Explaining the Discrepancy Between Intentions and Actions: The Case of Hypothetical Bias in Contingent Valuation

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An experiment was designed to account for intention-behavior discrepancies by applying the theory of planned behavior to contingent valuation. College students (N = 160) voted in hypothetical and real payment referenda to contribute $8 to a scholarship fund. Overestimates of willingness to pay in the hypothetical referendum could not be attributed to moderately favorable latent dispositions. Instead, this hypothetical bias was explained by activation of more favorable beliefs and attitudes in the context of a hypothetical rather than a real referendum. A corrective entreaty was found to eliminate this bias by bringing beliefs, attitudes, and intentions in line with those in the real payment situation. As a result, the theory of planned behavior produced more accurate prediction of real payment when participants were exposed to the corrective entreaty.

Keywords: *attitude; contingent valuation; hypothetical bias; intention; theory of planned behavior*

It is a common observation that people often fail to act in accordance with their stated intentions. The study reported in this article examined possible reasons for the discrepancy between expressed willingness to perform a behavior and its actual performance. Empirical research on this problem can be traced to LaPiere's (1934) classic study on racial prejudice. A Chinese couple stopped at more than 250 restaurants, coffee shops, hotels, motels, and inns while touring the United States and was admitted and received service without hesitation in 95% of the instances; yet, in response to a letter of inquiry, 92% of the establishments replied that they would not accept members of the Chinese race. Subsequent investigations have produced similar findings. For example, among female college students who indicated intentions to release their photos with an African American male for a variety of purposes, approximately 40% failed to follow through (Linn, 1965), and in the health domain, between 26% and 57% of respondents failed to carry out their intentions to use condoms, to undergo a cancer screening, or to exercise (Sheeran, 2002).

In the present study, we investigated the intention-behavior discrepancy in the context of contingent value measurement. Contingent valuation is a popular tool for assessing the monetary value of goods not traded in the market place (for reviews, see Cummings, Brookshire, & Schulze, 1986; Mitchell & Carson, 1989). Respondents in a survey are asked to indicate their willingness to pay for a certain good in a hypothetical or contingent market. The monetary value of the good in question is measured by aggregating these willingness-to-pay judgments in the relevant population. Unfortunately, scores of contingent valuation surveys conducted in recent years have revealed that many factors bias the amount of money participants indicate they would be willing to pay, thus jeopardizing the method's validity (see Hoehn & Swanson, 1988; Mitchell & Carson, 1989, for reviews).

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Prominent among recent concerns is mounting evidence for the so-called hypothetical bias, an overestimation of willingness to pay in hypothetical or contingent markets compared to actual payment in otherwise identical real cash markets (see Blumenschein, Johannesson, Blomquist, Liljas, & O'Connor, 1998; Brown, Champ, Bishop, & McCollum, 1996; Cummings, Harrison, & Rutstrom, 1995; Loomis, Brown, Lucero, & Peterson, 1996; Neill, 1995). For example, in different conditions of a recent experiment (Brown, Ajzen, & Hrubes, 2003), college students voted in a referendum to contribute $1, $3, $5, or $8 to a scholarship fund either in a hypothetical or a real payment context. Except for the $1 condition, in which the proportion of real yes votes exceeded the proportion of hypothetical yes votes by 10%, all other payment amounts revealed the usual hypothetical bias; the excess of hypothetical as opposed to real yes votes ranged from 30% in the $3 condition to 48% in the $8 condition.

EXPLAINING INTENTION-BEHAVIOR DISCREPANCIES

Expressions of willingness to pay in a hypothetical situation can be likened to behavioral intentions (Ajzen & Driver, 1992)[1] and hypothetical bias to a discrepancy between intention and behavior. The study reported in this article explored two possible reasons for hypothetical bias. One explanation was offered by Campbell (1963), who maintained that hypothetical and actual responses are both indicators of the same underlying latent disposition. People with highly positive dispositions would be expected to respond favorably in hypothetical as well as real contexts, whereas people with highly negative dispositions would be expected to respond negatively in both contexts. The discrepancy between intentions and behavior can, according to Campbell, be traced to individuals with moderate dispositions who respond favorably in the hypothetical context but unfavorably in the more demanding real context. The hypothetical bias in this view is more apparent than real, or—in Campbell's terms—it is a case of pseudo-inconsistency.

The second explanation attributes the discrepancy between intentions and behavior to substantive differences between hypothetical and real contexts. Early accounts traced these differences to the way in which people construe the situation, to the possibility that symbolic representations may be very different from representations in real-life situations (Blumer, 1955). In fact, LaPiere's (1934) study of racial prejudice was motivated by the desire to show that "symbolic attitudes are seldom more than a verbal response to a symbolic situation" (p. 230) and that "there is no necessary correlation between speech and action, between response to words and to the realities they symbolize" (p. 231).

In a related but more contemporary interpretation, it may be argued that salient features of a behavioral situation often activate beliefs about a behavior that are different from the beliefs that are activated in the hypothetical situation in which verbal questionnaire responses are elicited (Ajzen & Sexton, 1999). To explain the intention-behavior discrepancy shown in hypothetical bias, one would have to assume that the symbolic situation activates more favorable or fewer unfavorable considerations than does the behavioral situation. Behavior consistent with intentions would only be expected when beliefs in the two situations are congruent, that is, when they are the same or at least equally favorable or unfavorable.

The latent disposition hypothesis advanced by Campbell (1963) and the alternative belief disparity hypothesis are not mutually exclusive, and both processes could be at work. According to the first, hypothetical bias is due to a moderately favorable latent disposition among many respondents, a disposition that produces willingness to pay in the symbolic context but not in the manifest context. This latent disposition hypothesis implies that individuals who display hypothetical bias should have less favorable beliefs and attitudes regarding payment for the public good under consideration than individuals who are willing to pay in both contexts but more favorable beliefs and attitudes than individuals who are willing to pay in neither. Beliefs and attitudes regarding payment for a certain good represent the stable underlying disposition individuals bring to the situation; these beliefs and attitudes are the same in symbolic and behavioral contexts.

The belief-disparity hypothesis suggests that beliefs and attitudes are not invariant across context. Although they contain a stable core, beliefs and attitudes are assumed to be strongly influenced by salient contextual cues. The implication of this account is that we would expect more favorable beliefs and attitudes in the symbolic than in the behavioral context.

