

Interindividual–Intergroup Discontinuity as a Function of Trust and Categorization: The Paradox of Expected Cooperation

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Two experiments used a 3-choice variation of the prisoner's dilemma game to explore the paradoxical implications of expected cooperation of other groups and individuals for competitiveness and cooperativeness. Experiment 1 found that an experimental manipulation of opponent trustworthiness influenced the tendency of both groups and individuals to cooperate but had no significant effect on the tendency of groups and individuals to compete—possibly because of the perceived unfairness of competing with a trustworthy other. Experiment 2 found that an experimental manipulation of categorization increased the tendency of same-category groups and individuals to cooperate (as in Experiment 1) and also increased the tendency of same-category groups, but not individuals, to compete (unlike in Experiment 1). It was further found that the tendency of same-category groups to compete more than same-category individuals was relatively stronger for participants high in guilt proneness.

Interindividual–intergroup discontinuity is the tendency in the context of mixed-motive situations for relations between groups to be more competitive, or less cooperative, than relations between individuals. Most, but not all, of the discontinuity investigations have used a prisoner's dilemma game (PDG) matrix (see Figure 1) to provide a context for the intergroup and interindividual interaction. Many of these experiments were conducted in a suite with a central area, or hall, between three smaller rooms on either side. Interactions between individuals were structured so that each participant in a room on one side of the suite interacted with another participant on the opposite side of the suite. Prior to the first trial, and between all subsequent trials, the individuals communicated regarding what choices they might make. Typically, the communication occurred through face-to-face meeting in the central room, but in some instances communication involved the exchange of notes or the use of an intercom. In most of these experiments there were 10 trials, but in some experiments there was only 1 trial.

The procedure for investigating interactions between groups differed from the procedure for individuals in several respects. First, the 3 participants on either side of the suite were seated in a common room. Second, the group members were required to reach

agreement on a single choice for each trial. Third, the amount of money in the matrix was increased by a factor of three. Fourth, communication with the opposite groups typically occurred by sending representatives but, as with individuals, sometimes occurred by exchanging notes or talking through an intercom. In still other instances, all 6 participants (3 from each side) met in the central room between each trial. The repeatedly found discontinuity effect is the tendency for there to be more competitive or fewer cooperative choices between groups than between individuals.

Since an initial pair of investigations by McCallum et al. (1985), a sizable number of studies have been conducted. In a quantitative review of this literature, Wildschut, Pinter, Vevea, Insko, and Schopler (2003) identified 134 independent effect sizes extracted from 48 studies conducted at 11 different laboratories in the United States and Europe. The analysis tested and confirmed a number of theory-based predictions regarding the magnitude of the discontinuity effect. Although the meta-analysis did include an investigation with two *n*-person games (Insko et al., 1994) and a study in which the outcome contingencies were not presented in the shape of a PDG matrix (Schopler et al., 2001), it did not include two nonexperimental demonstrations of the discontinuity effect with diary data (Pemberton, Insko, & Schopler, 1996).

The predictions regarding variation in the magnitude of the discontinuity effect partially flowed from three hypotheses: (a) fear, or schema-based distrust; (b) greed, or social support for shared self-interest; and (c) identifiability. The fear hypothesis, a major focus of the present two studies, accounts for discontinuity in terms of the greater distrust toward other groups than toward other individuals (Hoyle, Pinkley, & Insko, 1989; Insko & Schopler, 1998; Pemberton et al., 1996; Wildschut, Insko, & Pinter, 2004). This hypothesis assumes the existence of an out-group schema implying wariness toward groups other than one's own. Note from the matrix in Figure 1 that if the opponent is

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	X	Z
X	270	360
Z	90	180

Figure 1. Prisoner's dilemma game matrix used for groups. X = cooperative choice; Z = competitive choice.

expected to choose Y or to compete, it is rational in the short run, and possibly also in the long run, to likewise choose Y.

