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A Fundamental Prediction Error: Self–Others Discrepancies in Risk Preference

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This research examined whether people can accurately predict the risk preferences of others. Three experiments featuring different designs revealed a systematic bias: that participants predicted others to be more risk seeking than themselves in risky choices, regardless of whether the choices were between options with negative outcomes or with positive outcomes. This self–others discrepancy persisted even if a monetary incentive was offered for accurate prediction. However, this discrepancy occurred only if the target of prediction was abstract and vanished if the target was vivid. A risk-as-feelings hypothesis was introduced to explain these findings.

Risk preference is a concept that describes what one does when faced with a risky option and a safer alternative; it is an important predictor of one's behavior under risk. In order to succeed in endeavors that involve other people, each person must accurately predict the preferences of others, including their risk preferences. For example, a physician needs to know the risk preferences of her patients. A manufacturer needs to know the risk preferences of his consumers. Yet, often the target of prediction is unknown or invisible. For example, the manufacturer may not know who his consumers are. This research examined how one predicts the risk preferences of others—especially of those whom one does not know personally—and whether one does so accurately. Unless otherwise specified, we consider risk preference as a continuum and use the term *more risk seeking* to subsume both "more risk-seeking" and "less risk-averse" in their strict sense.

Although a vast amount of research has been conducted on risk preference, little is known about how people predict the risk preferences of others. We next delineate several hypotheses. The first, a default hypothesis, is that people use their own risk preference to predict that of others and that they consequently predict others to have the same risk preference as themselves. Analogous to the false consensus notion in social psychology, this hypothesis implies that people blindly believe that others think like themselves. A second hypothesis is related to the *risk-as-value notion* formulated by Brown (1965; see also Clark, Crockett, & Archer, 1971; Lamm, Trommsdorff, & Rost-Schaude, 1972; Wallach & Wing, 1968). According to this hypothesis, people tend to perceive others to be less risk seeking than themselves. This proposition is based on two assumptions: (a) people consider risk seeking an admirable characteristic (e.g., Shapira, 1995), and (b) they perceive themselves as better—hence more likely to possess this admirable characteristic—than others (e.g., Svenson, 1978; Weinstein, 1989).

A third hypothesis is based on the assumption that one's risk preference is an expression of one's subjective feelings toward risk (e.g., Weber & Hsee, 1995; Weber & Milliman, in press). The extent to which our risk preference departs from risk neutrality is a function of our liking or dreading of risks. The conventional definition of risk preference confounds psychological aspects of risk perception with risk preference (Weber & Milliman, in press). Risk aversion typically reflects negative emotions engendered by risk, such as dread or a feared loss of control (Slovic, 1987). Consistent with this interpretation, Bagai (1995) recently reported evidence that nonlinearities in utility functions are largely attributable to hedonic reactions. Thus, we propose that when people make a risky choice themselves, their decision is influenced by their subjective feelings toward risk. When they predict the risky decision of another person, they may base their prediction partly on their own feelings. However, people may have difficulty fully empathizing with that person or considering the other person to have feelings that are as strong as their own. In that case, their prediction of the target regresses toward risk neutrality. In other words, people predict others to have similar risk preferences to themselves, but they predict others to be more risk neutral than themselves. This hypothesis will be referred to as the *risk-as-feelings hypothesis.*

A last hypothesis is that one bases one's prediction of another person's risk preference on one's stereotype about the group to which that person belongs. This proposition is called the *stereotype hypothesis.* Some support for this hypothesis came from a recent study by Hsee and Weber

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(1995). Both American and Chinese participants predicted that Americans were more risk seeking than Chinese people, even though in reality the Chinese were found to be significantly more risk seeking. Hsee and Weber suggested that those participants may have based their predictions on the stereotypical images of Americans portrayed in the media (i.e., venturous and risk taking). According to this hypothesis, one would predict (other) Americans to be more risk seeking than oneself.

We report three studies that investigated how people predict the risk preferences of others. In all of the studies, risk preference was assessed by asking participants to choose between a risky option and a sure option in a series of questions where the risky option was fixed and the sure option varied from question to question (see Table 1 for an example). Compared with the certainty equivalent and the probability-equivalent methods typically used to elicit risk preference, our method has greater ecological validity: In most real-world decisions, the decision maker has to make choices rather than state a certainty equivalent or give a probability estimate, and there is ample evidence that judged-certainty equivalents do not, in general, agree with those inferred from actual choices (Bostic, Herrnstein, & Luce, 1990).

Study 1

The primary purpose of this study was to examine whether or not the default hypothesis—that there are no self–others discrepancies in risk preference—holds. This study was part of a larger project that explored cross-cultural differences in risk preference (see Hsee & Weber, 1995); here we discuss only the part of the project that is relevant to the present research question.

