Judging risk behaviour and risk preference: The role of the evaluative connotation of risk terms

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Abstract

Two experiments investigate the impact of the evaluative connotation of risk terms on the judgment of risk behaviour and on risk preference. In the first experiment we focus on (1) the evaluation congruence of the risk terms with a general risk norm and (2) with subjects' individual risk preference, and its effects on the extremity of judgments of risk behaviour. In the second experiment we address (3) the effects of evaluative connotation of risk terms on risk preference.

In the first experiment subjects were presented with four decision problems, each with a risky and a cautious decision option, and were required to judge options. Results showed that the judged discrepancy between the risky and cautious option was larger on scales which were evaluatively congruent with the general risk norm for that specific decision problem or with subjects' individual preference. More specifically, in decision problems for which there was considerable consensus about the risk-norm judgments were more extreme on scales which were congruent with the risk norm, in those problems lacking a clear-cut risk-norm judgments were more extreme on scales congruent with subjects' individual risk preference.

In the second experiment we studied the reverse relation between the evaluative connotation of risk terms and risk preference. This experiment demonstrates that using evaluatively biased risk terms can affect risk preference. Using terms which imply a positive evaluation of risk-taking and a negative evaluation of risk avoidance led to increased risk preference, and vice versa. Results are discussed in the context of accentuation theory.

INTRODUCTION

A risky option of a choice problem could be described as reckless or as daring. Similarly, one could describe a risk-avoiding option as careful or as cowardly. This

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paper deals with this issue; i.e. the effects of the way risks are described on people's evaluation of risk behaviour and on their willingness to take risks. First we focus on the evaluative congruence of the language with a general risk norm, and study the effects on the extremity of judgment. Second, we study the effects of evaluative congruence with subjects' individual risk preference on judgment. Finally, we also address the effects of evaluative language on risk preference.

The present study is related to research on the effects of salience upon judgment. Tajfel and Wilkes (1963) used priority and frequency of appearance of an attribute in free descriptions of other people as indices for salience. In their study they validated the assumption that those attributes mentioned early and frequently (e.g. the salient attributes) are relatively important to the subjects. Salience could be described as attributes or dimensions which are perceived as prominent or important and which come to mind relatively easily. Salience can be dependent on 'internal' factors, such as one's own attitude or preference (e.g. Van der Pligt and Eiser, 1984). Salience can also be determined by 'external' factors, such as the distinctiveness or prominence of a certain aspect or dimension in the presentation (e.g. Taylor and Fiske, 1978).

One of the effects of salience concerns extremity of judgment. Based on general findings in quantitative judgments Tajfel and Wilkes (1963) showed that judgments tend to be more extreme on dimensions which are salient to the subject than on nonsalient dimensions. They related these findings to Tajfel's accentuation theory (1957). The basic principle of accentuation theory is that judgments given on a specific dimension (the focal dimension) might also be affected by other (peripheral) dimensions. Tajfel demonstrated that judgment on the focal dimension 'size' of coins was affected by the peripheral dimension 'value'. Differences in size between valued stimuli (coins) were overestimated relative to valueless stimuli (Tajfel and Cawasjee, 1959). In attitude judgment favourability towards the attitude issue is usually the focal dimension. A specific example of a peripheral dimension concerns the value connotation of scale labels describing the focal dimensions. The value connotation serves as a peripheral dimension in interaction with subjects' preferences. According to Eiser and Stroebe (1972), where there is a simple predictable relationship between focal and peripheral dimensions the judgments tend to be more extreme.

Eiser and Mower-White (1974a, b) demonstrated that subjects give more extreme judgments on dimensions where the peripheral dimension 'value connotation' was related to the focal dimension 'favourability'. In other words, subjects gave more extreme judgments on dimensions which were evauatively congruent with their own attitude position. In one of these studies (Eiser and Mower-White, 1974a), 12- to 13-year-old subjects were split in a pro-attitude group and an anti-attitude group concerning the issue of adult authority over children. All subjects were presented with 10 statements concerning the general attitude-issue. Subjects were told that these were comments made by young people, and were requested to rate each of the imaginary adolescents on 10 bipolar scales. In five of these scales the presumed pro-authority description implied a positive evaluation (Pro +), and the presumably more anti-authority term was evauatively negative (Anti −). Examples of the Pro+/ Anti− scale are: Patient–impatient, and obedient–disobedient. The remaining five scales implied the reverse relation between description and evaluation, examples of the Anti+/Pro− scales are: Progressive–old fashioned, and adventurous–unadventurous. Pro-subjects gave more extreme ratings on the Pro+/Anti− scales than on the Anti+/Pro− scales, and the reverse applied to the anti-adult authority subjects.
In other words, subjects gave more extreme ratings on scales evaluatively congruent with their own position, i.e. on dimensions which were more salient to them (Van der Pligt and Eiser, 1984).