The greed hypothesis, also a major focus of the present research, accounts for discontinuity in terms of the social support for self-interested behavior that is available to group members but absent for individuals (Insko, Schopler, Hoyle, Dardis, & Graetz, 1990; Schopler et al., 1993; Wildschut, Insko, & Gaertner, 2002). The initial statement of the hypothesis assumed that the social support for self-interested behavior had to be explicit. Recent evidence obtained by Wildschut et al. (2002) suggests, however, that the social support can also be implicit or flow from an in-group-favoring norm. Note from the matrix in Figure 1 that on any one trial outcomes are maximized by choosing Z and that this is true regardless as to whether the opponent chooses X or Z.

Finally, the identifiability hypothesis accounts for the discontinuity effect in terms of the fact that responsibility for the selfish behavior of individuals is more obviously specified, or identified, than is responsibility for a group's selfish behavior (Schopler et al., 1995). The group context provides a "shield of anonymity." As indicated previously, however, an important focus of the present investigation is the role of trust, or of distrust, in accounting for the discontinuity effect.

Trust

Although there is widespread agreement that trust is an important concept for understanding human relationships (e.g., Dawes, 1980; Pruitt & Kimmel, 1977), there is disagreement as to the precise meaning of the term. In the context of an extensive discussion of trust in organizations, Kramer (1999) aptly observed that "a concise and universally accepted definition has remained elusive" (p. 571).

Barber (1983) indicates that trust is the expectation of the persistence and fulfillment of the natural and the moral order and goes on to make the distinction between two types of trust. The first is the belief in another's competence (i.e., "I believe my bus driver has had the necessary training to get me safely to school"). The second is the expectation of goodwill and benign intent (i.e., "I believe my bus driver will not intentionally wreck the bus"). Yamagishi and Yamagishi (1994) have proposed that Barber's first type is actually confidence and that the second is trust. Yamagishi and Yamagishi further suggest a difference between assurance and trust. Whereas trust is the expectation of goodwill and intent,

assurance is an "expectation of benign behavior for reasons other than goodwill" (p. 131), for example, fear of being censored or punished. Hardin (2001) makes a similar distinction.

We acknowledge that in many contexts Yamagishi's and Hardin's distinction is important. However, in the context of the present research, what matters is an expectation that the opponent will cooperate—regardless of the assumed basis for the other's expected behavior. Thus, we follow Barber's second definition—a definition that parallels the usage of Deutsch (1958) and Kelley and Thibaut (1978). Deutsch proposed that "An individual may be said to have trust in the occurrence of an event if he expects its occurrence and his expectations lead to behavior which he perceives to have greater negative consequences if the expectation is not confirmed than positive motivational consequences if it is confirmed" (1958, p. 267). Kelley and Thibaut proposed that, in the context of a matrix choice, trust is the "assurance of not being exploited or abandoned" (1978, p. 232).

A related issue has to do with the relationship between trust and distrust. Trust and distrust can be conceptualized as opposite ends of a single bipolar scale or as two separate unipolar scales. We adopt the bipolar perspective—although we acknowledge that in some situations this may be an oversimplification.

Still a further issue has to do with the relationship between trust-distrust and fear. Coombs (1973) referred to fear as the motivation for uncooperative behavior that is based on the lack of trust and a sense of helplessness. Kerr (1983) conceived of fear as the worry that others will take advantage of one's efforts. Rapoport (1987) defined fear as the possibility of not receiving any payoff for one's actions. Parks and Hulbert (1995) modified this definition somewhat by adding that fear is the possibility of not receiving payoffs for one's cooperative actions. All these conceptions seemingly agree in assuming that fear is a feeling that is associated with low trust or high distrust, and we use the term in that way.

There has been extensive research relating to trust in the context of various *n*-person games (e.g., Parks & Hulbert, 1995), much of which has used Yamagishi's (1986) trust scale. Yamagishi and colleagues (Yamagishi, 1986; Yamagishi, 1988; Yamagishi & Sato, 1986; Yamagishi & Yamagishi, 1994) have conducted a series of studies of trust in both the United States and Japan. Furthermore, Van Lange and Kuhlman (1994) and De Bruin and Van Lange (2000) have conducted experimental studies in which the other's honesty or morality (as purportedly measured on a personality test) was manipulated. All of this research focused on individuals and not on groups.

