



The Social Context of Contingent Valuation Transactions

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Evaluative judgments should be sensitive to features of proposed transactions that respondents consider to be relevant. One set of potentially relevant features describes the social context in which a proposed exchange of goods and payment would occur. Two studies asked respondents to evaluate the relevance of social-context features in a contingent valuation-like task, eliciting expressed willingness-to-pay (WTP) judgments for a proposed cleanup of the Monongahela River. Participants found social-context features to be as relevant as features of the good and payment. Moreover, learning about social context reduced their willingness to participate in such tasks, especially for those respondents who had already performed the present task. However, it did not affect the magnitude of their WTP judgments. Overall, respondents were somewhat favorable to contingent valuation. The studies demonstrate a general method for evaluating procedures eliciting citizen judgments of environmental changes, building on general research into the role of social context in environmental behavior.

Keywords contingent valuation, environmental values, pollution prevention, value elicitation, willingness to pay

Responding to the needs of policymakers, researchers have developed various instruments for eliciting public values about environmental changes. Contingent valuation (CV) has gained particular prominence among these methodologies, at least in part because it promises to provide measures of amenity benefits that can be directly incorporated into benefit–cost calculations (Arrow et al. 1993). Although the environmental changes that CV addresses are often complex and unfamiliar, the method reflects a simple model of human values, drawn from microeconomics and survey research (Fischhoff 1991; 1997). CV assumes that people are sufficiently in tune with their

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hedonic processes that they can generate meaningful willingness-to-pay (WTP) judgments for any adequately described good. Thus, these judgments should be sensitive to respondents' personal wealth, the availability of substitutes, and other relevant features of the proposed transaction. This article offers a general approach to determining the appropriateness of such sensitivity, applied in a specific context representative of those addressed by CV studies.

One set of potentially relevant features refers to the social context of a transaction, those features that are not specific to the proposed good and payment, but that still define the exchange as an interpersonal relationship (Fischhoff and Furby 1988). Both common sense and much social research show that social context can strongly influence people's preferences. For example, under some circumstances, people care about ensuring distributive and procedural justice (Lerner 1987; Lind and Tyler 1988). They sometimes care about the externalities imposed on (or by) others, and about the identities of those others (Dawes 1991). They may be sensitive to how others interpret their actions (Schlenker and Weingold 1992). Social context can moderate the pleasure of consumption, as when it is compared with the consumption levels of others (Festinger 1954; Masters and Smith 1987).

If people care about a feature of social context, then their expressed valuations should be sensitive to how that feature is specified in a CV task (or any other evaluation study). That sensitivity is as much a test of the method's validity as is respondents' sensitivity to the *quantity* of the good being offered or its *probability* of actually being provided. These are two formal features of transactions, often manipulated in *scope* tests of CV (Arrow et al. 1993; Carson 1997; Fischhoff and Furby 1988; Frederick and Fischhoff 1998). The sign of a scope test is obvious: Someone who likes one quantity of a good should like a larger quantity at least as much. However, substantive features of transactions, like social context, have no necessary relationship to valuations. As a result, their relevance must be independently assessed, in order to determine what sensitivity is appropriate.

One source of such assessments is the general social science literature, showing the task features that typically matter to people. The next section draws on this literature to identify potentially relevant social-context features of CV transactions. The remainder of the article demonstrates a general method for assessing the relevance of these features, and the sensitivity of WTP responses, in a CV-like task. The results are, obviously, limited to our specific respondent sample, evaluated good, evaluation question, and characterization of CV's social context. However, they reflect an approach that could be readily incorporated in other studies. Moreover, when combined with the general literature on social context, such specific studies would create an increasingly full picture for policymakers hoping to get the greatest possible value from the evaluations evoked by such tasks.

