (embedded) and peripheral (nonembedded) attitudes differed in accessibility, but only when the self-concept was activated. Holland et al.'s results thus corroborate the present conclusions about the role of the self and central values. However, although values and embedded attitudes may share motivational properties, it is important to keep making a distinction between values and embedded attitudes (e.g., Maio & Olson, 2000; Rohan, 2000). Values differ from embedded attitudes not only in their level of abstraction and the way they are measured but also in their cognitive underpinning. Whereas embedded attitudes have a strong cognitive basis because they are linked to other attitudes (Pomerantz et al., 1995), values have much less cognitive substance, as Maio and Olson (1998) convincingly demonstrated.

Conclusion

In this article we focus on values as self-related motivating forces, which thus have the potential to give meaning to situations and to energize and regulate behavior. Taken together, the studies show that values do not influence behavior by default. Rather, both activation and the centrality of a value to the self constitute necessary elements for value-guided behavior. Results were obtained using different paradigms and different values. The studies may thus contribute to answering the question of why values do or do not enter a decision-making process and how this can occur. On the one hand, it seems that in spite of our capacity to hold elaborate value systems, we do not always live up to them. On the other hand, once we perceive the situation as being relevant for a value that is central to our self-concept, we have the cognitive and motivational architecture to act on that value spontaneously. This demonstrates the innate nature of how value systems might function, which thus can be considered as a symbolic self-defining property of human beings.

References

Ajzen, I., & Fishbein, M. (1972). Attitudes and normative beliefs as factors influencing behavioral intentions. *Journal of Personality and Social Psychology, 21*, 1–9.

Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin, 120*, 338–375.

Ball-Rokeach, S. J., & Loges, W. E. (1996). Making choices: Media roles in the construction of value-choices. In C. Seligman, J. M. Olson, & M. P. Zanna (Eds.), *The psychology of values: The Ontario Symposium* (Vol. 8, pp. 277–298). Mahwah, NJ: Erlbaum.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*, 248–287.

Bargh, J. A. (1990). Auto-motives: Preconscious determinants of social interaction. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition* (Vol. 2, pp. 93–130). New York: Guilford Press.

Bargh, J. A., & Barndollar, K. (1996). Automaticity in action: The unconscious as repository of chronic goals and motives. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 457–481). New York: Guilford Press.

Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 253–285). New York: Cambridge University Press.

Bargh, J. A., & Gollwitzer, P. M. (1994). Environmental control of goal-directed action: Automatic and strategic contingencies between situation and behavior. *Nebraska Symposium on Motivation, 41*, 71–124.

Bettman, J. R., Johnson, E. J., & Payne, J. W. (1991). Consumer decision making. In T. S. Robertson & H. H. Kassarian (Eds.), *Handbook of consumer behavior* (pp. 50–84). Englewood Cliffs, NJ: Prentice-Hall.

Braun, O. L., & Wicklund, R. A. (1989). Psychological antecedents of conspicuous consumption. *Journal of Economic Psychology, 10*, 161–187.

Brewer, M. B., & Gardner, W. (1996). Who is this “we”? Levels of collective identity and self representations. *Journal of Personality and Social Psychology, 71*, 83–93.

Brunstein, J. C., & Gollwitzer, P. M. (1996). Effects of failure on subsequent performance: The importance of self-defining goals. *Journal of Personality and Social Psychology, 70*, 395–407.

Carver, C. S., & Scheier, M. G. (1981). *Attention and self-regulation: A control-theory approach to human behavior*. New York: Springer-Verlag.

Carver, C. S., & Scheier, M. G. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review, 97*, 19–35.

Devos, T., Spini, D., & Schwartz, S. H. (in press). Conflicts among human values and trust in institutions. *British Journal of Social Psychology*.

Diener, E., & Wallbom, M. (1976). Effects of self-awareness on antinormative behavior. *Journal of Research in Personality, 10*, 107–111.

Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Emmet-Jones, R. (2000). Measuring endorsement of the new ecological paradigm: A revised NEP scale. *Journal of Social Issues, 56*, 425–442.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich.