PREDICTING WILLINGNESS TO PAY: THE THEORY OF PLANNED BEHAVIOR

To study the competing explanations of hypothetical bias, it is necessary to assess behavior-relevant beliefs and attitudes prior to observation of willingness to pay under hypothetical and real payment conditions. Assessment of beliefs and attitudes in the present study was guided by the theory of planned behavior (Ajzen, 1988, 1991), which has been applied successfully to a diverse range of behavioral domains (see Ajzen, 2001b; Armitage & Conner, 2001). Briefly, according to the theory, human action is influenced by three major factors: a favorable or unfavorable evaluation of the behavior (attitude toward the behavior), perceived social pressure to perform or

not perform the behavior (subjective norm), and self-efficacy in relation to the behavior (perceived behavioral control). In combination, attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral intention. As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived behavioral control, the stronger should be the person's intention to perform the behavior in question. Finally, given a sufficient degree of actual control over the behavior, people are expected to carry out their intentions when the opportunity arises (see also Gollwitzer, 1993; Triandis, 1977). Intention is thus assumed to be an immediate antecedent of behavior. However, because many behaviors pose difficulties of execution that can limit volitional control, it is useful to consider perceived behavioral control in addition to intention. To the extent that people are realistic in their judgments of a behavior's difficulty, a measure of perceived behavioral control can serve as a proxy for actual control and contribute to the prediction of the behavior in question (see Ajzen, 1991). Perceived behavioral control can thus influence behavior indirectly via intentions, and as a proxy for actual control, it can have a direct link to behavior. A schematic representation of the theory is shown in Figure 1 below.

When applied to contingent valuation in the context of a referendum, the behavior of interest is the vote (yes or no) to contribute money to a worthy goal. The three major determinants of this behavior—attitudes toward voting yes, subjective norms, and perceptions of behavioral control—are traced to corresponding sets of behavior-relevant beliefs. Consistent with an expectancy-value model (Feather, 1982; Fishbein, 1963), attitude toward voting yes is assumed to be determined by beliefs about the consequences of doing so, each belief weighted by the subjective value of the consequence in question (Fishbein, 1963, 1967; Fishbein & Ajzen, 1975). A similar logic applies to the relation between normative beliefs and subjective norm and the relation between control beliefs and perceived behavioral control. Normative beliefs refer to the perceived behavioral expectations of such important referent individuals or groups as the person's family, friends, teachers, and coworkers. These normative beliefs—in combination with the person's motivation to comply with the different referents—determine the prevailing subjective norm regarding the vote. Finally, control beliefs have to do with the perceived presence of factors that can facilitate or impede performance of a behavior. It is assumed that the perceived power of each control factor to impede or facilitate voting yes contributes to perceived control over this behavior in direct proportion to the person's subjective probability that the control factor is present.

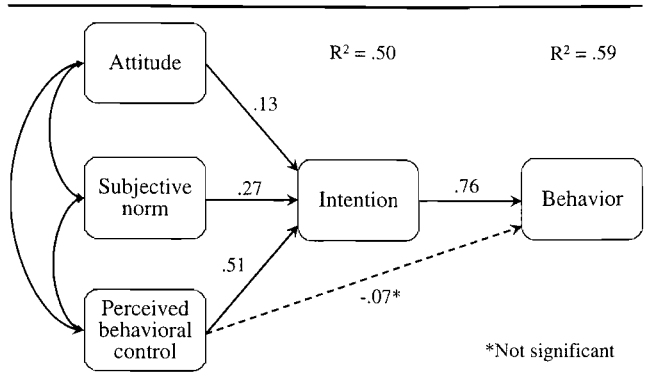

Figure 1 Prediction of voting in real referendum: Path analysis for the theory of planned behavior—total sample.

The present study, then, was designed to investigate beliefs, attitudes, and intentions of individuals confronted with the decision to vote yes or no in a referendum under hypothetical and real payment conditions. Measuring these variables should permit not only prediction of actual votes but also should enable us to gain a better understanding of factors responsible for the hypothetical bias that is observed in contingent valuation surveys, and for intention-behavior discrepancies in general.

REDUCING THE INTENTION-BEHAVIOR GAP

Investigators have tried to adjust for hypothetical bias in a number of ways: by including the use of real payment bids for comparable goods as a way to calibrate the hypothetical bids (Blackburn, Harrison, & Rutstrom, 1994; Fox, Shogren, Hayes, & Kliebenstein, 1998), by asking respondents how certain they are that they really would be willing to pay the indicated amount and using the certainty response to adjust the bids (Champ, Bishop, Brown, & McCollum, 1997; Li & Mattsson, 1995), and by asking respondents to consider their budgetary constraints before providing their hypothetical bids (Loomis et al., 1996; Neill, Cummings, Ganderton, Harrison, & McGuckin, 1994; Posavac, 2001).

In the present study, we used a direct attack on hypothetical bias, entreating participants in a contingent valuation survey to respond as if they were really spending their money. A thorough script designed to remove bias from a hypothetical referendum by means of such a corrective entreaty has been developed and tested with notable success by Cummings and Taylor (1999). In the eight-paragraph script, participants are not only encouraged to act as if the referendum were for real but also are explicitly told about the problem of hypothetical bias and are given possible reasons for the phenomenon. The study by Brown et al. (2003) mentioned earlier replicated and extended this experiment with similarly

impressive results. In this study, college students voted in a referendum to contribute money to a scholarship fund either with or without the entreaty to avoid hypothetical bias and, at the higher payment amounts, the contingent valuation estimates under hypothetical payment conditions were very close to those obtained for real payment.

The belief and attitude data collected in the present study permitted us to explore possible reasons for the effectiveness of the corrective entreaty. Specifically, we expected that, following the entreaty, beliefs and attitudes under hypothetical payment conditions would be comparable to the beliefs and attitudes of respondents in the real payment condition (without any entreaty). As a result, these beliefs and attitudes should become more accurate predictors of actual behavior.

HYPOTHESES

Willingness-to-pay responses were obtained in the context of a referendum, arguably the most appropriate contingent valuation format for valuing public goods (see Hoehn & Randall, 1987). Unlike most previous experiments, in which participants voted either in a hypothetical payment referendum or in a real payment referendum, most of our participants were asked to vote first under hypothetical payment conditions and then again under real payment conditions. This enabled us to identify individuals who displayed the hypothetical bias and to compare them to individuals who did not. The main purpose of the study was to explore the reasons for hypothetical bias, with a secondary aim of examining the effect of a corrective entreaty on this bias. The considerations and predictions discussed above are summarized in the following hypotheses:

Hypothetical bias: As in previous studies, we expect that—without a corrective entreaty—individuals are more likely to vote in favor of a payment referendum under hypothetical than under real payment conditions. This difference is expected to be eliminated or at least greatly reduced when the corrective entreaty is used.