Dimensions of Social Context in Valuation Tasks

Fischhoff and Furby (1988) proposed a general framework for specifying *transactions*, in which a *good* is exchanged for a *payment* in a *social context*. Such specification is particularly needed with unfamiliar transactions, where respondents may "fill in the blanks" differently than investigators had intended (Fischhoff et al. 1999; Schwarz 1999). The framework has three major social-context categories: (a) the other people involved, (b) the resolution mechanism (determining whether the transaction actually occurs), and (c) any other contingent stakes, beyond the good and payment. Here, we briefly consider their potential relevance for the unique circumstances that CV tasks create.

Others Involved

CV studies focus on individual respondents' value for a good (sometimes acting as proxies for their household). However, people often care about other people involved in a transaction. For example, an otherwise acceptable transaction may be rejected if (a) those proposing it are somehow stigmatized (Flynn et al., in press)¹; (b) it creates substantial externalities for valued others (Dawes 1991); or (c) its value is diminished by comparison with other people's fates, especially if others know about the contrast (Festinger 1954; Thaler 1980).

Thus, CV respondents might consider: Who is offering this unusual transaction (a curious researcher, local government, a firm in litigation)? Who else is affected by its outcome? What are others saying (and paying)? Different answers might evoke different valuations, or different willingness to provide an evaluation. Interviewers typically promise anonymity in order to reduce the influence of others (except the interviewer) observing the response. However, CV instruments seldom provide much additional guidance about the others involved.

Resolution Mechanism

Respondents may wonder about the social institution determining whether a transaction actually occurs (with the good and payment being exchanged). Different resolution mechanisms imply different balances of power between buyer and seller. Buyers may have sole control (in some consumer choices), act as part of a collective (as in elections), or feel quite disenfranchised. Perceived power could influence how truthfully respondents reveal their values, how hard they bargain, and how readily they seek cooperative outcomes.

Although a major concern in early CV studies, such strategic behavior has drawn decreasing concern. Researchers have seemingly concluded that social norms can prompt honest behavior, even without formally incentive-compatible mechanisms. If so, then respondents might provide candid valuation if they believed that the provision of the good depended on their response. If they doubted that policymakers would take their answers literally, they might choose, instead, to exaggerate their WTP or refuse to provide one. The differences between hypothetical responses and ones with direct payments has been a major topic in CV research (Camerer and Hogarth 1999; Mitchell and Carson 1989). Respondents' beliefs about policymakers' use of hypothetical answers have drawn less attention (Schkade and Payne 1994).

Other Stakes

Precedents

Often, people expect consistent behavior from one another, and impose social costs on erratic or unreliable individuals. When people internalize these expectations, past behaviors set precedents for future ones. Fundraisers exploit this principle when they solicit for small contributions, knowing that these prime responses to later, more substantial, requests (Cialdini 1993). Current behavior can also constrain future behavior by reducing one's ability to pay for additional goods or affecting the attractiveness of substitutes for a purchased good.

For many everyday transactions, any connection between immediate and subsequent behavior is obvious enough that investigators (or merchants) hardly need to specify it. In contrast, the stream of goods offered in CV studies is essentially arbitrary, arising from policy concerns or investigator curiosity. Even were that stream

predictable, it is hard to conceptualize one's overall need for nature and how fully it is satisfied (or threatened) by preserving (or losing) a particular good. The precedents that one's choice set for others add a further complication, as do those created by others' choices. Thus WTP for a public good (whether in a CV study or in real life) requires making and reflecting upon some assumptions about the transaction's role in the overall scheme of things.

Legitimacy

Finally, some responses reflect nonconsequentialist concerns, making a statement rather than expressing an evaluation. People may reject out of hand transactions that seem coercive or disrespectful. Conversely, they may disregard unattractive terms in order to support a valued principle (e.g., "The environment matters," "I care enough to respond"). In so doing, respondents may hope to support (or even create) social norms of participation.²

CV-like tasks have often evoked concerns about legitimacy, such as claims to the effect that "nature" has intrinsic rights that should not be put up for bid (Gregory 1986). Rejecting transactions "in principle," regardless of their details, is one possible source of protest responses (Mitchell and Carson 1989). Even respondents who accept CV's utilitarian premises might raise questions about fairness or equity (Baron and Spranca 1997).