Feather, N. T. (1982). *Expectations and actions: Expectancy-value models in psychology*. Hillsdale, NJ: Erlbaum.

Feather, N. T. (1990). Bridging the gap between values and actions: Recent applications of the expectancy-value model. In E. T. Higgins & R. M. Sorrentino (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 151–192). New York: Guilford Press.

Feather, N. T. (1992). Values, valences, expectations, and actions. *Journal of Social Issues, 48*, 109–124.

Feather, N. T. (1995). Values, valences, and choice: The influence of values on the perceived attractiveness and choice of alternatives. *Journal of Personality and Social Psychology, 68*, 1135–1151.

Feather, N. T. (1996). Values, deservingness, and attitudes toward high achievers: Research on tall poppies. In C. Seligman, J. M. Olson, & M. P. Zanna (Eds.), *The Ontario Symposium: The psychology of values* (Vol. 8, pp. 215–251). Mahwah, NJ: Erlbaum.

- Feather, N. T., Norman, M. A., & Worsley, A. (1998). Values and valences: Variables relating to the attractiveness and choice of food in different contexts. *Journal of Applied Social Psychology, 28*, 639–656.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Furnham, A. (1984). The Protestant work ethic: A review of the psychological literature. *European Journal of Social Psychology, 14*, 87–104.
- Gibbons, F. X. (1978). Sexual standards and reactions to pornography: Enhancing behavioral consistency through self-focused attention. *Journal of Personality and Social Psychology, 36*, 976–987.
- Gollwitzer, P. M., & Moskowitz, G. B. (1996). Goal effects on action and cognition. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 361–399). New York: Guilford Press.
- Gollwitzer, P. M., & Wicklund, R. A. (1985). Self-symbolizing and the neglect of others' perspectives. *Journal of Personality and Social Psychology, 48*, 702–715.
- Gollwitzer, P. M., Wicklund, R. A., & Hilton, J. L. (1982). Admission of failure and symbolic self-completion: Extending Lewinian theory. *Journal of Personality and Social Psychology, 43*, 358–371.
- Higgins, E. T. (1996). The "self-digest": Self-knowledge serving self-regulatory functions. *Journal of Personality and Social Psychology, 71*, 1062–1083.
- Himmelfarb, S. (1993). The measurement of attitudes. In A. H. Eagly & S. Chaiken (Eds.), *The psychology of attitudes* (pp. 23–87). Fort Worth, TX: Harcourt Brace Jovanovich.
- Holland, R. W., Verplanken, B., Smeets, R., & van Knippenberg, A. (2001). *Attitude strength and value-expressive behavior*. Unpublished manuscript, University of Nijmegen, Nijmegen, the Netherlands.
- Holland, R. W., Verplanken, B., van Knippenberg, A., & Dijksterhuis, A. (2001). *Me, myself and I: On the cognitive link between attitudes and the self*. Unpublished manuscript, University of Nijmegen, Nijmegen, the Netherlands.
- Jacoby, J., Jaccard, J., Kuss, A., Troutman, T., & Mazursky, D. (1987). New directions in behavioral process research: Implications for social psychology. *Journal of Experimental Social Psychology, 23*, 146–175.
- Johnson, B. T., & Eagly, A. H. (1989). Effects of involvement on persuasion: A meta-analysis. *Psychological Bulletin, 106*, 290–314.
- Katz, D. (1960). The functional approach to the study of attitudes. *Public Opinion Quarterly, 24*, 163–204.
- Kenny, D. A., Kashy, D. A., & Bolger, N. (1998). Data analysis in social psychology. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., pp. 233–265). New York: Oxford University Press.
- Kerlinger, F. N. (1984). *Liberalism and conservatism: The nature and structure of social attitudes*. Hillsdale, NJ: Erlbaum.
- Kristiansen, C. M., & Hotte, A. M. (1996). Morality and the self: Implications for the when and how of value-attitude-behavior relations. In C. Seligman, J. M. Olson, & M. P. Zanna (Eds.), *The psychology of values: The Ontario Symposium* (Vol. 8, pp. 77–105). Mahwah, NJ: Erlbaum.
- Kruglanski, A. W. (1996). Motivated social cognition: Principles of the interface. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 493–520). New York: Guilford Press.