Method

Materials. This study involved a 2 (person; self vs. others) × 2 (domain; gain vs. loss) × 2 (size; large vs. small) design. All variables were manipulated within subjects. Of the two person conditions, the self condition assessed participants' own risk preference; the others condition assessed their predictions of others' risk preference.[1] Of the two domain conditions, the options in the gain condition involved positive outcomes; those in the loss condition involved negative outcomes. Of the two size conditions, the outcome values in the large condition were 20 times the corresponding outcome values in the small condition. The 2 (person) × 2 (domain) conditions were printed on four separate pages of the questionnaire in three random orders, and the two size conditions were printed on the same page, with the large condition preceding the small condition.

Table 1
Options in the Seven Questions in the Gain–Large Condition of Study 1

	Option	
Question	Sure	Risky
1	$ 400	$2,000 or $0
2	$ 600	$2,000 or $0
3	$ 800	$2,000 or $0
4	$1,000	$2,000 or $0
5	$1,200	$2,000 or $0
6	$1,400	$2,000 or $0
7	$1,600	$2,000 or $0

Every condition included a set of seven questions, each containing a sure option and a risky option. Take the self–gain–large condition, for example. The sure option ranged from "receive $400 for sure" in Question 1 to "receive $1,600 for sure" in Question 7, with a $200 increment between adjacent questions. The risky option was always "flip a coin; receive $2,000 if heads, or $0 if tails." See Table 1 for a summary.

In the small condition, the outcome values in each question were 1/20th of those in the corresponding question in the large condition. Thus, for example, the two options in Question 1 became "receive $20 for sure" and "flip a coin; receive $100 if heads or $0 if tails." In every condition the seven questions were presented in the following sequence: 4-5-3-6-2-7-1.

The page for the self–gain condition opened with the following instructions:

> Suppose that *you* bought a lottery ticket a week ago. You are now informed that you have won and have been given two options of how to receive the money.

Respondents then read the two sets of questions (one representing the large condition, and one the small condition) and in each question indicated the option they would choose. For example, the first question on the questionnaire, which was actually Question 4, read:

> A: receive $1,000 for sure;
> B: flip a coin; receive $2,000 if heads, or $0 if tails.
> Which option would *you* choose? Circle A or B above.

The opening instructions for the others–gain condition were as follows,

> Suppose that *somebody somewhere in the U.S.* bought a lottery ticket a week ago. He/she is now informed that he/she has won and has been given two options of how to receive the money.

Respondents were given the same two sets of questions and asked to predict which option that person would choose in each question, assuming that the person was like most college students in the U.S.

The opening instructions for the self–loss condition read as follows:

> Suppose that *you* violated a traffic rule and hurt somebody a week ago. You are now informed that you will be fined and have been given two options of how to pay the fine.

The opening instructions for the others–loss condition were:

> Suppose that *somebody somewhere in the U.S.* violated a traffic rule and hurt somebody a week ago. He/she is now informed that he/she will be fined and has been given two options of how to pay the fine.

[1] This condition was called the Americans condition in Hsee and Weber (1995), because there was another "other" condition: the Chinese condition.

The questions for the loss conditions were parallel to those in their corresponding gain conditions, except that the word *receive* in each question was replaced with the word *pay*.

Participants and procedure. Participants were 99 college students recruited from the University of Chicago. They completed this and several unrelated questionnaires and received $5 for their participation.

Results and Discussion

Calculation of the risk preference index. A risk preference (*RP*) index was calculated for each condition. Note that a reasonable person would be more likely to choose the risky option in Question 1 than in Question 7 in the gain condition but more likely to choose the risky option in Question 7 than in Question 1 in the loss condition. Based on these assumptions, the *RP* index was defined as follows: In the gain condition, if a participant chose the risky option in Question 1 through Question i-1 and the sure option in Question i through Question 7, the *RP* index was defined as i (i = 2, 3, . . . , 7); in the loss condition, if a participant chose the risky option in Question 7 through Question i and the sure option in Question i-1 through Question 1, the *RP* index was defined as i (i = 2, 3, . . . , 7). The *RP* index was defined as 1 if one chose the sure option in all of the questions and as 8 if one chose the risky option in all of the questions. Consequently, the *RP* index had a range between 1 and 8, larger values indicating greater risk seeking and the midpoint, 4.5, indicating risk neutrality. If a respondent's choices were inconsistent (i.e., choice of the sure option in a lower numbered question but of the risky option in a higher numbered question in the gain conditions or choice of the sure option in a higher numbered question but of the risky option in a lower numbered question in the loss conditions), the *RP* index was considered a missing value in further analyses.

Predictions of risk preferences. The results are summarized in Figure 1. To assess whether there were self–others discrepancies in risk preference, we performed a 2 (person) × 2 (domain) × 2 (size) analysis of variance (ANOVA) and found a highly significant main effect for person, $F(1, 66) = 36.37$, $p < .001$: Participants predicted others to be significantly more risk seeking than themselves. The Person × Domain interaction was not significant, $F(1, 66) < 1$.