Predictions

Thus, perceived social context has been found to affect behavior in many transactions.³ The present studies examine the effects of disclosing different amounts of information about the social context of CV studies. We expected that more complete disclosure would *reduce* respondents' WTP by alerting them to the existence of many such CV studies, each eliciting a payment for an environmental good, thereby constraining respondents' resources, providing possible substitutes, and offering a chance to make a statement.⁴ We also expected knowledge of CV's social context to *increase* respondents' *willingness to participate*, by increasing CV's legitimacy and importance as a valuation mechanism. Thus, we expected clarifying the social context of CV to produce smaller, but more firmly held, valuations. We manipulated disclosure in two ways: (a) by providing different amounts of information about CV and (b) by providing different amounts of experience with it (so that respondents could see what it really meant).

Method

We asked Pittsburgh-area residents to evaluate a proposal to reduce the effects of acid mine drainage (AMD) on the Monongahela River, one of the city's "three rivers."⁵ The two studies manipulated how much information subjects received about CV. The fullest description included an account of (a) what CV is, (b) how CV studies might be used in policymaking, and (c) what claims CV advocates and critics make regarding its legitimacy as a policymaking tool.

Study I used a within-subject design. Initially, subjects evaluated the proposed cleanup without any information about CV. After reading detailed descriptions of the Monongahela watershed, the causes and effects of AMD, and the effects of the proposed cleanup, subjects were asked to state their maximum WTP and to characterize their commitment to that estimate. Subjects were then asked whether they had noticed and

been influenced by 10 features in the descriptions, half dealing with social context, half dealing with other aspects of the good and payment. Those who reported having neglected factors that now seemed relevant were offered the opportunity to modify their initial WTP. The WTP question was worded as, "What is the largest amount of money you would be willing to pay every year (in higher taxes and prices for goods and services) in order to reduce the effect of acid mine draining on the Mon River? \$_____"

In the second section of Study 1, subjects received additional information about CV, then repeated the valuation exercise. The information came in two parts: (a) a paragraph describing CV's role in policymaking (Table 1a) and (b) a page with eight "issues" (Table 2), selected to represent the opinions found in the literature and observed during our experience with CV and the surrounding controversies (Fischhoff 1989; 1991; 1993; 1997; Fischhoff et al. 1980; Fischhoff and Furby 1988; Fischhoff et al. 1999). We attempted to balance the arguments supporting and opposing CV, in tone as well as number. It is, however, an empirical question whether other renderings would substantially change responses. After reading the arguments, subjects evaluated how convincing each was (on a five-point scale). Subjects then received a final chance to revise their WTP, after which they repeated their evaluation of the CV method.

TABLE 1 Description of CV's Role in Policymaking

This questionnaire uses a procedure called "contingent valuation" to ask about your value for the environmental improvement we will describe in Section II.

Contingent valuation is frequently used by policy makers to make decisions about environmental regulations and other programs designed to improve the environment (such as clean-up programs). In this section, we will describe how contingent valuation works and ask you to describe your attitude toward using the procedure to set government policy.

In contingent valuation (or CV) studies, citizens are asked how much they are willing to pay for an environmental improvement to help policy makers evaluate environmental regulations and cleanup programs. These decisions involve balancing the costs of making improvements with their benefits. Costs include direct expenses, such as the taxes that go to cleaning up an area, as well as indirect expenses, such as higher prices that result from installing pollution control devices or reducing the supply of natural resources (e.g., virgin timberland). These analyses also consider economic benefits of environmental protection. Providing cleaner river water might reduce the costs of drinking water treatment and raise the market value of fish that can now be harvested from waters that were once too polluted for them, both of which make people better off economically.

However, not all the benefits are economic—that is, they are not all things that can be bought or sold for money. So policy makers cannot simply look at the "market value" of the benefit as a measure of its worth. An example of this type of benefit might be the pleasure people get from having a better view as they drive to work along the river's banks. As a result, CV studies ask people how they value those parts of the environment that aren't simple market goods.