- Lewin, K. (1952). Constructs in field theory [1944]. In D. Cartwright (Ed.), *Field theory in social science: Selected theoretical papers by Kurt Lewin* (pp. 30–42). London: Tavistock.
- Maio, G. R., & Olson, J. M. (1994). Value-attitude-behavior relations: The moderating role of attitude functions. *British Journal of Social Psychology, 33*, 301–312.
- Maio, G. R., & Olson, J. M. (1995). Relations between values, attitudes, and behavioral intentions: The moderating role of attitude function. *Journal of Experimental Social Psychology, 31*, 266–285.
- Maio, G. R., & Olson, J. M. (1998). Values as truisms: Evidence and implications. *Journal of Personality and Social Psychology, 74*, 294–311.
- Maio, G. R., & Olson, J. M. (2000). What is a "value-expressive" attitude? In G. R. Maio & J. M. Olson (Eds.), *Why we evaluate: Functions of attitudes* (pp. 249–269). Mahwah, NJ: Erlbaum.
- McClelland, D. C. (1980). Motive dispositions: The merits of operant and respondent measures. In L. Wheeler (Ed.), *Review of personality and social psychology* (Vol. 1, pp. 10–41). Beverly Hills, CA: Sage.
- McClelland, D. C., Koestner, R., & Weinberger, J. (1989). How do self-attributed and implicit motives differ? *Psychological Review, 96*, 690–702.
- Oettingen, G., & Gollwitzer, P. M. (2001). Goal setting and goal striving. In A. Tesser & N. Schwarz (Eds.), *Blackwell handbook of social psychology: Intraindividual processes* (pp. 329–347). Malden, MA: Blackwell.
- Oskamp, S. (1991). *Attitudes and opinions* (2nd ed.). Englewood Cliffs, NJ: Prentice-Hall.
- Payne, J. W., Bettman, J. R., & Johnson, E. J. (1992). Behavioral decision research: A constructive processing perspective. *Annual Review of Psychology, 43*, 87–131.
- Pomerantz, E. M., Chaiken, S., & Tordesillas, R. S. (1995). Attitude strength and resistance processes. *Journal of Personality and Social Psychology, 69*, 408–419.
- Rohan, M. J. (2000). A rose by any name? The values construct. *Personality and Social Psychology Review, 3*, 255–277.
- Rohan, M. J., & Zanna, M. P. (2001). Values and ideologies. In A. Tesser & N. Schwarz (Eds.), *Blackwell handbook of social psychology: Intraindividual processes* (pp. 458–478). Malden, MA: Blackwell.
- Rokeach, M. (1968). *Beliefs, attitudes, and values: A theory of organization and change*. San Francisco: Jossey-Bass.
- Rokeach, M. (1973). *The nature of human values*. New York: Free Press.
- Rosenberg, M. J. (1960). An analysis of affective-cognitive consistency. In C. I. Hovland & M. J. Rosenberg (Eds.), *Attitude organization and change: An analysis of consistency among attitude components* (pp. 15–64). New Haven, CT: Yale University Press.
- Schiffmann, R., & Nelkenbrecher, D. (1994). Reactions to self-discrepant feedback: Feminist attitude and symbolic self-completion. *European Journal of Social Psychology, 24*, 317–327.
- Schuman, H., & Johnson, M. P. (1976). Attitudes and behavior. *Annual Review of Sociology, 2*, 161–207.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology, 25*, 1–65.
- Schwartz, S. H. (1995). Values. In A. S. R. Manstead & M. Hewstone (Eds.), *The Blackwell encyclopedia of social psychology* (pp. 665–667). Oxford, England: Blackwell.
- Schwartz, S. H. (1996). Value priorities and behavior: Applying a theory of integrated value systems. In C. Seligman, J. M. Olson, & M. P. Zanna (Eds.), *The psychology of values: The Ontario Symposium* (Vol. 8, pp. 1–24). Mahwah, NJ: Erlbaum.
- Schwartz, S. H. (1999). A theory of cultural values and some applications for work. *Applied Psychology: An International Review, 48*, 23–47.
- Schwartz, S. H., & Bilsky, W. (1987). Toward a psychological structure of human values. *Journal of Personality and Social Psychology, 53*, 550–562.
- Schwartz, S. H., & Bilsky, W. (1990). Toward a theory of the universal content and structure of values: Extensions and cross-cultural replications. *Journal of Personality and Social Psychology, 58*, 878–891.
- Snyder, M., & Swann, W. B. (1976). When actions reflect attitudes: The politics of impression management. *Journal of Personality and Social Psychology, 34*, 1034–1042.
- Srull, T. K., & Wyer, R. S., Jr. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology, 37*, 1660–1672.