Latent disposition hypothesis: The critical comparison for this hypothesis involves respondents who (without a corrective entreaty) vote yes in the hypothetical referendum and then vote no in the real referendum (i.e., display hypothetical bias) versus respondents who vote yes in both referenda. The latent disposition hypothesis predicts that the latter respondents will have more favorable beliefs, attitudes, and intentions with respect to voting yes than the former.

Belief disparity hypothesis: The critical comparison for this hypothesis is between participants whose beliefs, attitudes, and intentions are assessed under hypothetical payment conditions as opposed to participants whose beliefs, attitudes, and intentions are assessed under real payment conditions. In the absence of a corrective entreaty, the belief disparity hypothesis predicts that beliefs, attitudes, and intentions with respect to voting yes will be more favorable when participants anticipate a hypothetical referendum than when they anticipate a real referendum. By way of contrast, when beliefs, attitudes, and intentions are assessed after exposure to the corrective entreaty, there should be few differences between the two types of referenda because the entreaty should influence beliefs, attitudes, and intentions in the hypothetical situation such as to make them comparable to the beliefs, attitudes, and intentions in the real payment situation.[2]

Prediction of intended and actual votes: In line with the theory of planned behavior, it is expected that intentions to vote yes in a referendum can be predicted from attitudes, subjective norms, and perceptions of behavioral control with respect to voting yes. Furthermore, exposure to a corrective entreaty is expected to affect intentions through its influence on the three antecedent variables. As a result, prediction of intentions should be accurate irrespective of the presence or absence of an entreaty. In contrast, because intentions to vote yes are conceptually analogous to hypothetical votes (Ajzen & Driver, 1992), hypothetical bias is expected to produce a discrepancy between intentions and actual voting in the real referendum. The theory of planned behavior should therefore provide a more accurate prediction of real votes following a corrective entreaty than without it.

METHOD

The public good in the present study involved a proposition to donate $8 to a college scholarship fund. The proposition was identical to one used in a previous investigation (Brown et al., 2003). The participants—University of Massachusetts (UMass) undergraduates—were told of the need to provide financial support to students from poor families who cannot afford to pay the university's tuition and fees. It was explained that financial aid provided by the state is insufficient and that the university maintains a general scholarship fund financed by private donations. Participants in small groups were told that if everyone present were to contribute $8, these contributions would be added to the University Scholarship Fund and would be used to help deserving students to attend the university. Specifically, the proposition took the following form:

PROPOSITION

> Everyone here in this room will contribute $8 to the University of Massachusetts–Amherst Scholarship Fund. The contribution is to be used to provide scholarship aid to needy and deserving students at the University of Massachusetts–Amherst.

It was explained that if more than 50% vote yes on this proposition then everybody will pay $8 and the money will be collected and given to the university for credit to the scholarship fund, but if 50% or fewer of the group members vote yes, then no one will pay $8. The real and hypothetical versions of the referendum differed only in the tense used to describe the outcomes. For example, the first sentence of the real version read, "If more than 50% of you vote YES on this proposition, all of you pay $8.— I will collect $8 from each of you . . . ," whereas the first sentence of the hypothetical version read, "If more than 50% of you were to vote YES on this proposition, all of you would pay $8—I would collect $8 from each of you . . . ."

Procedure

One hundred sixty UMass undergraduates (76% female) participated in the main study in groups of 6 to 10 members. They were paid a $10 compensation and they also received experimental course credit for their participation. After all group members had arrived, they were informed that there were two unrelated parts to the experiment, one involving questionnaire tasks, the other a referendum vote. In the first part, which lasted 45 to 55 min, participants first engaged in an assignment unrelated to the present study (rating fictitious job applicants on a variety of attributes and completing a number of personality scales). In addition, several demographic characteristics were assessed: gender, age, ethnicity, socioeconomic status, political affiliation, and religious affiliation. Because none of the demographic characteristics had a significant effect on the results, they will not be further considered.

When all group members had completed the first part, they were paid $10 for the work they had done and were told that they would now participate in the referendum vote. Instructions for the referendum were read to the group and the text of the referendum also was projected onto a screen. In some conditions of the experiment, the participants were then given paper ballots on which they recorded their votes (yes or no) in secret. After handing in their ballots, they were asked to complete a questionnaire designed to assess the variables in the theory of planned behavior. In other conditions, the participants first completed the theory of planned behavior questionnaire and then proceeded to vote on the proposition. In none of the real payment referenda did a majority of group members vote in favor of making the donation. It was therefore not necessary to collect money from the participants. At the conclusion, all participants were given an explanation of the study, were thanked for their participation, and were offered the address for making donations to the University Scholarship Fund if they desired to do so.

Experimental Conditions

For the referendum part of the study, groups of participants were assigned at random into one of five experimental conditions. In each condition, the referendum was explained first, but the remaining aspects varied, as follows:

1. Q-R. In the first condition, participants completed the theory of planned behavior questionnaire (Q) after receiving information about the referendum, informing them that the referendum was for real. This was followed by a vote under real payment conditions (R), that is, participants were told that they would have to pay $8 if the majority voted in favor of the proposition.

2. Q-H-R. In the second condition, completion of the theory of planned behavior questionnaire (Q) was followed first by a referendum under hypothetical payment conditions (H). Participants were told that they would not actually have to pay, even if a majority voted in favor of the proposition, but they were asked to respond as though the vote involved real cash payments. Once they had handed in their ballots, they were told that they would now participate in a real referendum where they will actually have to pay $8 if the majority votes yes and then proceeded to the second referendum under real payment conditions (R).

3. H-R-Q. To control for the possible effect of administering the theory of planned behavior questionnaire prior to voting on a referendum, participants in the third condition completed the questionnaire at the end. In this condition, the description of the referendum was followed immediately by a hypothetical vote (H), then a vote under real payment conditions (R), and finally administration of the questionnaire (Q). The questionnaire was identical to the questionnaire given in the first two conditions except that most items were worded in the past tense.

4. E-Q-H-R. The fourth condition was identical to the second except that the description of the referendum contained the corrective entreaty (E) designed to eliminate hypothetical bias (described below).

5. E-H-R-Q. In the final condition, the theory of planned behavior questionnaire was again moved to the end to control for the possible impact of completing the questionnaire prior to casting a ballot.