The typical CV study selects a random sample of citizens, usually numbering between a few hundred and a couple of thousand. Each participant is shown a description of the proposed environmental improvement and then is asked how much they would be willing to pay for it.

TABLE 2 Full Text of Social Context Issue Description

Like any measurement procedure, contingent valuation has been the subject of considerable debate among scientists. This section describes some of the major issues in that debate. After you read it, we will ask you some questions about the procedure and its application to the Mon improvement.

Those who support contingent valuation see these advantages:

- A1. CV studies allow direct communication between the public and policy makers. Instead of having to listen to lobbyists, policy makers can receive a message from individual citizens, without any intermediate interpreters.
- A2. CV studies can ask about the specific issues that interest policy makers, rather than just about general attitudes toward the environment—of the sort found on public opinion polls.
- A3. CV studies can give citizens a chance to learn about the issues, in a concentrated and balanced fashion. Often, environmental issues are communicated in a confusing and incomplete manner. CV studies allow for informed decisions.
- A4. CV studies allow people to value the environment for non-market reasons. These reasons might include the value of simply knowing that a piece of the environment has been preserved or that other species are afforded rights, beyond their usefulness to humanity.

Those who doubt CV see these disadvantages:

- D1. We have no complete list of all the environmental changes to which we may eventually have to assign dollar values. As a result, it is hard to know how much we can afford to spend on any particular change. Participants in CV studies might spend too much on the specific changes that they are offered or hold too much back, not knowing what would come next.
 - D2. Each CV study asks a sample of citizens to evaluate one specific environmental change. However, the results are interpreted as though everyone in the overall population is willing to pay that amount, not just the people who answered the question. At the same time, other people in other studies are making commitments to pay for (or ignore) other environmental issues. Under these conditions, it is hard to know what overall commitment is being made.
 - D3. Some people find it morally repugnant to place a dollar value on the environment. For example, if one believes that an endangered species has the right to exist, how would one answer a CV question? Any answer, except infinity, implies that one would be willing to give up the species for that amount of money.
 - D4. Although authors of CV studies try to explain the issues, the task is a very complex one for people to perform in the time allotted. It is just too hard to absorb all the details and figure out the answer to such an unusual question, as paying for a specific piece of the environment.
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Note. Mon-Monongahela River.

Relative to between-group comparisons, within-subject designs increase statistical power, by comparing people to themselves, at different states of knowledge. However, they can also have artifactual impacts, perhaps inflating the influence of an independent variable by highlighting it, or perhaps deflating its influence by anchoring respondents on their initial responses. As a result, a second study used a between-subject design. Its *elicitation-first* condition followed the procedure of Study 1 (deleting a few ancillary questions to reduce administration time). Its *context-first* condition reversed the order

of the value elicitation and information tasks. Thus, these subjects first read about and evaluated CV, then read about and evaluated the cleanup.

Subjects

Study 1 involved 57 parents recruited through a local high school PTA. Study 2 involved 91 members of Pittsburgh-area Rotary clubs. Forms were administered during regular group meetings, and introduced as part of "a project to learn about people's values for environmental resources." We donated \$5 to the organizations for each completed form. A few respondents (3%) returned incomplete forms and were deleted from the data set. Refusal to participate in the group activity was unusual, even though it was requested before they knew more than the necessary minimum to secure informed consent. Thus, it seems plausible that our subjects include some individuals who would not normally participate in surveys.

Results

Willingness to Pay

Overall Judgments

Neither experimental manipulation of social context changed subjects' expressed willingness to pay for the proposed cleanup. In Study 1, subjects who had read the cleanup proposal, but were otherwise ignorant about CV, stated a median WTP of \$50. That value did not change after they received and considered information about CV. In the between-subject comparison of Study 2, median WTPs were \$50 for both the elicitation-first and the context-first groups.⁶ Only 18% of subjects changed their WTPs in response to the experimental manipulations (with half going up and half down).