There was also a significant main effect for domain, $F(1, 66) = 4.99$, $p < .05$. Consistent with prospect theory (Kahneman & Tversky, 1979), participants were more risk seeking in the loss condition than in the gain condition, and they also predicted others to be so. The ANOVA also revealed a significant size effect, $F(1, 66) = 29.08$, $p < .001$, and a significant Size × Domain interaction, $F(1, 66) = 35.72$, $p < .001$. Participants were more risk seeking and also predicted others to be more risk seeking when the outcome values were large than when they were small, and these tendencies held only in the gain domain and not in the loss domain.

The main finding of this study was that participants systematically predicted others to be more risk seeking than themselves. This self–others discrepancy disconfirmed the default hypothesis that people consider others to have the same risk preference as themselves. Our finding also contradicted the risk-as-value notion, which implies that people tend to perceive others to be less risk-seeking.

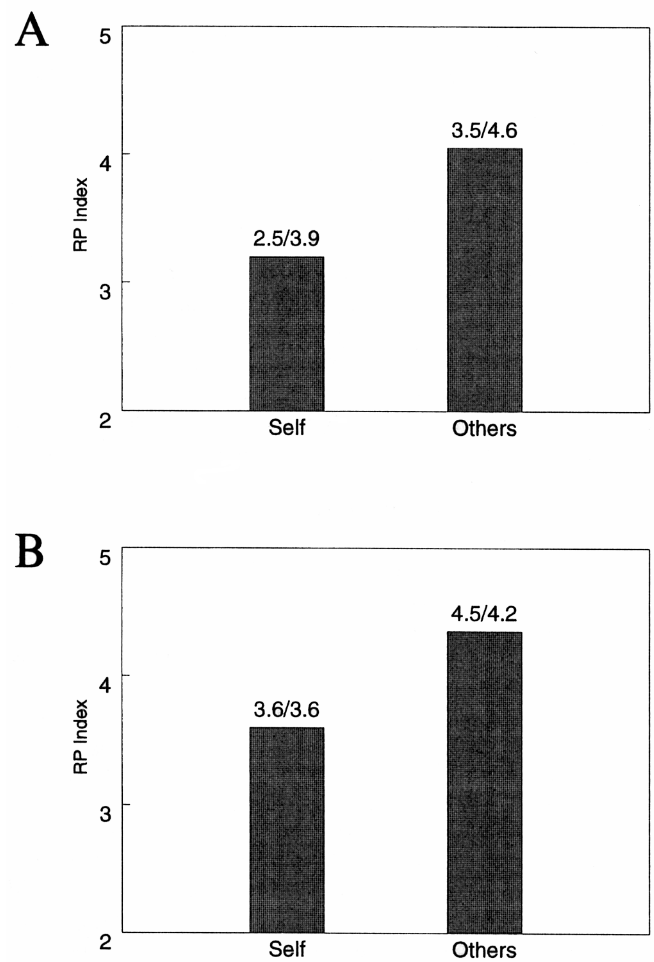

Figure 1. Mean risk preference (*RP*) indices for self and others in Study 1. Figure 1A shows the gain condition, and Figure 1B shows the loss condition. The *RP* index ranged from 1 to 8, greater numbers indicating more risk seeking. The numbers on top of each bar are the means of the two size conditions (large and small), respectively; the height of the bar represents the average of the two size conditions combined.

The self–others discrepancy finding was supportive of the risk-as-feelings hypothesis. Note that the risk neutrality point on the *RP* index is 4.5. In the self conditions, the *RP* indices were well below 4.5, indicating that participants were highly risk averse. In the others conditions, the *RP* indices were much closer to 4.5. Thus, the self–others discrepancy reported can be interpreted as suggesting that participants predicted the risk preferences of others to be somewhere between their own risk preference and risk neutrality.

Finally, the self–others discrepancy was also consistent with the stereotype hypothesis. Note that in the others condition the terms *American* and *U.S.* were used. These terms may have evoked in participants the stereotypical image of Americans—adventurous and courageous—and consequently led them to perceive others (i.e., other Americans) to be more risk seeking than themselves.

Study 2

Study 2 was designed in part to replicate the self–others discrepancy observed in Study 1 and in part to explore the underlying reasons for the discrepancy. This study involved two within-subject person conditions—self and others—and three between-subjects type-of-others conditions—others in U.S., others on campus, and next person. In the others-in-U.S. condition, participants were asked to predict the risk preferences of other students in the United States, and in the others-on-campus condition, to predict the risk preferences of other students on campus. In the next-person condition, participants were asked first to look at the person who happened to sit next to them and then to predict the risk preference of that particular person. (This study was conducted during lunchtime in a college dining hall, and for each participant there was always someone else sitting nearby.)