- Stapel, D. A., & Tesser, A. (2001). Self-activation increases social comparison. *Journal of Personality and Social Psychology*, *81*, 742–750.
- Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of self. *Advances in Experimental Social Psychology*, *21*, 261–302.
- Steele, C. M., & Lui, T. J. (1983). Dissonance processes as self-affirmation. *Journal of Personality and Social Psychology*, *45*, 5–19.
- Stern, P. C., & Dietz, T. (1994). The value basis of environmental concern. *Journal of Social Issues*, *50*, 65–84.
- Stern, P. C., Dietz, T., Kalof, L., & Guagnano, G. A. (1995). Values, beliefs, and proenvironmental action: Attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology*, *25*, 1611–1636.
- Svenson, O. (1992). Differentiation and consolidation theory of human decision making: A frame of reference for the study of pre- and post-decision processes. *Acta Psychologica*, *80*, 143–168.
- Verplanken, B., & Aarts, H. (1999). Habit, attitude, and planned behaviour: Is habit an empty construct or an interesting case of automaticity? *European Review of Social Psychology*, *10*, 101–134.
- Verplanken, B. Aarts, H., van Knippenberg, A., & van Knippenberg, C. (1994). Attitude versus general habit: Antecedents of travel mode choice. *Journal of Applied Social Psychology*, *24*, 285–300.
- Verplanken, B., & Svenson, O. (1997). Personal involvement in human decision-making: On conceptualizations and effects on decision processes. In R. Ranyard, W. R. Crozier, & O. Svenson (Eds.), *Decision making: Cognitive models and explanations* (pp. 40–57). London: Routledge.
- Wagner, U., Wicklund, R. A., & Shaigan, S. (1990). Open devaluation and rejection of a fellow student: The impact of threat to a self-definition. *Basic and Applied Social Psychology*, *11*, 61–76.
- Wicklund, R. A., & Duval, S. (1971). Opinion change and performance facilitation as a result of objective self-awareness. *Journal of Experimental Social Psychology*, *7*, 319–342.
- Wicklund, R. A., & Gollwitzer, P. M. (1982). *Symbolic self-completion*. Hillsdale, NJ: Erlbaum.

Appendix

The Multiattribute Consumer Choice Task

Television	Screen quality	Screen quality in sun	Sound quality	Remote control	Environmental aspects	Prechoice facilities	Quality of the instructions	Your choice
A	+	–	0	+	+	–	–	...
B	++	–	+	0	--	+	+	...
C	++	–	++	0	–	–	+	...
D	0	0	+	+	++	–	0	...
E	+	+	–	+	0	–	0	...
F	++	–	+	–	0	+	–	...
G	+	–	++	--	0	--	+	...
H	0	+	0	+	+	–	+	...
I	+	+	–	0	--	++	+	...
J	+	0	0	+	–	--	+	...
K	++	–	0	+	0	+	--	...
L	+	–	+	–	+	+	–	...
M	+	0	–	0	+	–	++	...
N	0	--	+	0	++	0	0	...
O	+	+	0	+	–	+	+	...
P	0	0	0	–	–	+	++	...
Q	+	0	++	+	--	+	++	...
R	+	--	0	0	++	--	–	...
S	+	0	+	0	--	+	–	...
T	0	0	+	–	++	0	--	...

Note. -- = very unfavorable; – = unfavorable; 0 = reasonable; + = favorable; ++ = very favorable.

Received June 16, 2000

Revision received October 1, 2001

Accepted October 2, 2001 ■