Eiser (1976) investigated whether these findings could be extended to the domain of risk-taking. In this study Eiser did not address the impact of the evaluative congruence of the scales with subjects' individual position (i.e. risk preference) but focused on the congruence with the general risk 'norm' about each decision problem. In his study subjects' general preference for the risky or the cautious decision alternative determined the 'risk norm'. In other words, decision problems in which most subjects preferred the risky alternative were defined as problems with a 'risky norm', and a general preference for the cautious alternative is defined as a 'cautious norm'. Eiser predicted that the risk norm for each particular decision problem determines which 'risk dimensions' are salient. In decision problems in which risk-taking was generally seen as the preferred alternative, subjects were expected to differentiate more between the risky and cautious alternatives on dimensions with an evaluatively positive term denoting the risky extreme and an evaluatively negative term denoting the cautious extreme, than on dimensions with the opposite value connotation. The reverse effect was expected for decision problems in which the cautious alternative was generally seen as most appropriate. The results supported these predictions; in the decision problems with a risky norm the judged discrepancy between the two alternatives was larger on the risk-positive ($R^+$), cautious-negative ($C^-$) scales (e.g. courageous—cowardly), while in problems with a cautious norm the judged discrepancy was larger on the risk-negative ($R^-$), cautious-positive ($C^+$) scales (e.g. foolhardy—careful).

Eiser's (1976) results thus indicated that subjects give more extreme ratings due to the peripheral dimension value connotation. The degree of discrepancy between judging the risky and cautious alternative was a measurement for extremity. The results show that judging risk behaviour can be affected by the value connotations of the response-scales as a function of the 'risk norm' for the decision problem. The measurement of risk norm consisted of the majority preference for the risky or cautious decision alternative. The degree of consensus about the risk norm was not taken into consideration in this study. In the present study we will pay attention to this aspect. Eiser did not study the judged discrepancy between risky and cautious behaviour as a function of the congruence between the evaluative scales and subjects’ individual risk preference. In our first experiment we will address this issue and investigate whether both the risk norm and the individual risk preference affects the discrepancy between judgments of the two alternatives. In other words, in that experiment we will investigate the effects of salience due to 'internal' factors; i.e. evaluative congruence between (existing) preference and (its effects on the use of) language.

In this article we also focus on the reverse relation. The second experiment addresses the issue of how 'externally' induced salience can affect preference; i.e. evaluative congruence between language (to be used) and (the effects on) preference. As noted salience can be dependent on 'external' factors such as distinctiveness or prominence of a dimension in the presentation. A relatively subtle manipulation of external factors affecting salience of certain dimensions concerns the evaluative connotation of the terms used to describe the problem. This issue has been studied in the domain of attitudes. Findings show that the use of evaluatively biased language can induce attitude change. Eiser and his associates (Eiser and Mower-White, 1974b; Eiser and
Ross, 1977; Eiser and Pancer, 1979) found that subjects tend to change their attitude in the direction of the evaluation implied by the salient dimension, to create (or restore) consistency. For example in the Eiser and Ross study (1977), subjects were requested to write an essay on the issue of capital punishment. Subjects had to incorporate words in their essay which conveyed clear negative evaluations of either capital punishment (e.g. callous, sadistic) or, the abolitionist position (e.g. oversentimental, starry-eyed). Results indicated that subjects using words implying a negative evaluation of capital punishment changed their attitude in the anti-capital punishment direction, and subjects using words implying a negative evaluation of the abolitionist position changed their attitudes in the pro-capital punishment direction. In the second study in this article we focus on the impact of using evaluatively laden terms on risk preference.

Summarizing: The present study investigates whether (1) the judged discrepancy between two alternatives is larger on scales which are evaluatively congruent with the risk norm for that particular problem than on scales incongruent with the norm, (1a) this effect is only expected as far as there exist substantial consensus about the risk norm, (2) the judged discrepancy between two alternatives is larger on scales evaluatively congruent with subjects individual risk preference than on scales incongruent with their individual risk preference, and (3) using evaluatively laden terms affects risk preference. This last question will be addressed in the second experiment.

**EXPERIMENT 1**

**Method**

**Subjects**

Subjects were 120 first year psychology students (30 per cent male and 70 per cent female) of the University of Amsterdam. They participated for credit points.

**Procedure**

Subjects were presented with four decision problems in random orders. Each of the problems involved a choice between two options: One cautious option with a certain outcome, and one risky option with uncertain outcomes. After reading each problem subjects were requested to judge a person who would choose for the cautious option, and a person preferring the risky option. Half of the subjects were presented with four scales describing risky behaviour in positive terms (R+) and cautious behaviour in negative terms (C−), and half of the subjects received scales describing cautious behaviour in positive terms (C+) and risky behaviour in negative terms (R−). Next subjects were asked whether they would prefer the cautious option or the risky option.