Corrective Entreaty

In conditions containing the corrective entreaty, participants were told of the problem of hypothetical referenda—that when money payments are at issue, people tend to vote differently under hypothetical than under real payment conditions. Results of past studies were presented showing a higher percentage voting yes in a hypo-

thetical referendum than in a real referendum. The reasons for this difference were then discussed, including the notion that in a referendum for a worthy cause, people tend to focus on doing good and tend to ignore the cost to them when it is hypothetical, but they temper that inclination with considerations of other options for their money when the referendum is for real. The entreaty ended with the following request: "I ask you to vote just exactly as you would vote if you were really going to face the consequences of your vote: which is to pay money if the proposition passes."[3]

Theory of Planned Behavior Questionnaire

Based on a pilot study with 46 UMass undergraduates, a seven-page questionnaire was developed to measure the constructs in the theory of planned behavior (see Ajzen, 2001a, for a description of questionnaire development). Participants were first given instructions on use of the questionnaire's 7-point bipolar adjective scales. There was no systematic order to the items designed to assess the theory's different constructs.

Direct attitude. The stem, "For me to contribute $8 to the UMass Scholarship Fund would be" was rated on a series of ten 7-point evaluative semantic differential scales with the following endpoints: *harmful-beneficial, undesirable-desirable, unpleasant-pleasant, good-bad, reasonable-unreasonable, comfortable-uncomfortable, negative-positive, fair-unfair, enjoyable-unenjoyable, wrong-right.* High scores were assigned to the positive end of each scale and the mean response across the 10 scales was used as a direct measure of attitude toward voting yes on the referendum. The internal reliability of this measure, as assessed by Cronbach's alpha, was .90.

Belief-based attitude. Two questions were asked with respect to each of five outcomes of voting to contribute $8 to the UMass Scholarship Fund identified in the pilot study. The five outcomes dealt with making more money available for scholarships to needy students, forcing others in the group to make a donation, making a difference for the better in someone's life, donating money that could be used for other things, and enabling more needy students to attend UMass. First, participants were asked to evaluate each outcome on a 7-point *extremely good-extremely bad* scale. Second, to assess belief strength, they were asked to rate the likelihood that voting to contribute $8 to the UMass Scholarship Fund would produce each of the five outcomes on a 7-point *extremely unlikely-extremely likely* scale. Based on an optimal scaling analysis that determines the proper scoring scheme (Ajzen, 1991), belief strength and outcome evaluation were both scored in a bipolar fashion, from –3 (*unlikely, bad*) to +3 (*likely, good*). To produce a belief-based estimate of attitude, belief strength and outcome evaluation, measures were multiplied and the resulting products were summed, in accordance with the expectancy-value model discussed in the Introduction.[4] The correlation between the direct and this belief-based measure of attitude was .50 ($p < .001$).

Direct subjective norm. Three items, interspersed among other questions, assessed subjective norms. Respondents rated, on 7-point scales, the statements that most people who are important to them would want them to vote to contribute $8 to the UMass Scholarship Fund (*strongly agree-strongly disagree*) and would think that they should vote to contribute (*should-should not*). The third item asked them to rate the statement that most people who are close to them would themselves vote to contribute $8 to the UMass Scholarship Fund (*definitely true-definitely false*). The mean score across the three items, with a Cronbach's alpha coefficient of .85, served as a direct measure of subjective norm.

Belief-based subjective norm. The pilot study had identified four normative referents of relevance: parents and family, friends and fellow students, other participants voting on the referendum, and UMass faculty and administrators. With respect to each of these four referents, two items assessed normative belief strength and motivation to comply. For example, the statement, "My friends and fellow students would think that I should contribute $8 to the UMass Scholarship Fund" was rated on a 7-point *extremely unlikely-extremely likely* scale to produce a measure of normative beliefs strength, and to assess motivation to comply, participants rated, on a 7-point *strongly disagree-strongly agree* scale, the statement, "Generally speaking, I want to do what my friends and fellow students think I should do." Optimal scaling analysis resulted in bipolar scoring (–3 to +3) for normative belief strength but unipolar (1 to 7) scoring for motivation to comply. The products of normative belief strength and motivation to comply were summed across the four referents to obtain a belief-based estimate of subjective norm. This measure had a correlation of .67 ($p < .001$) with the direct subjective norm measure.

Direct perceived behavioral control. Two items, appearing at different points in the questionnaire, were designed to assess perceived behavioral control. Respondents rated how possible they thought it was for them to vote to contribute $8 to the UMass Scholarship Fund (*possible-impossible*) and that the decision to contribute was completely up to them (*strongly agree-strongly disagree*). Perceived control, as measured by the second item, was found to be quite high, with relatively little variance among respondents; that is, most participants believed that the decision to contribute $8 to the UMass Scholarship fund was up to them. On the 7-point scale used, the mean response was 6.20 ($SD = 1.33$). In fact, this item

revealed virtually no correlation with any of the other variables assessed, and it did not correlate with the first perceived behavioral control item ($r = -.01$). Consequently, only responses to the first item were used as a direct measure of perceived behavioral control.

Belief-based perceived behavioral control. Four control factors were identified in the pilot study as potentially facilitating or hindering a positive vote in the referendum: whether the person could afford to make the contribution, could be sure that the contribution would indeed go to needy students, would not have to draw on regularly available funds, and had no other immediate need for the money. To assess control-belief strength, participants rated each control factor on a 7-point scale ranging from *definitely false* to *definitely true.* For example, "I can afford to contribute $8 to the UMass Scholarship Fund" was rated on this scale. A second item assessed the perceived power of the control factor. Thus, respondents rated, on a 7-point *strongly disagree-strongly agree* scale, the statement, "Being able to afford to contribute $8 to the UMass Scholarship Fund would enable me to vote in favor of the referendum." Optimal scaling analysis led to unipolar scoring (1 to 7) for control beliefs as well as perceived power of control factors. Control-belief strength and perceived power were multiplied for each control factor and the summed product terms constituted the belief-based measure of perceived behavioral control. The correlation between direct and belief-based measures of perceived control was .56 ($p < .001$).

Intention. Two 7-point items, separated by other measures, were designed to assess intentions to vote to contribute $8 to the UMass Scholarship Fund. One item asked respondents whether they intended to do so (*not at all-definitely*), the other whether they planned to do so (*definitely true-definitely false*). Cronbach's alpha for these two items was .93. Responses to the two items were averaged to obtain a measure of intention.[5] In addition, a binary intention measure was obtained by asking respondents, at the end of the questionnaire, whether they will vote yes or no in the referendum.