Relevance of Task Features

Table 3 summarizes subjects' reports of the attention paid to the 10 features of the proposed transaction, combining the two studies (which had very similar responses). The second two columns show subjects who reported considering a feature, divided between those saying that it had affected their valuations (column 1) and those saying that it had not (column 2). The right two columns show subjects who reported not considering a feature, divided between those saying that considering it would have changed their valuations (column 3) and those who said that it would not (column 4). For example, line 1 shows that 28% of subjects reported paying attention to the fact that they already pay something to preserve the river's status quo, with half saying that it had affected their decisions and half not. Of those who reported not having paid attention, roughly twice as many said that considering that feature would *not* change their evaluations as said that it would (43% vs. 24%).

Overall, subjects reported paying much more attention to some features than to others, ranging from 28% (line 1) to 80% (line 10). When subjects reported considering a feature, they said that their decisions had been affected in about 60% of cases. When they reported having ignored a feature, a minority said that considering it would have changed their judgments. That proportion varied from 36% [= $24\% / (24\% + 43\%)$; line 1] to 6% [= $1\% / (1\% + 15\%)$; line 10]. Overall, they reported an intention to change their valuations in 23.7% of these cases and in 11.3% of all feature-valuation judgments. Overall, more than half the subjects reported ignoring at least one factor that they said was relevant to their WTP. Yet fewer than 10% of subjects revised their WTP following this opportunity for further reflection.

TABLE 3 Reported Use of Information in Generating Initial WTP

Feature	Reported attention to feature			
	Considered		Did not consider	
	Reported effect on valuation			
	Affected decision	Did not affect	Would change	Would not change
<i>Payment for status quo</i>	14%	14%	24%	43%
<i>Other goods being evaluated</i>	21	14	20	43
Other pollutants in river	15	20	15	45
Years of payment	36	18	14	28
<i>Precedent</i>	24	12	13	47
Total program costs	39	23	8	25
<i>Fairness of C/B allocation</i>	31	17	9	39
<i>WTP of others</i>	13	19	6	59
Personal benefits	49	26	3	20
Major societal benefits	60	20	1	15

Note: Italics indicate social-context features. $n = 148$ C/B, cost-benefit.

The 5 social-context features in this set of 10 features are italicized in Table 3. Overall, subjects reported considering these features 36.8% of the time and having their evaluations influenced on 56.0% of those occasions. When they reported initially neglecting social-context features, they said that paying attention would affect their evaluation 23.7% of the time. Thus, the treatment of social-context features resembled that of the five features focused on the good and payment. These features matter to some people, but are often neglected.⁷

Effects of Social-Context Information

Legitimacy of the Procedure

After reading the social-context information, subjects answered the question, "In general, how would you describe your feelings about using CV in making public policy decisions?" The scale was anchored at 1 = Strongly oppose and 5 = Strongly support. Subjects' mean response of 3.5 suggests moderate satisfaction with CV.

Table 4 shows responses to the question, "In general, if you were asked to participate in a study of this type, would you agree?" Agreement rates are reported as a function of (a) whether they had received a brief or full description of CV and

TABLE 4 Future Willingness to Participate "in a Study of This Type"

Experience with valuation task	Social-context information (Description of CV)	
	Brief	Full
Had not evaluated river cleanup	79%	79% ^a
Had evaluated river cleanup	65	55 ^a

^a Means sharing a common superscript differed significantly at the $p < .05$ level.

(b) whether they had already produced a WTP value. In each cell, most respondents were willing to participate. However, the greater subjects' familiarity was with the task, the less they were willing to participate, dropping from 79% to 55% ($p < .02$). Analysis of variance (ANOVA) revealed no significant main effect for amount of context information. However, subjects who had completed the valuation task were significantly less willing to participate in future studies than were those who had not (60% vs. 79%; $p < .05$). Subjects who had done the evaluation seemed more sensitive to context information (10% difference vs. 0% difference), although the interaction was not statistically significant.