**Material**

The four decision problems were in different domains, describing one decision option with a certain outcome, and one option with uncertain outcomes. Each problem
description presented one person preferring the risky option (RT: risky target) and one person preferring the cautious option (CT: cautious target). The decision problems are summarized below:

1. X and Y are both buying a cheap second-hand stove. A possible danger of old stoves is that they might emit carbon monoxide. It is possible to test the stove for an extra (small) amount of money. To be sure, Y decides to have the stove tested. X thinks it will not be that bad, and decides against the test.

2. X and Y are travelling by train through Italy and are about to return home. They both intend to make use of a fast intercity connection. Just before leaving it is announced that on this very train line services might be interrupted due to strikes. On an alternative, but much longer route, the train will definitely not be delayed. X decides to take the shorter route, taking the chance to be hit by the strike, and Y decides to take the longer but certain route.

3. X and Y are on a skiing holiday, they are both good skiers. The snow conditions are poor. Especially downhill to the village, the slope is icy and rocky. Going to the village X decides to ski downhill, but Y thinks it too dangerous and takes the ski-lift back to the village.

4. X and Y are playing a game of chance with several other people. So far, they both have won 100 guilders. In the next round they have to play for double or nothing. X decides to play the next game, while Y decides to quit.

Subjects were presented with four adjectives. They were requested to indicate to what extent each of the adjectives applied to the target person (X) preferring the risky option (RT). Additionally, subjects rated the target person (Y) preferring the cautious option (CT) on the same scales. The order of rating RT and CT was randomized. Scores were given on 7-point scales ranging from not at all (1) to very much (7).

In the risk-positive, cautious-negative (R+/C−) condition the scales include two R+ (enterprising and daring) and two C− (timid and anxious) scales and the scales in the cautious-positive, risk-negative (C+/R−) condition included thoughtless, reckless, careful, and considered. This selection was based on a pre-test, asking subjects (N = 143) to indicate the evaluation of each of a series of adjectives and the extent to which each of the adjectives described cautious versus risky behaviour. Table 1 presents an overview of the evaluative connotation and descriptive meaning of the 12 adjectives used in the experiments presented in this article. Eight of these adjectives are used in Experiment 1.

Subjects were requested to indicate which of the two options they preferred; the risky or the cautious option. Next, they were asked how certain they felt about their option choice, ranging from very uncertain (1), to very certain (7).

Results

First we investigated subjects’ risk preference in the four decision problems. Risk preference for the risky or cautious option in each of the four problems was a first
Table 1. Evaluative and descriptive value of the selected adjectives

<table>
<thead>
<tr>
<th>Adjectives</th>
<th>Description*</th>
<th>Evaluation†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daring (R+)</td>
<td>5.71</td>
<td>5.13</td>
</tr>
<tr>
<td>Courageous (R+)</td>
<td>5.55</td>
<td>5.77‡</td>
</tr>
<tr>
<td>Enterprising (R+)</td>
<td>5.13</td>
<td>6.06</td>
</tr>
<tr>
<td>Timid (C−)</td>
<td>2.62</td>
<td>3.64</td>
</tr>
<tr>
<td>Anxious (C−)</td>
<td>2.87</td>
<td>3.22</td>
</tr>
<tr>
<td>Over-concerned (C−)</td>
<td>2.20</td>
<td>2.79‡</td>
</tr>
<tr>
<td>Reckless (R−)</td>
<td>6.13</td>
<td>2.99</td>
</tr>
<tr>
<td>Over-confident (R−)</td>
<td>6.11</td>
<td>3.59‡</td>
</tr>
<tr>
<td>Thoughtless (R−)</td>
<td>5.52</td>
<td>2.87</td>
</tr>
<tr>
<td>Careful (C+)</td>
<td>2.39</td>
<td>4.39</td>
</tr>
<tr>
<td>Considered (C+)</td>
<td>3.32</td>
<td>5.20</td>
</tr>
<tr>
<td>Responsible (C+)</td>
<td>3.91</td>
<td>5.79‡</td>
</tr>
</tbody>
</table>

* Possible range of the scores from 1 (risk-avoiding) to 7 (risk-taking).
† Possible range of the scores from 1 (negative) to 7 (positive).
‡ Adjectives which are only used in Experiment 2.

measure. A more precise measure was created by integrating subjects’ option preference and their certainty about their choice. Subjects preferring the risky option could obtain scores ranging from ‘very certain preference for the risky option’ (1), to ‘very uncertain preference for the risky option’ (7). Subjects preferring the certain option could obtain scores ranging from ‘very uncertain preference for the certain option’ (8), to ‘very certain preference for the certain option’ (14). This resulted in an index ranging from ‘extreme preference for the risky option’ (1) to ‘extreme preference for the sure option’ (14).