RESULTS

Hypothetical Bias and Corrective Entreaty

Our first order of business was to confirm the presence of hypothetical bias in the contingent valuation and to examine the ameliorating effect of the corrective entreaty. Table 1 shows the number of participants in each of the experimental conditions and the proportion who voted in favor of the proposition in the hypothetical and real payment referenda. Because neither hypothetical nor real voting behavior were affected by order of questionnaire administration, order was collapsed in these analyses. We first compared hypothetical to real votes in the three conditions that did not include a corrective entreaty, that is, Conditions 1, 2, and 3. As expected, the proportion of participants voting yes in the hypothetical referendum (mean of Conditions 2 and 3 = 0.69) was significantly higher than the proportion voting yes in the real referendum (mean of Conditions 1, 2, and 3 = 0.41; Wilkinson matched pairs signed ranks test, $z = 4.15$, $p < .001$). However, the corrective entreaty (mean of Conditions 4 and 5) significantly reduced the proportion of hypothetical yes votes from .69 to .33, $\Pi^2(1, N = 129) = 17.00$, $p < .001$, and following the entreaty, the mean difference between hypothetical and real votes (.33 vs. .28) was no longer significant (Wilkinson's $z = 1.34$, $p = .18$). These findings, then, confirm our first hypothesis: Without a corrective entreaty, participants displayed the usual hypothetical bias, but this bias was largely eliminated by the entreaty.

TABLE 1: Number of Participants and Proportion of Yes Votes in Hypothetical and Real Payment Referenda

	Referendum			
	Hypothetical		*Real*	
Experimental Condition	N	*% Yes*	N	*% Yes*
1. Q-R	—	—	31	.42
2. Q-H-R	34	.71	34	.38*
3. H-R-Q	34	.68	34	.44*
4. E-Q-H-R	32	.41	32	.34
5. E-H-R-Q	29	.15	29	.24

NOTE: Q = theory of planned behavior questionnaire, H = hypothetical referendum, R = real referendum, and E = corrective entreaty. The difference between hypothetical and real referenda is significant.
*$p < .05$.

Prediction of Intentions and Behavior

Intentions, hypothetical votes, and real votes. As expected, hypothetical votes were found to be quite similar to intentions. In fact, hypothetical votes correlated more strongly with intentions than with real votes. This can be seen most clearly by focusing on the binary intention measure among the 129 participants who voted in the hypothetical as well as in the real referendum (Conditions 2 through 5). In the hypothetical referendum, 128 participants (more than 99%) voted in accordance with their intentions (67 yes and 61 no), resulting in a phi correlation coefficient of .99 ($p < .001$). Only one participant expressed an intention to vote yes on the questionnaire and then voted no in the hypothetical referendum.

Correspondence between hypothetical and real votes was much lower, with 103 out of 129 (80%) participants voting the same way in the hypothetical and real referenda (phi = .64, $p < .001$). Consistent with the hypothetical bias documented earlier, the discrepant votes were

asymmetrical. Of 67 participants who voted yes in the hypothetical referendum, 24 (36%) voted no in the real referendum but of 62 who voted no in the former, only 2 (3%) voted yes in the latter.

The discrepancies between intentions and voting in the real referendum were similar to the discrepancies between hypothetical and real votes. Of the 129 participants considered, 104 (81%) voted in accordance with their intentions (phi = .66, $p < .001$). When real votes were inconsistent with intentions, virtually all showed overestimates in terms of intentions such that 24 of 68 respondents (35%) actually voted no when they intended to vote yes, but only 1 of 61 (2%) voted yes after expressing an intention to vote no.

Theory of planned behavior and voting in the real referendum. Path analyses were conducted to test the ability of the theory of planned behavior to predict intentions to vote yes and actual voting in the real referendum. Using EQS version 5.7b (Bentler, 1995), direct paths were specified from attitude, subjective norm, and perceived behavioral control to intention and from intention and perceived behavioral control to behavior.[6] Because one of the two items designed as a direct measure of perceived behavioral control had poor psychometric properties, the belief-based measures of attitude, subjective norm, and perceived behavioral control were used in the path analyses but very similar results were obtained when the direct measures were substituted for the belief-based measures. Also, because the behavioral criterion (yes or no vote) was a dichotomous measure, the robust method for categorical variables was applied. In addition to computing the chi-square for the difference between predicted and obtained values, the fit between structural model and data was evaluated by means of the Bentler-Bonnet normed fit index (BBNFI) and the root mean square error of approximation (RMSEA). The BBNFI estimates the amount of variance explained by the model. It can vary from 0 to 1 and a good fit is indicated by values greater than .95. The RMSEA index compensates for sample size, with low values indicating good fit. Usually, a RMSEA value of .05 or less is considered acceptable.

A path analysis was first performed for the total sample. Table 2 displays the means and standard deviations of attitudes, subjective norms, perceptions of behavioral control, intentions, and actual voting behavior, as well as the correlations among these variables. The fit for the proposed model was found to be excellent. The discrepancy between predicted and obtained covariance structures was not significant, $\chi^2 = 4.14$, $df = 2$, $p = .13$, and the goodness-of-fit indices reached highly satisfactory levels (BBNFI = .99, RMSEA = .04). In Figure 1, it can be seen that all three components—attitude toward voting yes, subjective norm, and perceived behavioral control—made significant contributions to the prediction of intentions, and intentions, in turn, had a strong effect on actual voting behavior in the real referendum. Perceived behavioral control did not have a significant direct path to behavior but appears to have influenced voting indirectly by its effect on intention. The model accounted for 50% of the variance in intentions and for 59% of the variance in actual vote.

TABLE 2: Means, Standard Deviations, and Correlations for Theory of Planned Behavior Variables: Total Sample ($N = 160$)

	M	SD	*A*	*SN*	*PBC*	*I*
Attitude (A)	10.06	13.11	—			
Subjective norm (SN)	10.09	20.29	.43	—		
Perceived behavioral control (PBC)	95.40	44.19	.53	.53	—	
Intention (I)	4.24	2.26	.51	.59	.72	—
Real vote	0.36	0.48	.39	.35	.41	.61

NOTE: All correlations are significant at $p < .001$.

Following the analysis for the total sample, separate analyses were performed for participants in Condition 2 who did not receive the corrective entreaty (and who completed the questionnaire prior to voting) and for participants in the otherwise identical Condition 4 who were entreated to be realistic in their hypothetical votes.[7] The model was found to fit the data quite well in both conditions of the experiment, although—as might be expected—the fit was somewhat better for participants with than without the corrective entreaty. For participants without the entreaty, the discrepancy between predicted and obtained covariance structures was not significant, $\chi^2 = 3.56$, $df = 2$, $p = .15$, and the BBNFI goodness-of-fit index was at an acceptable level (.96). The RMSEA index, however, was .15, which is above the .05 level considered satisfactory. The same analysis conducted for participants exposed to the corrective entreaty (Condition 4) resulted in a good fit between model and data, $\chi^2 = 1.23$, $df = 2$, $p = .54$, *ns*, and both fit indices were highly satisfactory (BBNFI = .99, RMSEA < .001).

