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**When does a referent problem affect willingness
to pay for a public good?**

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When does a referent problem affect willingness to pay for a public good?

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ABSTRACT

In two studies we examined the willingness to support action to remedy a public problem. In Study 1 people were asked whether they would financially contribute to solution of a public problem. In Study 2, people were asked whether they would sign a petition to support a public action. The aim was to test whether the willingness to support solution of a public problem is affected by the type of problem that is used as the referent. We hypothesized that the willingness to support a public action is lower when evaluated in the context of a high - as opposed to a low - importance referent problem (importance contrast effect). We also hypothesized that the importance contrast effect is tied to the perceived relatedness between the target and referent problems. The importance contrast effect should be found only when the two problems relate to different category domains. The findings bear out this prediction.

Keywords:

Willingness to support, joint evaluation, referent problem, category-bound thinking

Introduction

Public action involves a wide range of activities which vary in kind, scope, effort and importance. The evaluation by individuals of a public action is an important determinant of the extent to which this action serves the public interest. A large body of recent research demonstrates that the interpretation of responses to such evaluation questions, particularly questions concerning willingness to pay (WTP), do not conform to economic principles as applied to public goods. On the one hand, these evaluations are not appropriately sensitive to factors that should affect economic value, and on the other, they are affected by factors that have no normative role. Thus, for example, responses are not sufficiently sensitive to quantitative aspects of either the problem or the proposed action (reviewed in Baron, 1997; Kahneman, Ritov, and Schkade, 1999), but they are unduly affected by the context in which the question is embedded.

This study focuses on the underpinnings and the implications of the effect of the context of judgment on the willingness to support solution of a public problem. The effect of context of judgment on the evaluation of a public problem was studied in earlier research by comparing preferences among pairs of public problems typically consisting of a human health problem and an environmental problem not directly affecting human health, when the problems were judged separately by different subjects and when they were judged simultaneously by the same subjects. For these pairs, judgment in isolation yielded preference for action addressing the environmental problem, while simultaneous evaluation, which necessarily juxtaposed the two problems, led to a preference for dealing with the human problem

first. Thus, for example, Kahneman and Ritov (1994) found that people were willing to pay more to save dolphins than to prevent skin cancer in farm workers when the two cases were presented separately; but the preference reversed when they were judged simultaneously. A similar kind of reversal also occurs for pairs of goods comprising an environmental improvement and a consumer good (Irwin, Slovic, Lichtenstein, and McClelland, 1993).

Kahneman and Miller (1986) argued that most judgments involve an implicit comparison of the stimulus with its spontaneously evoked set of alternatives, or counterfactuals. Although in many cases the generation and use of counterfactuals involve conscious thought processes, in many other cases counterfactuals are automatically and unconsciously generated (Kahneman, 1995).

The notion of an evoked set extends Garner's earlier research on the processing of information and structure (1974). According to this theory, as the organism perceives a stimulus, an inferred set of stimuli, including the target stimulus, is constructed. On this account, the stimulus properties are significant only insofar as they are perceived as the dimensions that define a set of stimuli. For example, the linearity of a pattern of lines is a perceived property of the pattern only if linearity is considered a dimension along which stimuli may vary. Consequently, the inferred set reflects the subject's encoding of the stimulus properties according to his/her expectations about possible variations in these properties.

Following Kahneman and Ritov (1994), in the case of a public problem such as the above-mentioned threat to dolphins, the evoked set would include problems within the problem's natural domain. Thus, for example, considering the threat to dolphins is likely to evoke threats to other animal species, or similar environmental problems. Consequently, evaluation of the dolphin problem in isolation will reflect its rank order within this evoked set. When the dolphin problem is presented simultaneously with the problem of skin cancer among farmers, the latter problem imposes a new context. In this context, one problem, that of skin cancer, presumably belongs to a more important category than the other problem does. Consequently, the relative importance of the two categories receives more weight than it does in separate judgments, resulting in a stronger preference for the human health problem.