We formulated two predictions for the study. One was based on the risk-as-feelings hypothesis. According to that hypothesis, there would be a greater self–others discrepancy in the others-in-U.S. and the others-on-campus conditions than in the next-person condition. The reason for the prediction is as follows: Both others in the United States and others on campus are abstract concepts; participants would have difficulty empathizing with them or projecting their own feelings onto them; therefore, they would rely more on risk neutrality for their prediction. In contrast, someone who sat nearby was vivid and concrete; it would be easy for the participants to project their own feelings onto that individual; therefore, their prediction would be closer to their own risk preference.

The second prediction was based on the stereotype hypothesis: If the self–others discrepancy found in Study 1 resulted from one's stereotype about Americans, then there would be a self–others discrepancy in the others-in-U.S. condition, but no self–others discrepancy in the others-on-campus condition, because the only difference between these two conditions was that the former involved the term *U.S.*, which would trigger the stereotype about Americans, and the latter did not involve such a term. It should be noted that the two predictions are not mutually exclusive; it is possible that both of them are correct.

Method

Materials. Study 2 utilized a 2 (person; self and others) × 3 (type-of-others; others in U.S., others on campus, and next person) × 2 (domain; gain and loss) × 2 (size; large and small) design, where person and domain were within subjects and type-of-others and size were between subjects. The 3 (type of others) × 2 (size) between-subjects conditions were contained in six separate versions of the questionnaire.

The others-in-U.S.–large version started with the following instructions:

> Suppose that you have been involved in a lawsuit. Below are a series of scenarios describing the outcome of the case and the options you face. Your task is to tell us in each scenario: (a) which option *you* would choose, and (b) which option you think *most other students in the U.S.* would choose if they were in your situation.

The instructions were followed by two sets of seven scenarios, representing the two domain conditions, respectively. The options in the seven scenarios in the gain condition are illustrated in Table 2. In each scenario, participants were first asked to indicate which option they would choose and then to predict what most other students in the U.S. would choose. For example, Scenario 1 read as follows:

> Scenario 1. You win the case and the judge gives you two options:
> A: receive $2,000 for sure;
> B: flip a coin; receive $10,000 if heads, or $0 if tails.
>
> *I* would choose (circle one): A B
> I think *most other students in the U.S.* would choose (circle one): A B

The seven scenarios in the loss condition were parallel to those in the gain condition except (a) the phrase *you win the case* was replaced with *you lose the case* and (b) the word *receive* was replaced with *pay*. In each condition, the seven scenarios described in Table 2 were presented in the following sequence: 1-7-2-6-3-5-4.

The others-in-U.S.–small version was identical to the others-in-U.S.–large version except that the outcome values in the questions were 10 times smaller.

The others-on-campus versions were identical to the corresponding others-in-U.S. versions except that the phrase *in the U.S.* was replaced with *on this campus*.

In the next-person versions, participants first received the following instructions:

> Before you start, please look around and see who sits closest to you. Do not talk to or disturb that person, but look at him/her for a second and remember how he/she looks.

The rest of the questionnaire was parallel to the others-in-U.S. version except that participants were asked to predict for the person they had just looked at instead of students in the U.S.

Participants and procedure. Respondents were 159 University of Chicago students. They were recruited during lunchtime in a dining hall and given a chance to win a $100 cash prize for their

Table 2
Options in the Seven Scenarios in the Gain–Large Condition of Study 2

	Option	
Question	Sure	Risky
1	$2,000	$10,000 or $0
2	$3,000	$10,000 or $0
3	$4,000	$10,000 or $0
4	$5,000	$10,000 or $0
5	$6,000	$10,000 or $0
6	$7,000	$10,000 or $0
7	$8,000	$10,000 or $0

participation. Each participant received one of the six versions of the questionnaire and completed it individually.

Results and Discussion

As in Study 1, an *RP* index was calculated for every participant in each condition. The results are summarized in Figure 2. Next, we first report the findings of an omnibus 2 (person) × 3 (type-of-others) × 2 (domain) × 2 (size) ANOVA and then the results of several analyses tailored to test the specific predictions for this study. The omnibus ANOVA revealed a significant main effect for person, $F(2, 91) = 3.25$, $p < .05$. Replicating the self–others discrepancy found in Study 1, participants again predicted others to be more risk seeking than themselves. The ANOVA also revealed a significant main effect for domain, $F(1, 91) = 57.88$, $p < .001$ and a significant Domain × Size interaction effect, $F(1, 91) = 5.05$, $p < .01$. As in Study 1, participants were more risk seeking and predicted others to be more risk seeking in the loss condition than in the gain condition, and this domain effect was more pronounced when the outcome values were large than when they were small. There were no other significant effects.