The path coefficients and proportions of explained variance in intentions and behavior are shown in Figure 2. The values to the left of each slash refer to the experimental condition that did not include a corrective entreaty (Condition 2) and the values to the right of the slash to the condition that included the entreaty (Conditions 4). Inspection of Figure 2 reveals that, as expected, the theory afforded good prediction of intentions irrespective of entreaty condition. The difference between the amount of explained variance without entreaty ($R^2 = .64$) and with entreaty ($R^2 = .57$) was not significant ($z = 0.49$, $p = .62$).

The most notable difference between entreaty conditions is related to the proportion of explained behav-

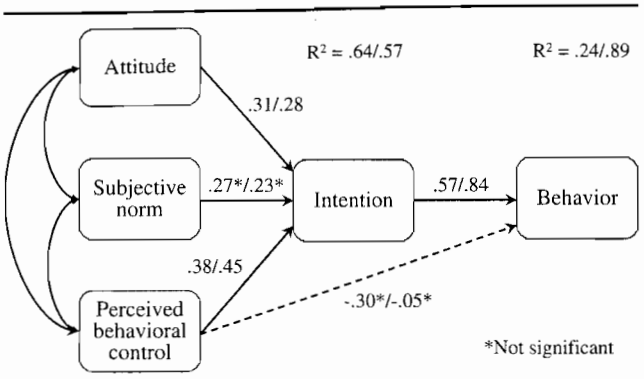

Figure 2 **Prediction of voting in real referendum: Path analysis for the theory of planned behavior without corrective entreaty (values before slash) and with corrective entreaty (values after slash).**

TABLE 3: **Univariate Comparison of Means for Theory of Planned Behavior Variables: Differences Between Real No and Real Yes Votes for Participants Who Voted Yes in the Hypothetical Referendum**

	Real Vote = No		*Real Vote = Yes*		
	M	SD	M	SD	F(df = *1, 44*)
Attitude					
Direct	5.99	1.94	5.76	1.18	0.25
Belief-based	13.11	6.90	16.22	11.69	1.08
Subjective norm					
Direct	5.91	0.75	5.98	1.10	0.05
Belief-based	23.79	19.39	25.44	22.35	0.07
Perceived behavioral control					
Direct	6.42	0.77	6.33	1.44	0.06
Belief-based	118.81	47.22	121.96	42.11	0.36
Intention	6.26	0.89	6.15	1.59	0.82

NOTE: None of the univariate tests are statistically significant.

ioral variance. Without a corrective entreaty, the model accounted for only a modest 24% of the variance, but—consistent with our hypothesis—the amount of explained variance increased dramatically for respondents who were given the entreaty. Among these participants, fully 89% of the variance in the real vote was explained by intentions and perceptions of behavioral control. The difference between these two values is highly significant ($z = 4.68$, $p < .001$). To further explore the observed differences between entreaty conditions, we used the EQS software to conduct a group comparison. In the first analysis, all path coefficients were constrained to be equal for the two samples of participants (without or with a corrective entreaty). This analysis showed a good, but not perfect, fit between model and data, $\chi^2 = 17.89$, $df = 12$, $p = .12$, BBNFI = .93, RMSEA = .09; the two goodness-of-fit indices did not quite meet generally accepted criteria. In a series of subsequent analyses, successive path coefficients were allowed to vary freely. The only significant improvement was observed when the path from intention to behavior was left unconstrained. This model exhibited an excellent fit to the data, $\chi^2 = 10.96$, $df = 11$, $p = .44$, BBNFI = .96, RMSEA < .01, and the increment in the model's fit was statistically significant ($\chi^2 = 4.77$, $df = 1$, $p < .03$). Clearly, consistent with our hypothesis, exposure to a corrective entreaty had little effect on the prediction of intentions but greatly improved the prediction of actual behavior from these intentions.

Latent Disposition Hypothesis

We now consider the viability of the two hypothetical bias explanations. The latent disposition hypothesis leads us to expect that individuals who vote in favor of the disposition not only in a hypothetical situation but also under real payment conditions hold more favorable beliefs and attitudes than individuals who support the hypothetical proposition but vote against it when it is for real. To test this prediction, we examined the experimental conditions without corrective entreaty that included hypothetical as well as real referenda (i.e., Conditions 2 and 3) and selected only participants who voted in favor of the proposition in the hypothetical referendum ($N = 46$). Using multivariate analysis of variance, we compared the attitudes, subjective norms, perceived behavioral control, and intentions of participants who voted yes ($N = 27$) and participants who voted no ($N = 19$) in the real referendum. Neither the multivariate test ($F = .369$; $df = 1, 38$; $p = .92$) nor the univariate tests revealed significant differences between these groups. Table 3 displays the results of the univariate tests. It can be seen that the means of the two groups were very similar, without any consistent pattern to the differences between participants who voted no and participants who voted yes in the real referendum. There was thus no support for the hypothesis that hypothetical bias is due to a latent disposition of intermediate favorability, which would lead participants to vote yes under hypothetical conditions but no under real payment conditions.

Belief Disparity Hypothesis

Hypothetical bias. The alternative belief disparity hypothesis explains hypothetical bias by proposing that participants hold more positive beliefs about voting in favor of the referendum under hypothetical than under real payment conditions. To test this hypothesis, we compared the questionnaire responses of participants who expected to vote in a real referendum (Condition 1) to the responses of participants who expected to vote in a hypothetical referendum (Condition 2). A multivariate analysis of variance provided support for the prediction.

TABLE 4: Means and Standard Deviations for Theory of Planned Behavior Variables in Hypothetical and Real Referenda

	Hypothetical (N = *31*)		*Real* (N = *34*)		
	M	SD	M	SD	F(df = *1, 63*)
Attitude					
Direct	5.02	1.23	4.60	1.11	2.02
Belief-based	9.30	11.88	6.48	15.11	0.69
Subjective norm					
Direct	5.20	1.32	4.49	1.43	4.22*
Belief-based	16.45	21.25	1.81	18.94	8.43**
Perceived behavioral control					
Direct	5.76	1.54	5.32	1.58	1.31
Belief-based	96.67	43.73	88.71	43.62	0.53
Intention	4.88	2.04	3.81	2.17	4.25*

*$p < .05$. **$p < .01$.

In this analysis, Condition 1 versus Condition 2 was the independent factor and the theory of planned behavior measures served as dependent variables. In the multivariate analysis, responses prior to the hypothetical referendum tended, overall, to be more favorable than responses prior to the real referendum ($F = 2.63$; $df = 7, 56$; $p < .10$). More important, the univariate effects displayed in Table 4 show that the difference between hypothetical and real payment conditions was significant for intentions and that this effect could be traced primarily to differences in subjective norms. Both the direct and belief-based measures of subjective norm revealed significant differences in the expected direction between hypothetical and real referenda.