As mentioned above, an isolated problem spontaneously evokes a set of other problems from the same domain or category. We can further assume that the judgments made by people within a natural category are quite orderly. They typically reflect the similarity structure of the evoked set. As research on categorization in the domain of public problems suggests (Kahneman, Ritov, and Schkade, 1999), although the boundaries of informal categories are fuzzy, there is considerable agreement on the relative rank order within the category. Thus, for example, within the set of problems spontaneously evoked when considering the threat to dolphins, a threat to elephants is likely to be ranked higher than the threat to dolphins, while a threat to wild goats will probably be ranked lower. The willingness to pay to save dolphins, is expected to be lower than that for elephants and higher than that for goats. The coherence of relative valuations within a given homogenous context has also been demonstrated in a different domain, namely the willingness to pay to avoid an unpleasant experience (Ariely, Loewenstein and Prelec, 2003).

The aim of the present study is to explore the cognitive process underlying the joint evaluation. We do that by examining the effect of a referent problem on the evaluation of a target one. Previous research has mostly examined the joint evaluation of problems from categories differing in relative importance (Irwin et al, 1993; Kahneman and Ritov, 1994; Bazerman et al., 1999; Bonini, Biel, Gärling and Karlsson, 2002; Sunstein, Kahneman, Schkade and Ritov, 2002). In these cases, as detailed earlier, it is thought that judgment primarily involves a weighing of category importance. However, the joint evaluation of problems from different categories may differ from the joint evaluation of problems from the same category, even when the respective categories do not obviously differ in importance. In the present study we argue that when people consider two problems from the same domain, the first problem encountered ("referent problem") creates a context of judgment for the second one ("target problem"). The context of judgment for the evaluation of the target problem relates to the evoked set of exemplars that belongs to the category domain of both problems.

Garner's theory of the evoked set implies that introducing a referent problem before evaluation of the target problem should have little or no effect if both problems are exemplars from the set naturally evoked by the referent. The target, in this case, is consistent with expectation.

Thus, the evaluation of the target problem is a function of its relative importance within the evoked set. The presentation of a high rather than low-important referent problem should not affect the evaluation of the target problem because the referent and target problems evoke a similar set of exemplars. This is due to the fact that the two problems refer to the same category domain.

However, when a problem from a different domain is provided as a context for the evaluation of the target problem, the pairing of the two problems is unexpected, and attention is drawn to the contrast in their relative importance. That is, the evaluation of the target problem reduces to the judgment of the relative importance of the two problems. As a consequence, the evaluation of the target changes as a function of the relative importance of the referent problem: The evaluation of the target is higher when it is compared to a lower than higher relative important referent problem.

This does not mean that the perceived contrast between the two problems is not affected by the relative importance of their respective categories. What we assume is that people do not generate a “super-category” by integrating the two sets of exemplars that relate to the two different domains.

The role of the contrast in importance between different problems has been demonstrated in recent contingent valuation studies (Bonini et al., 2002; Sunstein et al., 2002). Bonini et al., for example, found that WTP for a public good was lower when the context of judgment related to a high- rather than a low-value product.

In sum, we predict that evaluation of a target problem will be affected by the referent problem introduced prior to the target only if the natural domain of the referent is different from the natural domain of the target. In this case, the judgment is expected to be affected by the contrast in importance between the two problems. This hypothesis was tested in the two experiments now described.

The usual practice in contingent valuation surveys designed to assess the population’s evaluation of a public good is to elicit the respondent’s subjective willingness to pay (WTP) for the good in question. However, the reliability of the resulting aggregate WTP measure has been the subject of much debate (see for example Diamond and Hausman, 1994; Fischhoff, 1991; Kahneman et al., 1999). In a recent study addressing the question of WTP reliability, Jorgensen, Syme, Smith, and Bishop (2004) conclude that the dichotomous decision whether or not to contribute anything at all (WTC) is more reliably measured than is the distribution of open-ended WTP bids. In light of these findings, in Study 1 the focal point of our analysis, and the basis for our conclusions, is the response (yes/no) to the question about the willingness to contribute (WTC), although we also report WTP responses. In Study 2 we analyze the response (yes/no) to the question concerning the respondent’s willingness to sign a petition.

Study 1

Two sets of problems were used in this study, each from a different domain. Each set included three problems: a target problem, and a low and high-importance referent problem. Each target problem was presented with each of the other four referent problems (two from each domain) for an equal number of times. Thus, across all eight conditions the referent problems were the same, although for half of the time the target and referent problems belonged to the same domain, while for the rest of the time the target was a problem from one domain and the referent a problem from a different domain. We predicted that the importance ranking of the referent problems (high vs. low) would affect the WTC for the target only in the dissimilar condition.