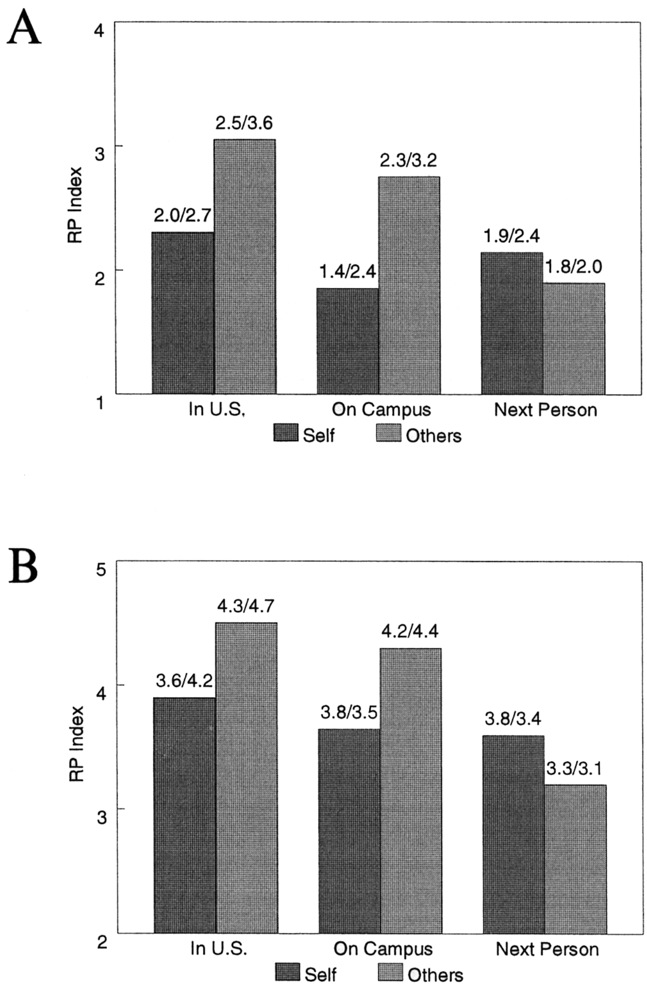

Figure 2. Mean risk preference (*RP*) indices for self and others in the three type-of-others conditions (others in U.S., others on campus, and next person) of Study 2. Figure 2A shows the gain condition, and Figure 2B shows the loss condition. The *RP* index ranged from 1 to 8, greater numbers indicating more risk seeking. The numbers on top of each bar are the means of the two size conditions (large and small), respectively; the height of the bar represents the average of the two size conditions combined.

As discussed earlier, there were two predictions as to how the self–others discrepancy would vary as a function of who the others were. One prediction, based on the stereotype hypothesis, asserts that the self–others discrepancy would be greater in the others-in-U.S. condition than in the others-on-campus condition. The other prediction, based on the risk-as-feelings hypothesis, implies that the self–others discrepancy would be greater in the two abstract conditions (i.e., others-in-U.S. and the others-on-campus) than in the concrete, next-person condition. Because these predictions were not mutually exclusive and we were not interested in pitting one against the other, we considered the two predictions separately.

To test for the prediction based on the stereotype hypothesis, we ran a 2 (person) × 2 (type of others) × 2 (domain) × 2 (size) ANOVA, where type of others included only the others-in-U.S. and the others-on-campus conditions. The Person × Type-of-Others interaction was literally nil, $F(1, 91) = 0$: The self–others discrepancy was as strong in the others-on-campus condition as in the others-in-U.S. condition; in other words, the concept of "U.S." did not amplify the self–others discrepancy.

To test for the prediction based on the risk-as-feelings hypothesis, we assigned the same contrast weight to the two abstract conditions (others in U.S. and others on campus) and a different contrast weight to the next-person condition and ran a 2 (person) × 3 (type of others) × 2 (domain) × 2 (size) ANOVA. There was a significant Person × Type-of-Others interaction, $F(1, 91) = 5.05$, $p < .05$, indicating that the self–others discrepancy was significantly greater in the two abstract conditions than in the next-person condition. Further analyses indicated that when the type-of-others factor included only the two abstract conditions, the person effect was significant, $F(1, 60) = 7.26$, $p < .01$, but when the type-of-others factor included only the next-person condition, the person effect vanished, $F(1, 60) < 1$). In other words, participants only predicted abstract others to be more risk seeking than themselves, but did not predict concrete others to be so.

These results support the risk-as-feelings hypothesis, not the stereotype hypothesis. As in Study 1, the *RP* indices in the others conditions were closer to the risk-neutrality point (4.5) than those in the self conditions. Thus, the self–others discrepancy can be interpreted as suggesting that participants predicted others to be more risk neutral than themselves. This discrepancy occurred only when participants made predictions for abstract individuals whom they could not see and thus presumably could not empathize with; it vanished when participants made predictions for a vivid and concrete individual sitting next to them.

We also calculated the correlations across participants between their own *RP* index and the *RP* index they predicted for others. In the gain condition, the correlation in the two abstract conditions (others in U.S. and others on campus) was .37 and in the next-person condition was .20; the two correlations were not significantly different. In the loss condition, the correlation in the two abstract conditions was .70 and in the next-person condition was .64; they were also not significantly different.