In the context of the discontinuity effect, we have obtained extensive nonexperimental evidence (summarized in Wildschut et al., 2004) indicating that groups are more distrustful of each other than are individuals. For example, we have found that coded, tape-recorded discussions between groups contain more references to distrust than do coded, tape-recorded discussions between individuals and that prior to an initial PDG trial group members are more likely than individuals to predict that the opponent will compete. The evidence that is most relevant to the present research relies on a three-choice variation of the PDG, referred to as the PDG-Alt matrix. The corner cells of this matrix constitute a PDG, but this matrix includes a third choice (see Figure 2) that guarantees an intermediate outcome regardless of the opponent's choice. We refer to the third choice as "withdrawal." Whereas competition is the rational choice when trust is high and it is assumed that the opponent will cooperate, withdrawal is the rational choice when

	X	Y	Z
X	270 270	225 225	360 90
Y	225 225	225 225	225 225
Z	90 360	225 225	180 180

Figure 2. Prisoner's dilemma game-Alt matrix used for groups. X = cooperative choice; Y = withdrawal; Z = competitive choice.

trust is low and it is assumed that the opponent will compete. Research with the PDG-Alt matrix (Insko et al., 1990, 1993; Schopler et al., 1993, 1995) has consistently found that groups both withdraw more and compete more on such a matrix—thus providing evidence consistent with both fear and greed hypotheses. The initial experiment involved multiple trials, but the subsequent experiments involved only one trial. If it is known that there will be only one trial, the withdrawal choice more obviously reflects distrust and not some tactical, greed-related motivation, for example, planned defensive withdrawal following offensive competitiveness. Partially for that reason, in the present research participants were informed that there would be only one trial.

Most research with experimental games has not involved experimental manipulations of trust. A notable exception is the cited research by Van Lange and Kuhlman (1994) and by De Bruin and Van Lange (2000) that varied false feedback regarding the opponent's honesty and/or morality (as purportedly measured on a personality test). The present research explored the role of trust in two experiments. The initial experiment resembles the research of Van Lange and colleagues in that both included an experimental manipulation of trustworthiness through false feedback from a supposed personality test. However, this experiment differs from previous research in three salient respects. First, the participants were under the impression that the opponent received feedback regarding own extraversion and not own trustworthiness. Second, because of our particular interest in groups the experiment included interactions between groups. Third the PDG-Alt matrix provided the context for the interactions. We chose to use the PDG-Alt matrix rather than the PDG matrix because with the PDG-Alt matrix the withdrawal choice is more obviously a reflection of distrust than is the competitive choice on the PDG matrix. Experiment 1 examined the role of trust for both individuals and groups and for both men and women. Experiment 2 explored the possibility that common categorization provides one basis for assumed trust and thus that shared category membership produces effects parallel to those of the trust manipulation in Experiment 1.

In Experiment 1, we initially planned to follow the typical procedure of having group representatives meet and discuss the single choice that was to be made. However, when we tried this procedure, we found that in the low-trust condition representatives were prone to express their mutual distrust ("We cannot trust you")

when supposedly the other group only knew about own-group extraversion. For that reason, in Experiment 1 participants exchanged notes that we substituted surreptitiously with a standard note. Such a procedure yields two independent observations per interaction pair (individuals or groups) but creates some complexities relating to the assessment of choice behavior.

The PDG-Alt requires that participants select the cooperative (X), withdrawal (Y), or competitive (Z) choice. From the perspective of our concern with trust, the two most obviously relevant choices are withdrawal and cooperation. Given the forced-choice constraint, knowledge of withdrawal and cooperation allows for certain prediction of competition. In view of this constraint, we initially analyzed the data with two orthogonal contrasts. The first contrast is a comparison of cooperation and withdrawal. Given this contrast, the remaining orthogonal contrast is a comparison of competition with the combination of cooperation and withdrawal.