Because subjects first rated the two action alternatives on evaluatively biased scales we tested whether option preference was affected by the connotation of the scales. We conducted a 2 × 4 MANOVA, using evaluative bias as a between-factor and the four decision problems as a within-factor. Evaluative bias of the scales did not affect risk preference: The factor evaluative bias was not significant (F(1,117)<1; n.s.). The analysis showed a significant effect for the within factor (F(3,351) = 36.63; p<0.001), indicating that risk preference differed for the four decision problems. Descriptive data of risk preference for each of the four problems are presented in Table 2. The results show that the four decision problems led to different levels of risk preference.

The main concerns of this experiment are whether the judged discrepancy between two action alternatives is larger on scales which are evaluatively congruent with the risk norm for a specific decision problem than on scales which are incongruent; and, secondly, whether the judged discrepancy is larger on scales which are evaluatively congruent with subjects’ own risk preference than on evaluatively incongruent scales. Analogous to Eiser (1976) we used the percentage of subjects preferring the risky option as a measure of the ‘risk norm’. As can be inferred from Table 2, of the four problems, one problem (the stove problem) is associated with a ‘cautious norm’, while in one problem (gamble) a ‘risky norm’ exists. The other two problems revealed no clear preference, and hence no clear norm could be identified.

Similar to Eiser (1976), the judged discrepancy between two action alternatives
was used as an index for extremity of judgment. The index was based on the difference of subjects’ rating of the target preferring the risky option (RT) and the target preferring the cautious option (CT) on the four evaluatively biased scales. The discrepancy index for each of the four decision problems was based on the means of absolute differences on the four scales, ranging from ‘minimal discrepancy’ (0), to ‘maximal discrepancy’ (6). The descriptive results are presented in Table 3.

Table 3. Judged discrepancy between risky and cautious action alternatives, as a function of judgmental scales and own preference

<table>
<thead>
<tr>
<th>Decision problem</th>
<th>Evaluative bias</th>
<th>Subjects preferring</th>
<th>Subjects preferring</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Risky option (N)</td>
<td>Caution option (N)</td>
<td>(N)</td>
<td>(N)</td>
</tr>
<tr>
<td>1. Stove</td>
<td>R+/C−</td>
<td>2.63 (8)</td>
<td>2.76 (53)</td>
<td>2.66 (61)</td>
</tr>
<tr>
<td></td>
<td>C+/R−</td>
<td>3.15 (5)</td>
<td>3.87 (54)</td>
<td>3.81 (59)</td>
</tr>
<tr>
<td>2. Train</td>
<td>R+/C−</td>
<td>2.19 (28)</td>
<td>1.97 (33)</td>
<td>2.07 (61)</td>
</tr>
<tr>
<td></td>
<td>C+/R−</td>
<td>1.63 (28)</td>
<td>2.53 (31)</td>
<td>2.10 (59)</td>
</tr>
<tr>
<td>3. Skiing</td>
<td>R+/C−</td>
<td>3.14 (28)</td>
<td>2.52 (33)</td>
<td>2.81 (61)</td>
</tr>
<tr>
<td></td>
<td>C+/R−</td>
<td>2.58 (31)</td>
<td>3.20 (28)</td>
<td>2.87 (59)</td>
</tr>
<tr>
<td>4. Money</td>
<td>R+/C−</td>
<td>2.82 (37)</td>
<td>2.41 (24)</td>
<td>2.66 (61)</td>
</tr>
<tr>
<td></td>
<td>C+/R−</td>
<td>1.87 (35)</td>
<td>1.98 (24)</td>
<td>1.92 (59)</td>
</tr>
</tbody>
</table>

Possible range of the scores from 0 (minimal discrepancy) to 6 (maximal discrepancy).

The discrepancy indices were analysed with MANOVA in a two-level (evaluative bias: R+/C− versus C+/R−) between-subjects factor with four problems that constitute a within-subjects design. The within-factor ‘norm’ had two levels ‘clear’ versus ‘not clear’. Two problems are nested within each of the two levels of the factor norm. The analysis resulted in a significant main effect for the factor ‘norm’ ($F(1,118) = 15.21; p < 0.001$), indicating a difference in the discrepancy between problems with a clear norm and without a clear norm. The interaction effect ‘problems’ × ‘norm’ ($F(2,236) = 61.09; p < 0.001$) indicates that the differences in discrepancy between the two problems within the levels of ‘clear norm’ versus ‘no clear norm’ are different. The three-way interaction effect ‘problems’ × ‘norm’ × ‘bias’ ($F(2,236) = 37.06; p < 0.001$) shows that the factor ‘bias’ affects the degree of discre-
pancy but that this impact is dependent on the norm and the problems within the different levels of norm. This indicates that the effect of the evaluative bias is not identical in each of the decision problems, due to the expected impact of the direction of the risk norm and the level of risk norm for each of the decision problems. As can be inferred from the overall column in Table 3, the judgments between the risky and cautious option are more discrepant on scales which are congruent with the general norm (stove problem: C+/R−; money problem: R+/C−) than on the incongruent scales (stove problem: R+/C−; money problem: C+/R−). This effect was only found in these two decision problems with a clear risk norm.