Two aspects of these results are noteworthy. First, in both the gain and the loss conditions, the correlations were not significantly different between the abstract and the concrete (next-person) conditions. This result is not inconsistent with the risk-as-feelings hypothesis. As mentioned earlier, the risk-as-feelings hypothesis implies two important propositions. First, one's prediction of another person's risk preference depends partly on one's own risk preference and partly on risk neutrality. Formally,

$$RP_T = wRP_S + (1 - w)N,$$

where RP_T is predicted risk preference of a target, RP_S is one's own risk preference, N is the risk-neutrality point, and w is a relative weight. The risk-as-feelings hypothesis also implies that one's prediction of another person's risk preference depends less on one's own preference and more on risk neutrality if the target is abstract than if the target is concrete. In other words, w is smaller if the target is abstract than if the target is concrete.

Because N is a constant, the correlation between RP_T and RP_S remains the same regardless of the size of w, as long as w is greater than 0 and the proportional between-subjects variance in w remains the same. One may wonder why the correlations were actually smaller (albeit insignificantly) in the concrete than in the abstract conditions. We suspect that participants in the concrete condition may have used some individuating information about the target. Such information would add noise to RP_T, hence reducing the correlation between RP_T and RP_S.

The other aspect of the correlation data worth noting is that the correlations were larger in the loss than in the gain condition. For the risk-as-feelings model described above, this result means that the between-subjects variability in w is smaller for the loss than for the gain condition. Smaller variability in w for losses may occur because people experience stronger emotions for negative outcomes than for positive outcomes and, consequently, are more consistent (among themselves) in the relative weight they give to their own preference when predicting the preference of someone else in the loss condition than in the gain condition.

Study 3

Study 3 was a replication of Studies 1 and 2 with two major variations. First, in the first two studies there was no incentive for predictive accuracy; in Study 3 participants could win a cash prize if their predictions were accurate. We were curious whether people's desire to win money by making accurate predictions would eliminate the self–others discrepancy. Second, the person variable (self vs. others) was manipulated within subjects in Studies 1 and 2; in Study 3 it was manipulated between subjects. This variation was designed to test the robustness of the self–others discrepancy.

Method

Materials. This study employed a 3 (person; self, others on campus, and next person) × 2 (domain; gain and loss) design, where person was between subjects and domain within subjects. The questionnaire for this study had three versions, corresponding to the three person conditions, respectively. Each version contained two parts, representing the two domain conditions, respectively. Each part contained a set of nine scenarios, as summarized in Table 3. The reason we used nine scenarios instead of seven was to avoid possible floor and ceiling effects; with nine scenarios the sure option in the first question was only 1/10th of the greater outcome in the risky option, and the sure option in the last question reached 9/10th of the greater outcome in the risky option. In each part, the nine scenarios were presented in the following sequence: 1-9-2-8-3-7-4-6-5.

The self version of the questionnaire opened with the following general instructions:

> In this questionnaire, your task is to indicate what *you* would choose in a variety of scenarios. Suppose that *you* have been involved in a lawsuit. In Scenarios 1–9 below, assume that you have *won* the case and that you are given two options, A and B, to choose from. Your task is to decide in each scenario which option *you* would choose.

Participants then responded to the first set of nine scenarios, representing the gain condition. Scenario 1, for example, read as follows:

> Scenario 1. A: get $500 for sure;
> B: flip a coin; get $5,000 if heads or $0 if tails.
>
> I would choose (circle one): A B

After that, participants read:

> In Scenarios 10–18 below, assume that you have *lost* the case and that you are given two options, A and B, to choose from. Your task is to decide in each scenario which option *you* would choose.

Participants then responded to the second set of nine scenarios, representing the loss condition.

The others-on-campus version was parallel to the self version except that instead of indicating what they themselves would

Table 3
Options in the Nine Scenarios in Study 3

	Option	
Question	Sure	Risky
1	$ 500	$5,000 or $0
2	$1,000	$5,000 or $0
3	$1,500	$5,000 or $0
4	$2,000	$5,000 or $0
5	$2,500	$5,000 or $0
6	$3,000	$5,000 or $0
7	$3,500	$5,000 or $0
8	$4,000	$5,000 or $0
9	$4,500	$5,000 or $0

choose, participants were asked to predict what "an average student on this campus" would choose. Participants were told that if their predictions were 100% accurate, that is, matched what most respondents in a random sample of students from the campus would choose, they would be awarded $50 in cash.

The next-person version was also parallel to the self version except that participants were instructed to predict what "the student who sits closest to you now" would choose in those scenarios. Participants were told that if their predictions were 100% accurate, that is, matched what that person would choose, they would be awarded $50 in cash.[2]

Participants and procedure. Respondents were 141 Ohio State University students who participated in this experiment as part of a course requirement. The experiment was conducted in a classroom with groups of up to 50 students. Participants were randomly assigned to the self, the others-on-campus, or the next-person conditions. Every participant was paired with and seated next to another participant in the same condition, and the questionnaires distributed to the two participants carried the same code number. This procedure served two purposes. First, it reduced possible confusion among participants in the next-person condition because every participant in the next-person condition had one and only one person sitting closest to them. Second, it allowed us to compare, after the experiment, participants' predictions of the next person's choices against the next person's actual choices and thereby determine whether the predictions were correct or not.