Table 5 shows the effects of task experience on subjects' ratings of the persuasiveness of the eight social-context issues. Subjects who had not produced WTP evaluations found the four advantages to be more compelling than the four disadvantages. Having performed the WTP task led to somewhat lower ratings for the advantages and somewhat higher ratings for the disadvantages (although, on average, the former were still more convincing than the latter).

Discussion

Transactions occur in a social context, which can add meaning to the exchange of a good and payment. Two studies examined the impact of providing social context for CV-like transactions, eliciting WTP judgments for a proposed river cleanup. Subjects attributed similar relevance to these features and to features characterizing the good and payment—in terms of what they reported considering and what they wished that they had considered (Table 3). Subjects found the arguments supporting the legitimacy of this social context to be more convincing than those opposing it, although that margin declined some with direct experience in performing the task (Table 5). The combination of providing judgments and learning about social context reduced their willingness to participate in such studies in the future, although a majority were still willing to do so (Table 4). CV studies often elicit large numbers of abstentions and other protest responses, compared to other surveys, in which respondents typically comply with the task once they have agreed to participate (Mitchell and Carson 1989). Possibly,

TABLE 5 Evaluation of Issues

Item	Before valuation task	After valuation task
Potential advantages		
A1. Direct communication	3.7	3.8
A2. Specific issues	3.9 ^a	3.5
A3. Chance to learn	3.7	3.5
A4. Nonmarket values	3.5 ^a	3.1
Potential disadvantages		
D1. Incomplete list of goods	3.0	3.4 ^a
D2. Vague total commitment	3.2	3.7 ^a
D3. Morality of pricing nature	2.4	2.6
D4. Issues too complex	2.9	3.4 ^a

Note. 1 = Not at all convincing, 5 = Extremely convincing. ^aSignificant at $p < .05$

those protests reflect, in part, some of the same discomfort with the methodology observed here.

However, these experiences were unrelated to the judgment that motivates CV studies: Median WTP was \$50, whatever exposure subjects had had to social context. Although they often expressed a desire to respond to neglected features (Table 3), subjects seldom did so when allowed to revise their judgments. One possible explanation of this insensitivity of WTP is that the social-context features emphasized here affected comfort with the procedure (as a way to elicit citizen values), but not the value of the cleanup. In that case, insensitivity is appropriate, and should increase confidence in these WTP values, as a measure of benefit. However, it is also possible that subjects were unable to accommodate these specific social-context issues into their WTP task, despite their avowed relevance. If so, then this insensitivity would be akin to that of a failed scope test. Examining such possibilities would require more intensive elicitation procedures, exploring the implications of individual respondents' value systems for their expressed valuations (Fischhoff et al. 1999; Schkade and Payne 1994).

There would, however, be some reason for concern if future studies consistently found WTP insensitive to social context features that subjects considered relevant. Such insensitivity could be akin to the scope-test results that motivated the "contribution model" proposed by Kahneman and Knetsch (1992). According to this account, when subjects cannot translate their value for a good into hedonically equivalent changes in wealth, they provide general expressions of concern, little related to an economic interpretation of WTP. Conceivably, some of our subjects provided shallow (and hypothetical) dollar values in order to make a statement supporting citizen participation in environmental policymaking. Indeed, subjects who rated CV's advantages more highly were less likely to state a \$0 WTP (3% vs. 25%, for those below and above the median; $p < .01$, χ^2 test).

At the least, these other judgments suggest that subjects have more to say than is captured in their WTP estimates. For example, policymakers might want to know how willing respondents are to stand by their answers and what respondents view as the strengths and weaknesses of the elicitation procedure, given different degrees of familiarity with it. Conceivably, as task complexity mounts, some respondents may want help in deciding what to say—to the point of wanting someone else to respond for them, in cases where they feel that they lack the time, attention, or insight to acquit themselves properly. Representative government is, in part, a response to such feelings.