We have four observations relating to the two contrasts. First, because the fear hypothesis relates to the difference between cooperation and withdrawal and the greed hypothesis relates to the difference between competition and the combination of cooperation and withdrawal, the contrasts flow from theory. Second, because of the dependency among the choices, analysis of the second contrast (competition vs. the combination of cooperation and withdrawal) yields the same result as the analysis of competition alone. Third, because the second contrast yields two-level difference scores (competition vs. either cooperation or withdrawal), this contrast and follow-up tests of the individual choices are more appropriately analyzed with logistic regression than with ordinary analysis of variance (ANOVA). Fourth, because the first contrast (cooperation vs. withdrawal) yields three-level difference scores (cooperation, withdrawal, or neither cooperation nor withdrawal), it can only be interpreted as contrasting cooperation with withdrawal if the participants selecting neither of these alternatives (i.e., those selecting the remaining, competitive alternative) are dropped. Note, further, that dropping competition results in complete dependency between cooperation and withdrawal so that the same results are obtained from the analysis of just cooperation or of just withdrawal. (If these dependencies seem puzzling, consider the simpler two-choice PDG in which the same conclusions are reached from analysis of cooperation alone, competition alone, or of the difference between cooperation and competition.)

A primary purpose of Experiment 1 was to explore an apparent inconsistency between the fear and greed hypotheses. According to the fear hypothesis, the competitive PDG choice depends on the expectation that the opponent will compete and is therefore dangerous. On the other hand, according to the greed hypothesis, the competitive PDG choice depends on the expectation that the opponent will cooperate and is therefore vulnerable (Insko et al., 1990, 1993; Schopler et al., 1993). Thus, the research question is whether expected cooperation produces less competition, as implied by the fear hypothesis, or more competition, as implied by the greed hypothesis.

Why did we expect that a trusted other would produce relatively more competitive choices than the other possible choices of cooperation and withdrawal? Quite simply because interacting with a trustworthy other would result in a perceived vulnerability that could be exploited—particularly in a one-trial situation in which participants expected to be individually dismissed and particularly with groups. Consistent with the greed interpretation, Shure, Meeker, and Hansford (1965) observed, in the context of bargain-

ing research, that “The pacifist’s tactics apparently invite exploitation and aggression, even among those who do not begin with such intentions” (p. 116). In a similar vein, Enzle, Harvey, and Wright (1992) found that accountable representatives were more likely than unaccountable representatives to compete with a cooperative other.

Yet why should perceived vulnerability in the opponent be more readily taken advantage of by groups than by individuals? Note that according to the social support for shared self-interest hypothesis and the identifiability hypothesis, groups are more likely to pursue outcome maximization of matrix values than are individuals. The implication of these hypotheses is that trust would increase competitiveness relatively more for groups than for individuals. On the other hand, it could be that participants would regard competition with a trustworthy other as unfair or even as immoral. If so, interaction with a trustworthy other, as opposed to an untrustworthy other, would have the opposite effect of reducing competition.

Consistent with the schema-based distrust interpretation of the discontinuity effect, our assumption was that high trust would reduce the concern with being exploited and also make salient norms concerning reciprocity and fairness. From this perspective, high trust should increase cooperativeness and decrease withdrawal. This predicted effect actually applies to both groups and individuals. Whereas groups are generally less trusting than individuals, individuals who do not trust should, like groups, be less inclined to cooperate. Previous research (Insko et al., 2001) has found that the minority of individuals who do not cooperate subsequently indicate that they expected their opponent to compete.

There is a seeming paradox in that whereas the greed hypothesis implies that high trust will make groups more competitive, the fear hypothesis implies that high trust will make groups more cooperative. To the extent that responses on the PDG-Alt matrix provide evidence for both effects, the implication would be that some groups are relatively more influenced by greed and some are relatively more influenced by fear.

Finally, we also expected a groups versus individuals effect on the first contrast such that, relative to individuals, groups would cooperate less and withdraw more and a groups versus individuals effect on the second contrast such that, relative to individuals, groups would compete more than cooperate or withdraw.

Experiment 1

Method

Participants. One hundred eleven male and 181 female undergraduates from the University of North Carolina at Chapel Hill participated in the experiment.

Independent variables. The experimental design included two independent variables (groups vs. individuals and trust) and gender. Groups versus individuals was manipulated by comparing the interaction between two 3-person groups with interaction between two individuals. Trust was manipulated by giving false feedback that the other group (or individual) scored high versus low on a prior assessment of trustworthiness. Finally, the participants in any given session were always either all men or all women.