After they had made predictions for others, participants in the next-person and the others-on-campus conditions were also asked to indicate their own choices. These responses were subsequently used to determine the accuracy of their predictions. Specifically, in the next-person condition, we determined the accuracy of a given participant's predictions by comparing them against the next person's own choices. In the others-on-campus condition, we used the modal choices of all participants as a benchmark and determined the accuracy of a given participant's predictions by comparing them to those modal responses. As promised, two participants whose predictions were 100% accurate were awarded $50 each.

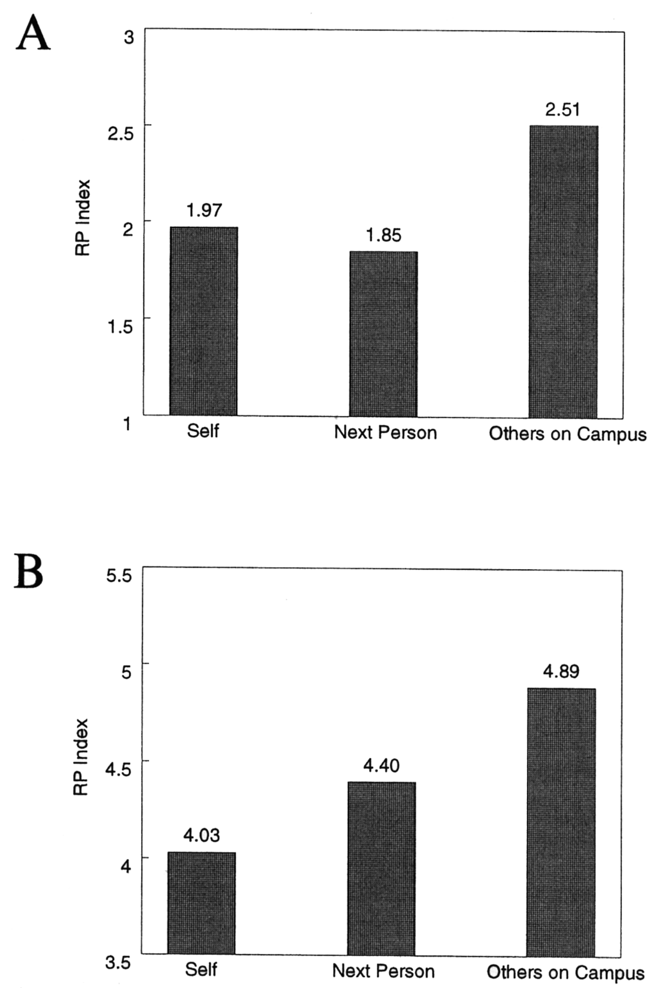

Figure 3. Mean risk preference (*RP*) indices for self, next person, and others on campus in Study 3. Figure 3A shows the gain condition, and Figure 3B shows the loss condition. The *RP* index ranged from 1 to 10, greater numbers indicating more risk seeking.

Results and Discussion

As in Studies 1 and 2, an *RP* index was calculated for every participant in each condition. Because there were nine instead of seven pairs of choices in each condition, the *RP* index in this study ranged from 1 (most risk averse) to 10 (most risk seeking) and the risk-neutrality point was 5.5. The results are summarized in Figure 3. A 3 (person) × 2 (domain) ANOVA was performed. It revealed a marginally significant main effect for person, $F(2, 101) = 2.71$, $p = .07$, and a significant main effect for domain, $F(1, 101) = 78.67$, $p < .001$. As in the first two studies, the domain effect indicated a greater risk-seeking propensity in the loss condition than in the gain condition. There was no significant Person × Domain interaction.

Three planned contrast analyses were performed for the person variable. The first analysis, which compared the self condition against the others-on-campus condition, secured a significant effect, $F(1, 101) = 4.25$, $p < .05$; participants predicted their fellow students on campus to be significantly more risk seeking than themselves. The second contrast analysis, which compared the self condition against the next-person condition, did not find a significant effect, $F(1, 101) < 1$, indicating that participants did not consider the person sitting nearby to have a risk preference systematically different from their own. The third contrast analysis, which compared the self and the next-person conditions as one group against the others-on-campus condition, revealed a significant difference, $F(1, 101) = 5.39$, $p < .05$; whereas respondents predicted the person sitting nearby to have roughly the same risk preference as themselves, they pre-

[2] At the end of every version there were two unrelated questions: one asking participants to choose from among nine singers the one they liked the most (or to predict the choice of others) and the other asking participants to choose from among nine psychologists the one they would most want to take an introductory psychology course from (or to predict the choice of others). These questions were added to make it less likely that one's predictions were 100% accurate because financial constraints prevented us from awarding too many $50 prizes.

dicted other students on campus to be significantly more risk seeking.