To further explore these differences, we examined the specific normative beliefs and motivations to comply that make up the belief-based measure of subjective norm. A multivariate analysis of variance revealed no significant differences for motivation to comply but significant effects for three of the four normative beliefs, as can be seen in Table 5. In comparison to hypothetical payment conditions, under real payment conditions, participants were more likely to believe that their parents and families, their friends and fellow students, and other members of their group would disapprove of their contributing $8 to the fellowship fund. There was no difference with respect to members of the university faculty and administration who were viewed as supporting a contribution in both situations.

Corrective entreaty. The belief disparity hypothesis also leads to the prediction that the effect of a corrective entreaty is to diminish or erase the differences in beliefs, attitudes, and intentions between hypothetical and real payment conditions. In a multivariate analysis of variance, the corrective entreaty had a significant multivariate main effect ($F = 2.78$; $df = 7, 118$; $p < .01$), which showed that, as expected, the corrective entreaty

TABLE 5: Differences in Normative Beliefs Between Hypothetical and Real Payment Referenda

Normative Referent	*Hypothetical* (N = *31*)		*Real* (N = *34*)		
	M	SD	M	SD	F(df = *1, 63*)
Parents and family	5.23	1.78	4.32	2.21	3.39†
Friends and fellow students	4.65	1.84	3.52	1.81	6.23*
Other group members	4.53	1.50	3.48	1.34	8.71**
Faculty and administrators	5.38	1.56	5.48	1.50	0.07

†$p < .10$. *$p < .05$. **$p < .01$.

TABLE 6: Effects of Corrective Entreaty on Theory of Planned Behavior Variables

	Without Entreaty		*With Entreaty*		
	M	SD	M	SD	F(df = *1, 124*)
Attitude					
Direct	5.39	1.57	4.60	1.37	9.18**
Belief-based	12.30	11.26	9.46	13.75	1.63
Subjective norm					
Direct	5.31	1.49	4.45	1.52	10.19**
Belief-based	17.73	21.68	5.92	16.39	11.56**
Perceived behavioral control					
Direct	5.93	1.56	5.41	1.70	3.16†
Belief-based	105.81	45.61	87.25	41.50	5.61*
Intention	5.07	2.17	3.57	2.16	15.39**

†$p < .10$. *$p < .05$. **$p < .01$.

generally lowered beliefs, attitudes, and intentions so that they were less favorable than the corresponding responses without a corrective entreaty. The relevant means and standard deviations are presented in Table 6, which also shows the results of univariate tests of the difference between participants with and without the corrective entreaty. It can be seen that the entreaty had significant effects on virtually all measures. It depressed attitudes (assessed directly) as well as subjective norms, perceptions of behavioral control, and intentions. Clearly, participants exposed to the corrective entreaty were led to form a pattern of beliefs, attitudes, and intentions that was much less supportive of a yes vote than was the case for participants who approached the hypothetical vote without the entreaty.

A second relevant piece of evidence comes from a comparison of the theory of planned behavior measures in Conditions 1 and 4. This comparison revealed that the beliefs, attitudes, and intentions of participants exposed to the corrective entreaty prior to the hypothetical vote (Condition 4) were virtually identical to the beliefs, attitudes, and intentions of participants in the real referen-

dum (Condition 1). The multivariate effect of condition on attitude, subjective norm, perceived behavioral control, and intention was not significant ($F = 0.62$; $df = 7, 55$; $p = .74$), and neither were any of the univariate effects. Taken together, these findings support the hypothesis that the corrective entreaty tends to reduce the favorability of responses under hypothetical payment conditions and to bring them in line with responses in the real referendum.

DISCUSSION

Observed discrepancies between stated intentions and actual behavior have been of concern to investigators for a long time, and they also pose a problem for the validity of contingent valuation estimates of willingness to pay. In the present study, we examined possible reasons for hypothetical bias and for the ability of an intensive corrective entreaty to ameliorate the tendency to overestimate willingness to pay. Previous studies have demonstrated the hypothetical bias, have explored its boundary conditions, and have tried to correct for it. To the best of our knowledge, this is the first study that tried to test alternative explanations of the hypothetical bias. The results suggest that the bias cannot be attributed to an insufficiently polarized latent disposition, the explanation offered by Campbell (1963) to account for inconsistencies between intentions and actions. This latent disposition hypothesis would lead us to expect that participants who vote yes in hypothetical as well as real referenda hold more favorable beliefs, attitudes, and intentions with respect to the proposition than participants who display an inconsistent pattern of behavior. However, a comparison of individuals who displayed the hypothetical bias with individuals who did not revealed little difference in their beliefs, attitudes, and intentions.

It is of course possible that in a different context, enacting a behavior has a higher threshold than expressing an intention, in support of the latent disposition hypothesis. Another way to "salvage" this hypothesis is to assume that hypothetical bias is related to facets of attitude strength other than polarity of valence (see Krosnick, Boninger, Chuang, Berent & Carnot, 1993). Thus, it is feasible that participants who do and do not vote in accordance with their hypothetical intentions hold equally positive attitudes toward a favorable vote but that the former hold these attitudes with greater confidence.

However, in the context of the present investigation, the data supported an alternative explanation offered by the belief disparity hypothesis (Ajzen & Sexton, 1999). Consistent with this hypothesis, individuals confronted with the real referendum expressed less favorable reactions with respect to voting yes than did individuals confronted with the hypothetical referendum. This finding indicates that, at least with respect to the behavior examined in this experiment, hypothetical and real contexts are qualitatively different, that people construe them in very different ways, and that questions posed in such contexts can elicit very different responses. The hypothetical situation was less likely to activate strong normative beliefs than the real payment situation. Confronted with the real payment referendum, participants seemed to realize that parents and friends might consider it unwise to give away their money, even to a worthy cause, and to believe that other group members may be opposed to making a donation and may thus not want the participant to support the proposition. It should be clear, however, that these conclusions may not be generalizable to referenda dealing with issues other than contribution to a scholarship fund or to other populations. Very different considerations may be activated for other issues and among other types of respondents. Even so, anecdotal evidence in Linn's (1965) study on racial integration also implicated normative considerations as a major distinguishing feature of hypothetical versus real behavioral situations.