Method

Pilot study. In order to select the two sets of problems, we ran a pilot study with 16 triplets of public problems. Two groups of respondents (44 Hebrew University students participating in each group), received eight triplets each (24 problems in total), and rated the importance of each problem on a 10-point scale ranging from “very little importance” to “very high importance”. Two sets that best fitted the requirements of the experimental design were selected for the main experiment. All t-tests (comparing the target to the higher and lower referent problems) were statistically significant.

Main study. Three hundred and six Hebrew University students participated in the study. Each questionnaire included only one referent and one target problem. As said above, each of the two target problems was presented with each of the other four referent problems for an equal number of times. Hence the experiment included eight conditions: similar-high, similar-low, dissimilar-high, and dissimilar-low for each of the two target problems.

All the questionnaires asked the subjects to imagine that they had received a letter asking them for a financial contribution to address a specific public problem which was described by a single sentence. They were asked to indicate first whether they would make the contribution (WTC) by circling the word Yes or No, and if so, how many euros they would be willing to give (WTP).

The referent problem was always introduced first. After responding to the questions pertaining to this problem, the participants were asked to imagine that they received another letter asking for a contribution to the target problem. Again, the participants responded by expressing their WTC and WTP.

Results

Table 1 sets out the WTC and the WTP for the target problems in each of the four conditions.

Table 1: Percent of non-zero contributors (WTC), and mean willingness-to-pay (WTP) for the Target Problems across the four conditions.

Type of Referent Problem		WTC	WTP
Category	Importance Ranking		
Same domain of target problem	High	34%	13.61
	Low	38%	14.43
Different domain of target problem	High	19%	11.93
	Low	40%	21.83

The majority of participants did not want to contribute. In the same-domain context, the percentage of WTC for the target problems did not differ between the high- and the low-importance referent problem conditions (34% and 38% respectively). However, in the different-domain context the percentage of WTC for the target problems was lower in the high- than in the low-importance referent problem conditions (19% and 40% respectively).

We ran a log-linear analysis to test the expected interaction between the factor Relatedness (same vs. different domain) and the factor Importance of the referent problem (high vs. low importance).

The results from the log-linear analysis showed that the parameter of the factor WTC (yes. vs. no) was statistically significant ($z = 6.08, p < .001$). The null contribution was more frequent than the positive one (67% and 33%, respectively). The parameter of the interaction WTC by Target problem (scout movement expansion vs. Hanevi'm Street buildings conservation) was also statistically significant ($z = 2.44, p < .05$). The positive answer was more frequently associated with the scout movement expansion (39%) than with the Hanevi'm Street buildings conservation (26%) problem.

The parameter of the interaction WTC by Importance of the referent problem (High VS. Low) was statistically significant ($z = 2.56, p < .05$). The positive contribution was more frequently associated with the low- (39%) rather than the high-importance (27%) referent problem. This interaction was not affected by the type of Target problem because the parameter of the interaction WTC by Importance by Target was not statistically significant ($z = .68, p = .50$). However, as expected, the parameter of the interaction WTC by Importance by Relatedness was statistically significant ($z = 1.67, p < .05$, one-tailed). As shown in Table 1, the interaction WTC by Importance was affected by the relatedness between the referent and target problems (same vs. different category domain). The parameter of the four-term

interaction WTC by Importance by Relatedness by Target was not statistically significant ($z = 1.30, p = .19$).

Study 2

The purpose of this study was to test whether the relatedness by importance interaction previously found extended to political support for public action. We focused on a situation that frequently occurs in everyday life: deciding whether or not to sign a petition for public action.

Method

We used the same procedure, stimuli and experimental design of Study 1. The only difference was in the evaluative task. In this Study, the participants had to decide whether or not to sign a petition. Three hundred and eighty-two Hebrew University students participated in the study. After filling in the questionnaire, participants were thanked and given a cookie for their participation.

Results

Table 2 sets out the percentages of willingness to sign (WTS) for the target problems in each of the four conditions.

Table 2: Percentages of willingness to sign (WTS) for the Target Problems across the four conditions.

Type of Referent Problem		WTS, Yes answer
Category	Importance Ranking	
Same domain of target problem	High	48%
	Low	49%
Different domain of target problem	High	32%
	Low	53%

With the exception of the condition “different domain and high-importance referent problem” (32%), nearly half of the participants were willing to sign the petition in the other three conditions.