Procedure. On arrival at the laboratory suite, participants drew index cards labeled either “A” or “B” to determine their room assignments. One small room off the main room was labeled “A” and one room was labeled “B.” In the individuals condition, 1 participant was assigned to each room, and in the group condition, 3 participants were assigned to each room. After all participants had arrived, we asked them to individually fill out two

different questionnaires labeled “Scale A” or “Scale B,” respectively. After completing the assessments, participants were told that Scale A was a measure of extraversion and Scale B was a measure of trustworthiness and that their responses were to be computer scored by another experimenter in an adjacent room. The trustworthiness scale included 10 items (e.g., “successfully lying about your qualification to get a job,” “revealing something about a person that he or she told you confidentially,” “receiving too much change and keeping it,” and “stealing something from a store without anyone else finding out”) to which participants responded by indicating how acting in such manner would make them feel. Responses were on a 5-point scale ranging from 1 (*feel pretty good*) to 5 (*feel pretty bad*).

On returning from supposedly having delivered the completed scales to the adjacent room, the experimenter gave detailed instructions on the choice combinations of the PDG matrix (the Figure 1 matrix for groups or a comparable matrix in which the values were divided by 3 for individuals), including step-by-step oral review of two examples. After answering any questions, the experimenter introduced the participants to the more complex, three-choice PDG-Alt matrix (the Figure 2 matrix for groups or a comparable matrix in which the values were divided by 3 for individuals), again with explicit instructions and examples. Participants then completed an exercise assessing their understanding of the outcomes of various combinations of choices and had their answers individually corrected by the experimenter.

Following the exercises, the experimenter explained to participants that there would be only one interaction and described the procedure they would follow. Following description of the one-trial interaction, groups (or individuals) played two practice trials with the experimenter. For the practice trials, the payoff was not money but points, and it was made clear that the choice participants were seeing was selected by the experimenter and not by the other group or individual. During the practice trials the experimenter selected X (the cooperative choice) on the first trial and Z (the competitive choice) on the second trial.

Prior to beginning the actual trial, the experimenter looked at his watch and stated:

When completing this kind of task, we found from previous research that groups (participants) prefer to have some information about the other group (participant) before making their final decision. For this reason, we had you complete two personality tests at the beginning of this session. Now each group (participant) will receive some information about the other group (participant) based on one of the two scales. One group (participant) will receive information about the other group’s (participant’s) trustworthiness and one group (participant) will receive information about the other group’s (participant’s) extraversion.

Following this statement, the experimenter left the room. One minute later, the experimenter returned carrying two computer printouts titled Trust Indicator Conversion (TIC) Scale. At this time, both groups (individuals) received standardized information regarding the other group’s (individual’s) trustworthiness, although they were under the impression that the other group (individual) received information regarding their own-group (or own) extraversion. Feedback regarding the other group was characterized as being the average of the three group member’s individual scores.¹ In each session, one group (individual) was randomly assigned to

¹ An alternative procedure to averaging the individual scores would have been to have the group members collectively respond to the questionnaire. An argument against such a procedure is that, as out-groups tend to be seen as self-aggrandizing, a group response might have been perceived by the other group as being less honest than the average of the individual responses—particularly in the high-trust condition.

the high-trust condition and one group (individual) to the low-trust condition. The trustworthiness feedback was provided on a scale that indicated that the other group (individual) was either 84% trustworthy (high trust) or 45% trustworthy (low trust).²

During the actual trial participants were given 1 min to examine, and in the case of groups, to discuss, the PDG-Alt matrix used during training and practice. Following the 1-min period, each group (individual) was given a 3 × 5 card and asked to write a message to the other group (individual) concerning the choice to be made. After the cards were collected, the experimenter gave each group (individual) a standard message, supposedly from the other group (individual), which read: "Let's both choose 'X.'" In fact, consistent with prior research (Insko et al., 1994; Schopler et al., 1995), participants wrote some variation of this message in most instances.

Following receipt of the standard message, the groups or individuals were given 1 min to record an X, Y, or Z choice. Group members understood that the three members would make a collective decision, and all participants understood that there was to be only one trial.

After collecting the decisions, the experimenter gave each participant a postexperimental questionnaire containing various assessments, including an assessment of suspicion. Finally, the groups or individuals were awarded the money they had earned, were debriefed, and, as promised earlier, dismissed individually. No participants expressed suspicion regarding the validity of the notes or the manipulation of trustworthiness.