To test the effects of the evaluative bias of the scales in relation to the risk norm and subjects’ risk preference we conducted for each decision problem separately a 2 (evaluative bias: R+/C− versus C+/R−) × 2 (option preference: Risky versus cautious option) analysis of variance. The analysis for the ‘stove’ problem resulted in a significant main effect for ‘evaluative bias’ ($F(1,119) = 28.75, p < (0.001)$. The analysis did not reveal a significant main effect for ‘option-preference’ ($F(1,119) < 1$), and no significant interaction effect was found ($F(1,118) < 1$). The effect for evaluative bias indicated that the judged discrepancy between the two options was greater on the C+/R− scales on the R+/C− scales. Hence, subjects judged the different options more distinct on those scales evaluatively congruent with the risk norm for that decision problem.

The analysis for the ‘money’ problem resulted in a similar effect. A main effect was found for ‘evaluative bias’ ($F(1,119) = 13.76, p < 0.001$), indicating that the judged discrepancy was greater on the R+/C− scales (congruent with the risk norm) than on the C+/R− scales (incongruent with the risk norm). Results did not show an effect of ‘option-preference’ ($F(1,119) < 1$), the interaction effect was also non-significant ($F(1,119) = 1.66, n.s.$).

In both the ‘train’ problem and the ‘ski’ problem the main effect of evaluative bias was not significant ($F(1,119) < 1$). This seems to be due to the absence of a clear risk norm in both decision problems. In both problems the analysis revealed the predicted interaction effect (train: $F(1,119) = 8.66, p < 0.01$; ski: $F(1,119) = 9.76, p < .01$). The main effects of ‘option-preference’ were non-significant (train: $F(1,119) = 3.10; n.s.;$ ski: $F(1,119) < 1$). As can be inferred from Table 2, the interaction effects indicate that subjects preferring the risky option judged the discrepancy between the two options greater on the congruent R−/C− scales than on the incongruent C+/R− scales. Similarly, subjects preferring the cautious option judged the risky versus the cautious option more distinct on C+/R− scales than on R+/C− scales.

**Discussion**

Findings support the two predictions tested in this experiment: (1) The judged discrepancy is affected by the risk norm, and (2) by subjects' individual risk preference in interaction with the value connotations of the response scales. The first finding is in accordance with Eiser’s (1976) conclusion that the judged discrepancy between the two options is affected by the existing risk norm for a particular decision problem. If the risk norm for the decision problem is widely shared the judged discrepancy between the risky and the cautious option is larger on scales evaluatively congruent with the norm than on incongruent scales. For decision problems with no clear-cut
risk norm, judged discrepancy was not affected by the interaction of the evaluative value of the rating scales and the risk norm.

It needs to be noted that, as in Eiser’s (1976) study, ‘risk norm’ is based on subjects’ stated preference for the risky or cautious decision alternative. We did not ask subjects if they thought that most people would prefer one of the alternatives and if so, which one. This might have been a more adequate measurement of risk norm. It could be argued that the actual option preference in the population might differ from the perceived population preference. However, we suppose that the actual general risk preference as measured in our study will approach ‘risk norm’ as generally used.

In accordance with our second prediction, subjects tended to judge the two options as more distinct on those scales which were evaluatively consistent with their own risk preference. This effect is explained as due to the salience of those dimensions which are congruent with subjects’ own risk preference. The effect was obtained in the two decision problems in which a clear risk norm was absent. This finding seems to indicate that only in the absence of a clear-cut risk norm subjects own risk preference determines which dimensions are salient. Moreover, if there exists a clear risk norm, subjects whose preference does not match the general risk norm give more extreme judgments on scales evaluatively congruent with the general norm but incongruent with their own preference.

EXPERIMENT 2

In this experiment we investigate whether the use of evaluatively laden terms will affect subjects’ risk preference. It is expected that this effect will be most pronounced in problems without a clear-cut risk norm.