As mentioned earlier, Study 3 differed from the first two studies in (a) that it included a monetary incentive for accurate predictions and (b) that the person factor in this study was manipulated between subjects. Despite these differences, the self–others discrepancy persisted. Study 3 corroborated Study 2 by showing that the self–others discrepancy occurred only when one made predictions for abstract people and that it disappeared when one made predictions for a concrete individual.

General Discussion

This research examined how people predict the risk preferences of others. Three studies reported herein consistently found that participants were very poor at predicting others' risk preference. They overwhelmingly overestimated their fellow students' propensity to take risks, regardless of whether the choices were between positive outcomes or between negative outcomes. Interestingly, this self–others discrepancy occurred only when participants made predictions for abstract others of whom they had no image and vanished when they made predictions for concrete individuals whom they could see but did not know.

In the remainder of the article, we discuss some of the theoretical and practical implications of our findings. Theoretically, our research has documented a systematic bias in predictions of the risk preferences of others and provided some insight to the process underlying this bias. At the beginning of the article, we proposed several hypotheses about how people predict the risk preferences of others. The default hypothesis, which predicts no self–others discrepancies, was clearly not supported. The risk-as-value hypothesis, which implies that people would predict others to be less risk seeking, was also inconsistent with our findings. Although the stereotype hypothesis may have explained why participants predicted other Americans to be more risk seeking than themselves, it could not explain why participants also predicted other (abstract) fellow students to be more risk seeking.

The only hypothesis consistently supported by our results is the risk-as-feelings hypothesis. We have suggested that people's risk preferences depend on their feelings toward risk. When people make a prediction of another person's risk preference, they base their prediction partly on their own feelings and partly on risk neutrality, which reflects lack of particular feelings. How much people base their prediction on their own feelings depends on how vivid the target person is. If the target is vivid, people can empathize with the target, perceive the target to have feelings similar to their own, and consequently predict the target to make the same choices as themselves. If the target is abstract, people are emotionally more distant from the target, would have greater difficulty imagining how the target feels about risk, and, consequently, would resort more to risk neutrality for making the prediction.

Recently, Alicke, Klotz, Breitenbecher, Yurak, and Vredenburg (1995) showed that the better-than-average effect—a tendency to perceive oneself more favorably than others—is more pronounced when the target of comparison is abstract than when the target is concrete. Although the self–others discrepancy in risk preference is very different from the better-than-average effect, there is similarity between their findings and ours: In both cases, making the target concrete reduces the perceived difference between oneself and the target. We suspect that both the self–others discrepancy in risk preference and the better-than-average effect occur because people have difficulty identifying themselves with the target and that making the target concrete reduces the difficulty.

In combination, the difference between the concrete and the abstract conditions observed in this research and in Alicke et al. (1995) shed light on the process of predictive judgments in general. For many predictive judgments (be they predictions of others' risky choices or judgments of others' likelihood of being involved in a car accident), there are at least two sources of information. One is of a personal nature (e.g., how I feel about a risky choice; how well I drive); the other is of a more abstract or distributional nature (e.g., what people ought to do in risky situations; what accident statistics tell us). The above distinction is similar to that between the singular probabilistic system and the distributional probabilistic system made by Reeves and Lockhart (1993), with individuating target characteristics (in the singular system) providing the personal probability information and relative frequency characteristics based on class membership (in the distributional system) providing the abstract probability information. People's final judgments are often based on both sources of information. The relative weight of the two sources of information depends on whether the target person is concrete or abstract. Personal information receives greater weight when the target is concrete, and distributive information receives greater weight when the target is abstract.

From a practical perspective, the self–others discrepancy in risk preference is a serious bias in the prediction of risk preference. This bias can exist in many different domains. For example, in new-product development and marketing, manufacturers need to predict the behaviors, including risk preferences, of the average consumer. Because the average consumer is an abstract concept, the self–others bias is likely to occur. Likewise, in policy making, lawmakers need to know the preferences, including risk preferences, of their constituents. Again, constituents are often an abstract aggregate, and therefore the self–others bias may arise. In negotiations, one needs to predict the risk preference of the other party in order to strategically determine one's own move. More often now than ever before, negotiations are conducted using electronic mail and other telecommunication channels, and the two parties may never meet each other personally. Thus, they, too, may be susceptible to the self–others bias.

By making people aware of this bias, we hope that they can learn to predict others' risk preferences and thereby others' decisions more accurately. Such a gain in prediction accuracy yields important benefits. In marketing, for example, it results in a better match between new products and customer preference. In policy making, it helps lawmakers institute policies that better reflect people's willingness to trade off risks and returns. In negotiation, it helps reduce misunderstanding between the negotiating parties and thereby increases the chance of integrative bargaining solutions.

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