In the same-domain context, the WTS for the target problems was substantially the same between the high and the low-importance referent problem conditions (48% and 49% respectively). However, in the different-domain context the WTS for the target problems was lower in the high- rather than the low-importance referent problem conditions (32% and 53% respectively). This finding closely replicates that with the WTC reported in Study 1.

We ran a log-linear analysis to test the expected interaction between the factor Relatedness (same vs. different domain) and the factor Importance of the referent problem (high vs. low-importance).

The results from the log-linear analysis showed that the parameter of the factor WTS (yes. vs. no) was not statistically significant ($z = 1.71, p = .09$). The percentages of negative and positive answers were 54% and 46% respectively.

The parameter of the interaction WTS by Target problem (scout movement expansion vs. Hanevi'm Street buildings conservation) was statistically significant ($z = 2.26, p < .05$). The positive answer was more frequently associated with the Hanevi'm street buildings conservation (51%) than with the scout movement expansion petition (40%).

The parameter of the interaction WTS by Importance of the referent problem (High VS. Low) was statistically significant ($z = 2.28, p < .05$). The positive answer was more frequently associated with the low- (51%) rather than the high-importance (40%) referent problem. This interaction was not affected by the type of Target problem because the parameter of the interaction WTS by Importance by Target was

not statistically significant ($z = .11, p = .91$). However, as expected, the parameter of the interaction WTS by Importance by Relatedness was statistically significant ($z = 1.93, p < .05$, one-tailed). As shown in Table 2, the interaction WTS by Importance was affected by the relatedness between the referent and target problems (same vs. different domain). The four-terms interaction WTS by Importance by Relatedness by Target was not statistically significant ($z = .24, p = .81$).

Discussion

The research presented here sought to examine the effect of a mixed category context (dissimilar domains) on the stated willingness to financially or politically support public action.

Previous research focused mostly on the joint evaluation of problems belonging to differentially important categories. In the joint evaluation of such problems the relative importance of the problems plays a major role. The research reported here compared the joint evaluation of problems belonging to the same domain and problems belonging to different domains, while controlling for their relative importance.

In two studies we found that support for solution of a target public problem was not substantially modified when it was judged separately, in the context of another problem from the same domain or a more inclusive one. However, in the context of dissimilar problems the support for solving the target problem changed in the direction predicted by contrast. The willingness to financially or politically support solution of the target problem (and to a lesser extent the stated amount of financial contribution) was lower in the context of a high-ranking referent problem than it was in the context of a low-ranking one.

We propose an account of these findings based on the notion that the evaluation of a public problem is not just a function of its perceived importance, but rather of its importance relative to a norm.

Specifically, we argue that the evaluation of the target problem in the context of another problem from the same domain is a function of its relative importance within the evoked set of exemplars that belong to that category domain. However, in the context of dissimilar problems, the evaluation of the target problem reduces to the judgment of the relative importance of the two problems. This does not mean that the perceived contrast between the two problems is not affected by the relative importance of their respective categories. What we assume is that people do not generate a “super-category” by integrating the two sets of exemplars that relate to the two different domains.

Earlier research suggested that separate evaluations, more than simultaneous ones, tend to be dominated by spontaneous affective reaction (Ritov and Kahneman, 1997; Bazerman, Moore, Tenbrunsel, Wade-Benzoni, and Blount, 1999; Slovic, Finucane, Peters, and MacGregor, 2002). In a recent study, Ritov and Baron (2006) obtained direct evidence that emotions do indeed play a more prominent role in separate than in comparative evaluation. These effects were found regardless of whether the problems evaluated jointly belonged to the same category or to different categories.

Taken together the above mentioned findings suggest that simultaneous evaluation of multiple problems tends to yield a more rational, perhaps less affect-driven evaluation. Against this background, it is important to note that our findings imply that the introduction of a broader context does not inevitably give rise to a more rational judgment. Indeed, if stability is a feature of rationality, then our results show that introducing an unexpected referent problem yields a less, rather than more, stable judgment of the target problem. Although category-bound thinking is a major source of incoherence in moral or legal judgments (Sunstein, Kahneman, Schkade, and Ritov, 2002), the tendency to prefer any measure that would induce cross-category comparison should be regarded with caution. In some cases, as in our studies, the cross-category context itself may give rise to incoherence.

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