Attitudinal research has frequently demonstrated that subjects’ own attitude position mediates the ease with which subjects’ attitudes can be influenced (Sherif and Hovland, 1961; Tesser and Shaffer, 1990). Eiser and van der Pligt (1982) argued that subjects holding more pronounced, extreme positions will be relatively unaffected by manipulations of the response scale. The risk norm indicates whether the risky or cautious behaviour is generally seen as the appropriate behaviour, but risk norms differ in the degree of consensus about the appropriate option preference. If there exist a clear-cut (widely shared) risk norm, we expect subjects to be more outspoken about their option preference as compared to problems without such a clear risk norm. This assumption seems to be supported by the results in the first experiment. As can be inferred from Table 2, in problems with a clear-cut, widely shared risk norm subjects feel relatively certain about their option preference. In problems with moderate consensus about the risk norm, preferences about the option preference are less pronounced. The extent to which people feel certain about their option preference is expected to influence the impact of the use of evaluatively biased language in a similar way as attitude extremity. This prediction is in line with Payne, Bettman and Johnson (1992), who argue that ‘the more uncertainty in one’s preference ... the more susceptible to framing effects’ (p.100). In sum, it is predicted that risk preference will be affected by the use of evaluatively laden terms, and that this effect is more pronounced for problems in which there is less consensus about the risk norm and people are relatively uncertain about their preferences.
Method

Pilot study

Decision problems were selected in a pilot study in which a sample of first year psychology students (N = 40) were presented with 15 decision problems, all problems included one option involving a certain outcome, and one option involving uncertain outcomes. Subjects were asked to indicate their option preference and how certain they felt about their preference (on a 7-point scale, ranging from ‘very uncertain’ (1) to ‘very certain’ (7). Based on this pilot study we selected:

1. A ‘car problem’; buying a second-hand car with an official (one year) guarantee, versus buying a somewhat cheaper car without guarantee.
   - Cautious norm, certain a large majority of subjects preferred the cautious option (85 per cent), mean certainty score: 4.82.
2. Unusual disease; fighting the disease using a vaccine saving half of the infected people, versus using a vaccine which might not be effective at all or could save all infected people.
   - Cautious norm, uncertain; a small majority preferring the cautious option (60 per cent), certainty score: 3.78.
3. A ‘job problem’ reorganization involving jobs; opting for a reorganization plan definitely saving 50 per cent of the jobs, versus opting for a risky plan that might save all jobs or might lead to bankruptcy.
   - Risky norm, uncertain a small majority preferring the risky option (63 per cent), certainty score: 3.85.
4. A ‘sports problem’; playing a championship sports game; being one of the top players and notwithstanding a (light) injury deciding to join in the final match (risking a more severe injury), versus not participating to avoid a possible more severe injury.
   - Risky norm, certain a large majority preferring the risky option (83 per cent), certainty score: 5.00.

Subjects

In the main study, 155 first year psychology students of the University of Amsterdam participated for credit points.

Procedure

Subjects were randomly divided in 2 (evaluative sign) × 4 (problem) groups. Each subsample of subjects received one of the four decision problems. Subjects were told that this study concerned the quality of arguments, defined as the persuasiveness of the arguments to be assessed by a panel of independent judges. After reading the decision problem, subjects were requested to fulfil a task which was included to investigate whether the use of evaluatively biased risk terms would affect risk preference. Subjects were asked to formulate six arguments for or against taking the risky or the cautious option. Subjects were free to formulate arguments for or against any of the two options. Each argument had to include at least one of six presented adjectives. The adjectives to be used were evaluatively biased, one
condition presenting risk-positive \((R^+)\) terms and cautious-negative \((C^-)\) terms and the other condition presenting cautious-positive \((C+)\) terms and risk-negative \((R^-)\) terms. After finishing this task, subjects were asked to indicate their own option preference.

**Material**

The four decision problems are summarized above.

The presented adjectives consisted of the terms used in Experiment 1, with a few additions. In the \(R^+ / C^-\) conditions subjects were presented with three adjectives describing risk taking positively and three adjectives describing cautious behaviour negatively. These were: Enterprising, daring, courageous \((R^+)\), over-concerned, timid, and anxious \((C^-)\). The other condition included three adjectives describing risky behaviour negatively and three adjectives describing cautious behaviour positively. These were: Thoughtless, reckless, over-confident \((R^-)\), responsible, careful, and considered \((C^+)\). (Table 1 presents an overview of the evaluative and descriptive values of the terms used in this experiment, based on the pre-test).

After generating arguments on the basis of the set of the pre-tested adjectives, subjects were required to mark their own option preference (the cautious option or the risky option) and to indicate how certain they felt about their own preference on a 7-point scale (ranging from (1) very uncertain to (7) very certain).