The corrective entreaty developed by Cummings and Taylor (1999) was found to be very effective in reducing discrepancies between hypothetical and real votes, producing contingent value estimates that were very close to the real values. The effects of the entreaty on hypothetical votes were traced to its impact on beliefs, attitudes, and intentions with respect to voting yes in the referendum. These factors became significantly less favorable as a result of exposure to the entreaty. Of interest, the corrective entreaty was focused primarily on the consequences of a favorable vote, drawing the participants' attention to the fact that doing so would leave them with less money to spend on other things. Such an intervention would be expected to have a direct effect on behavioral beliefs and, hence, on attitudes toward the behavior. However, the data of the present study suggest that the hypothetical bias was due to a different factor: the strength of normative considerations. The corrective entreaty might therefore have missed its target, except for the fact that its impact was quite diffuse, spreading beyond attitudes to subjective norms and perceptions of behavioral control.

It may be argued, however, that the lengthy and explicit corrective entreaty produced strong demand characteristics suggesting to participants that they should lower their willingness to pay estimates and consider voting no in the hypothetical referendum. Thus, participants may simply have acceded to the experimenter's perceived expectations, without any real change in willingness to pay. Several findings argue against this possibility. For one, the corrective entreaty lowered not only willingness-to-pay estimates but also

beliefs and attitudes regarding a yes vote. There was nothing in the entreaty to suggest that people should change their beliefs and attitudes. More important, the entreaty's effects were not uniform across different normative beliefs: It lowered the perceived expectations of family, friends, and other group members but not the perceived expectations of faculty and administrators. This finding is contrary to a demand-characteristics explanation, which would predict that members of the faculty (represented by the experimenter who administered the entreaty) would have the strongest impact. Also, the entreaty did not have a uniform impact on all participants. Its impact on beliefs and attitudes was differentiated in such a manner that it greatly improved prediction of voting in the real referendum. This particular pattern of influence is inconsistent with a demand-characteristics explanation; instead, it supports the idea that the corrective entreaty led participants to form beliefs, attitudes, and intentions similar to those in a real payment situation, thereby permitting more accurate prediction of actual behavior.

The effectiveness of the corrective entreaty has important implications for influence of intentions on behavior. The assumption in the theory of planned behavior that intentions are an immediate antecedent of behavior is shared by other social psychological models (e.g., Fisher & Fisher, 1992; Gollwitzer, 1993; Triandis, 1977). Indeed, intentions are generally found to predict corresponding behavior quite well. Meta-analyses covering diverse behavioral domains have reported mean intention-behavior correlations of .47 (Armitage & Conner, 2001; Notani, 1998), .53 (Shepherd, Hartwick, & Warshaw, 1988), .45 (Randall & Wolff, 1994), and .62 (van den Putte, 1993), and in a meta-analysis of these and other meta-analyses, Sheeran (2002) reported an overall correlation of .53 between intention and behavior, suggesting that intentions account, on average, for approximately 28% of the variance in behavior. However, these meta-analyses also have shown that the magnitude of intention-behavior correlations varies widely. The present study suggests that the strength of the intention-behavior correlation is moderated by the extent to which people have realistic expectations regarding the behavioral situation. Without a corrective entreaty, intentions formed in a hypothetical context were poor predictors of behavior in a real context. In contrast, exposure to a corrective entreaty prior to making a (hypothetical) decision was shown to produce beliefs, attitudes, and intentions comparable to those that exist in a real behavioral context, and these more realistic dispositions were found to be excellent predictors of actual behavior.

These findings also have important implications for use of the theory of planned behavior in empirical research. Because this and other theories posit that intentions are an immediate precursor of behavior, and because intentions usually predict behavior quite well, many investigators have used behavioral intentions as a proxy for actual behavior. The results of the present study suggest that this practice is justified only if it can be assumed that intentions are assessed in a context that is likely to produce realistic beliefs concerning the behavior. If the beliefs that are activated when the behavior is performed differ from the beliefs that are readily accessible during questionnaire administration, actual behavior may well differ from expressed intention. Investigations that rely on intention as a proxy for actual behavior must thus be interpreted with caution.

CONCLUSIONS

The results of the present study confirm the existence of a strong bias for people to overestimate the likelihood that they will engage in a socially desirable behavior. This bias produces unrealistically high estimates of intentions to pay for a worthy cause as well as inconsistencies between intentions and actions in many other domains. One way to overcome this problem is to employ a corrective entreaty. To be effective, the entreaty must change beliefs, creating attitudes, subjective norms, perceptions of control, and intentions that are comparable to those under real payment conditions, thus reducing or eliminating the discrepancy between expressed intentions and actual behavior. As in many other applications (see Ajzen, 2001b; Armitage & Conner, 2001), the theory of planned behavior was found to be a useful conceptual framework for trying to predict and understand voting in hypothetical and real referenda. The theory permitted accurate prediction of voting intentions irrespective of the presence or absence of a corrective entreaty, but it revealed intention-behavior inconsistency in the real referendum. Whereas the corrective entreaty had no effect on the theory's ability to predict intentions, it did moderate predictive validity for real payment decisions. As expected, voting in the real referendum was predicted with considerable accuracy only for participants who had been exposed to the corrective entreaty. By creating beliefs and attitudes similar to those in the real payment situation, the corrective entreaty allowed the theory of planned behavior to make accurate predictions of voting in the real referendum.

NOTES

1. Willingness to pay for a public good also has been likened to an attitude toward the good in question (Kahneman, Ritov, Jacowitz, & Grant, 1993). Our approach focuses not on the good itself but more specifically on the intention to vote for or against a proposition to pay money for the good under consideration.

2. Participants who vote no in the hypothetical as well as in the real referendum are expected to have less favorable beliefs, attitudes, and intentions than participants who vote yes in the hypothetical referen-

dum (and yes or no in the real referendum). This difference would be predicted by both the latent disposition and the belief disparity hypotheses and can thus not be used to test the competing explanations.

3. The complete text of the corrective entreaty is available on the Internet at http://www.fs.fed.us./rm/value/cheaptalkscript.html.

4. Unlike items used to assess attitude toward the behavior directly, items assessing salient beliefs and outcome evaluations are not required to exhibit high internal consistency. Accessible behavior beliefs may contain a degree of ambivalence, with some outcomes valued positively, others negatively. There is therefore no expectation that the different beliefs will necessarily correlate highly with each other. The same logic applies to the measures of normative and control beliefs described below.

5. The questionnaire contained a few additional measures not directly related to the theory of planned behavior: a mood adjective checklist, the participants' predictions of how the other group members would vote, and their sense of moral obligation to support the petition.

6. We would like to thank Amiram Vinokur for his assistance with these analyses.

7. The analyses were repeated for all participants who were not exposed to the entreaty (Conditions 2 and 4) and those who were exposed (Conditions 3 and 5), irrespective of questionnaire order. The results were virtually identical to those reported here.

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