Nonetheless, despite subjects' difficulties with the task, they did not reject it out of hand (Table 4). Even at the end, they rated the advantages as slightly more convincing than the disadvantages (Table 5). Possibly, the social context that we provided helped to keep them on task, evoking a perceived social responsibility to provide some value. Conceivably, better methods will allow respondents to articulate their values better. We suspect that this will require a more interactive process than ours—or than seems possible with conventional survey methods (Beattie et al. 1998; Fischhoff 1997; Gregory et al. 1993; McDaniels 1996).

The expected role of social context in those studies should be shaped strongly by the general literature on the roles of social context. Conversely, such studies can contribute to that literature, by examining people's responses to the novel tasks posed by CV (or other stated preference methods). The generality of our finding is, of course, limited by the particulars of our procedure. We sought to design a study falling within the family of CV procedures, drawing heavily on Smith and Desvousges's (1986) previous work on the Monongahela River. We recruited relatively well-educated and

motivated subjects. We tried to provide a balanced account of CV's advantages and disadvantages. Our goal was to learn about the role of social-context variables in valuation processes, not to make a categorical judgment regarding CV's validity. Although our subjects tended to favor CV and its social context, our main conclusion is that such questions should be routinely asked, rather than that these answers would be universally found.

In the meantime, researchers will have to provide guidance to policymakers regarding how to interpret evaluations that respondents themselves are sometimes hesitant to take too seriously. Reluctance to participate in a study might represent principled rejection of the task by subjects who decide that it is an illegitimate method for guiding societal choices; that situation would have no obvious remedy. Or, it might reflect the difficulty that subjects experience in constructing answers to otherwise legitimate questions; those objections might be reduced with improved elicitation procedures (e.g., more transparent questions, better opportunities to deliberate, greater access to relevant background information). Our procedures attempted to assess the need for such caution. We believe that they can inform policymakers regarding the proper uses of study results, complementing the picture created by the pattern of sensitivities and insensitivities in the data.

Notes

1. In addition to being valued in its own right, social context may provide cues to the good's value (Fischhoff 1998). For example, an unsavory partner may devalue a transaction not only by making it unpleasant, but also by creating uncertainty about its outcome (e.g., "If this used car is really so pristine, why is the seller pushing me so hard to buy it?"). Conversely, a high-status partner may add value to the association as well as increase the perceived worth of the good (e.g., "If they went to all this trouble to ask about the cleanup, it must be valuable.")
2. Experimental economists have demonstrated the power of such norms. In single-iteration "ultimatum games," one subject proposes a way to divide a sum of money with a second. If the proposal is accepted, both subjects are paid accordingly; if it is rejected, neither receives anything. Behavior in experiments routinely violates the game-theoretic prediction that the proposer will offer a trivial amount, which the other player will accept. In fact, proposers typically offer about 30% of the payoff, while receiving subjects routinely reject offers as great as 20% (Guth et al. 1982). Roth (1995) notes that participants may not be trying to be *fair*. Average offers decrease over additional iterations, which clarify the game's dynamics—although some offers are still rejected in principle.
3. We use the phrase "CV-like" to recognize the diversity of tasks and nomenclature in this domain, despite attempts at standardization (Arrow et al. 1993; Mitchell and Carson 1989).
4. This would also fit the pattern of reduced bids in successive iterations of tasks in experimental economics (see note 2).
5. Initially, we planned to replicate the landmark Desvousges et al. (1987) Monongahela River cleanup CV study. However, we discovered that the Mon was so much cleaner now that the earlier stimuli were inappropriate (Koryak 1990). As a result, we addressed the largest current problem (Hornsberger 1990).
6. Participants in Study 1 were more likely to adjust their WTP (37%) than were participants in Study 2 (7%). There is no way of knowing whether this reflected something about the subject populations, something about their respective tasks, or chance.
7. We make no claim that these are definitive sets of either class of features, the determination of which would require a combination of normative analyses and descriptive research (Fischhoff 1993; 1997; Fischhoff and Furby 1988; Fischhoff et al. 1999).

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