**Results**

In this experiment we focus on the effects of the use of evaluatively biased risk terms on risk preference. Subjects formulated arguments including one of the six presented evaluatively biased risk terms in each of the arguments. The arguments had been scored by two judges as pro-risk, neutral, or anti-risk. The inter-judge reliability was 86 per cent. In the \(R^+ / C^-\) condition 49 per cent of the arguments were scored as 'pro-risk', 33 per cent as 'neutral' and 18 per cent as 'anti-risk'. In the \(C^+ / R^-\) condition the scores were 22 per cent 'pro-risk', 20 per cent 'neutral', and 58 per cent 'anti-risk'. This result indicates that subjects generally formulated arguments which were congruent with the evaluative connotation of the risk terms.

Each subject conducted this task for one of the four decision problems. First we present subjects' risk preference based on subjects' option choice and their certainty score. As in Experiment 1, this resulted in an index ranging from 'very certain preference for the risky option' (1) to 'very certain preference for the certain option' (14). Table 4 presents subjects' risk preference in the four problems.

To test whether the use of evaluative biased terms affect risk preference we conducted a 2 (evaluative bias) \(\times\) 4 (decision problem) analysis of variance. As expected, the four decision problems led to different levels of risk preference. This difference was significant \((F(1,153) = 24.33, p < 0.001)\). The analysis also revealed a significant main effect for the factor 'evaluative basis' \((F(1,153) = 4.31, p < 0.05)\), indicating that subjects' risk preference was affected by the use of evaluatively biased risk-terms. Subjects in the \(R^+ / C^-\) condition had more preference for the risky option than subjects in the \(C^+ / R^-\) condition. The interaction effect was not significant \((F(1,153) < 1)\), suggesting that the effect of the evaluative bias was not dependent on the decision problem. Because we expected stronger effects in the decision prob-
Table 4. Risk preference and certainty as a function of the use judgmental dimensions

<table>
<thead>
<tr>
<th>Decision problem</th>
<th>(N)</th>
<th>( R+/C- ) condition</th>
<th>(N)</th>
<th>( C+/R- ) condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Second-hand car</td>
<td>20</td>
<td>11.00</td>
<td>19</td>
<td>12.26</td>
</tr>
<tr>
<td>2. Unusual disease</td>
<td>18</td>
<td>7.44</td>
<td>19</td>
<td>8.21</td>
</tr>
<tr>
<td>3. Job problem</td>
<td>19</td>
<td>6.26</td>
<td>20</td>
<td>9.05</td>
</tr>
<tr>
<td>4. Sports match</td>
<td>20</td>
<td>3.45</td>
<td>19</td>
<td>4.05</td>
</tr>
<tr>
<td>Overall</td>
<td>77</td>
<td>7.04</td>
<td>77</td>
<td>8.40</td>
</tr>
</tbody>
</table>

Possible range of the scores from 1 (very certain preference for risky option) to 14 (very certain preference for certain option).

problems lacking a clear-cut risk norm, we tested for differences between the risk preference in the \( R+/C- \) condition versus the \( C+/R- \) condition within each decision problem separately. These analyses only resulted in a significant effect in one of the two problems without a widely shared risk norm, the ‘job problem’ \((t(146) = 2.138, p < 0.05)\). These findings indicate that the impact of the evaluative bias is not strongly dependent on the general certainty about risk preference or the risk for that specific decision problem. As far as differences might existed, effects seem to be stronger in problems without a clear-cut risk norm.

**GENERAL DISCUSSION**

The findings of both experiments generally support our hypotheses. Results indicate that (1) the judged discrepancy between a person preferring the risky versus a person preferring the cautious option is larger on scales which are evaluatively consistent with the general risk norm for that specific decision problem, (1a) this effect is only found in decisions for which there exist substantial consensus about the risk norm; (2) the judged discrepancy between the two options is larger on scales evaluatively congruent with subjects’ own risk preference, and (3) using evaluatively laden risk terms affects subjects risk preference in a direction congruent with the evaluation implied by the risk terms.

In accordance with the first hypothesis we found that in the two decision problems with considerable consensus about the option preference (indicating the existence of a clear risk norm) judgments are more extreme on scales evaluatively congruent with this norm than on incongruent scales. This finding is in accordance with Eiser’s (1976) finding, indicating that when the general norm is approval of the risky option and disapproval of the cautious option, subjects perceive positive terms referring to risk-taking (enterprising) and negative terms referring to risk-avoidance (anxious) as most salient. In the two problems with no clear-cut overall preference for the risky or the certain option, the judged discrepancy between the two action alternatives was not affected by the congruence of the scales with the risk norm. This finding suggests that there needs to be consensus about the risk norm in order to obtain more extreme ratings on evaluatively congruent scales.

The finding that subjects’ own risk preference affects the judged discrepancy between the risky and the cautious options supports the second hypothesis. The obtained effect can best be explained by the same mechanisms that explain the extremity of ratings on evaluatively biased scales in the domain of attitudes. Those dimen-
sions, which are evaluatively congruent with subjects’ risk preference, are perceived as more salient and seen as more relevant or applicable to the risk behaviour which has to be judged. Judgments of risky and cautious behaviour will be more distinct, or more extreme, on these dimensions.

The effect of subjects’ own risk preference upon judged discrepancy was only found in those decision problems, for which no widely shared risk norm existed. This suggests that widely shared risk norms can overrule the impact of subjects’ individual risk preference. If risk-avoidance is generally perceived as most appropriate for a specific decision problem, even subjects who prefer the risky alternative give more extreme ratings on scales evaluatively congruent with the norm. Hence, those dimensions evaluatively incongruent with one’s own risk preference but congruent with the general norm seem to be more salient than the dimensions congruent with one’s own preference but incongruent with the risk norm.

Both the impact of risk norm and risk preference on the judged discrepancy can be understood in terms of the accentuation theory. Judgments on the focal dimensions can be more extreme due to a related peripheral dimension. Accentuation theory postulates that a peripheral dimension such as ‘value’ can affect judgments on the focal dimension, for example ‘size’. In attitude research it has been clearly demonstrated that the connotation of the judgment scale in interaction with the subjects’ own attitude can serve as a peripheral dimension. In attitude research the focus has been on subjects’ own attitude as a determinant of the salient dimension. In the present research we found that not only subjects’ own preference or opinion can affect salience and as a consequence the judged discrepancy, the general norm can also determine the salience of particular dimensions. Our result that the general risk norm determines which dimension is perceived as salient is in accordance with Eiser’s (1976) finding. His findings also concerns the domain of risk behaviour. Future research should investigate the impact of general norms in the domain of attitudes.

Most intriguing is our finding that, when the general norm and individual preference contradict each other, the effects of the former seem to outweigh the latter. This finding indicates that the salience of the peripheral dimension ‘value connotation’ can be dependent on congruence with individual preference or general norm. In other words different factors can determine which dimensions are perceived as salient. Accentuation theory is not explicit about the dependence of the peripheral dimension on other factors. Accentuation theory does not take into consideration that the effects of the peripheral dimension ‘value connotation’ can be dependent on other factors than the individual preference, such as a general norm. Hence, accentuation theory in the present form cannot explain the dominance of risk norm over individual preference in the determination of the salient dimension. The relative impact of individual preference versus general norm might be dependent on the importance of relevance of the judgmental issue. One could argue that in highly relevant or involving issues individual preference will be more dominant in determining the salient dimensions, while in less involving issues and in issues with strong public general norms, the norm might be more dominant. These possibilities need to be studied in future research.

In the first experiment we studied the relation between salience due to individual preference and extremity of judgment, while in the second experiment we studied the opposite relation: The impact of salience on individual preference. In the first experiment salience was based on an internal factor: Subjects’ own preference, while
in the second experiment salience was externally induced: The use of evaluatively biased terms. The effects of using evaluatively biased risk terms on risk preference is in accordance with findings in attitude research (Eiser and Ross, 1977; Eiser and Pancer, 1979; Van Schie, Martijn and Van der Pligt, 1992). Inducing subjects to pay more attention to particular dimensions of risk behaviour, increases the salience of these dimensions. For example, if subjects are ‘forced’ to think of positive dimensions of risk-taking and negative dimensions of risk-avoidance, this would influence subjects’ judgment (Van der Pligt and Eiser, 1984). In the above example subjects’ preference will tend to shift in the direction of risk-taking.

In the second experiment subjects were asked to include evaluatively biased risk terms in the self-generated arguments. This affected subjects’ risk preference. One could argue that in our first experiment subjects also had to use evaluatively biased terms. In this experiment, however, subjects were only requested to rate risk behaviour on biased scales. One could argue that ‘using’ biased terms in the first experiment differs from the second experiment in the sense that ‘using’ in the second experiment implies a much more active cognitive process than in the first experiment. Actively processing the biased terms had an impact, while simple rating did not influence risk preference. One could argue that both formulating arguments which are congruent with the evaluative connotation of the terms to be incorporated and formulating arguments which contradict the evaluative connotation of the terms which have to be incorporated makes people think about specific aspects of risk behaviour. In other words, this task made subjects pay more attention to one side of the issue. Furthermore, as most of the generated arguments were congruent with the evaluative bias in the presented terms, formulating arguments might have served as a form of self-persuasion. These explanations for the impact on risk preference do not apply to the first experiment. The different impact of using biased terms due to the cognitive process is in accordance with our previous findings in the domain of attitudes (Van Schie et al., 1992), showing that active information processing leads to stronger attitude change than relatively passive information processing.

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