Dependent variables. Our main interest was in the assessment of choice behavior: the choice to cooperate, the choice to withdraw, or the choice to compete. These choices were initially analyzed with two orthogonal contrasts: cooperation versus withdrawal and competition versus cooperation and withdrawal combined. If an effect was significant for either contrast, it was followed with simple-effect tests of the two components of the contrast. In addition there were a number of assessments on the postexperimental questionnaire relating to expected choice and reasons for the choice.

The initial portion of the postexperimental questionnaire asked participants to indicate the likelihood (0%–100%) that the other group would choose X, Y, and Z, respectively. Participants were instructed that the likelihood ratings should add up to 100%. Our primary interest was in the likelihood, or expectancy, that the other group (individual) would choose X, or cooperate. This assessment has a dual purpose. First, the assessment allows for a check of the repeated finding that individuals expect more cooperation than groups. Second, the assessment serves as a manipulation check for the trust manipulation.

Reasons for the choice were assessed, first, with an open-ended question and, second, with a series of close-ended ratings. The open-ended assessment was a single question asking participants why their group (or why he or she) had made an X, Y, or Z choice. Two judges blind to the trust condition coded the responses for the following five possibilities: (a) max rel ("We chose 'Z' to make more money than the other group"); (b) max own ("We chose 'Z' to make as much money as we could"); (c) max joint ("We chose 'X' so that both groups could make the most money together"); (d) min dif ("We chose 'Y' so that no matter what, both groups would get equal amounts of money"); and (e) distrust ("We chose 'Y' because they said they would choose 'X,' but we did not believe them"). Spearman–Brown-corrected correlations between the two judges' ratings were as follows: .86 for max rel, .92 for max own, .95 for max joint, .85 for min dif, and .92 for distrust.

The close-ended assessments were ratings on a 7-point scale (1 = *not at all*, 7 = *very much*) of each of 10 items, 2 for each of the above-described reasons for the choice. For example, in the group condition, max rel was assessed with the following two items: "to earn more than the other group" and "to maximize the difference between the two groups in my group's favor." Spearman–Brown-corrected correlations for the item pairs were .93 for max rel, .75 for max own, .87 for max joint, .76 for min dif, and .66 for distrust.

Because separate analyses of the open- and close-ended assessments yielded similar results and because the two types of assessment were

moderately correlated, we primarily focus on a z -transformed composite of each of the five reasons. Reliability coefficients for these composites were .92 for max rel, .88 for max own, .94 for max joint, .85 for min dif, and .83 for distrust.

Unit of analysis. Because the experimenter controlled communication between the two groups, or two individuals, their responses were independent, and the unit of analysis was the single group in the groups condition and the single individual in the individuals condition.

Results

Expected cooperation. Mean expected cooperation is given in Table 1. Because we were primarily interested in expected cooperation as a manipulation check for trust, we restricted the reported results to just expected cooperation. Consistent with past results, a three-factor ANOVA revealed a main effect of groups versus individuals, $F(1, 134) = 23.92, p < .01$, such that groups expected less cooperation than did individuals.³ Unlike past results, this main effect was qualified by an interaction with gender, $F(1, 134) = 4.30, p < .05$, indicating that the tendency for groups to expect less cooperation than individuals was relatively larger for women than for men. The smaller difference for men was marginal, $F(1, 134) = 3.60, p = .07$. Because gender interactions for distrust were not found in numerous previous studies, we are skeptical as to the reliability of the present result.

Of particular importance in the present experiment is the main effect for trust, $F(1, 134) = 44.65, p < .01$, that was not qualified by any interactions. The fact that more cooperation was expected with high trust than with low trust (see Table 1) serves to validate the trust manipulation.

Choice: Cooperation versus withdrawal. Proportions of cooperative, withdrawal, and competitive choices are given in Table 2. A Trust × Groups Versus Individuals logistic regression for cooperation versus withdrawal resulted in a significant main effect for trust, $\chi^2(1, N = 121) = 8.21, p < .01$, and for groups versus individuals, $\chi^2(1, N = 121) = 20.27, p < .01$.⁴ Cooperation was greater and withdrawal was less with high than low trust and with individuals than with groups.

We were prevented from including gender in the model for all logistic regressions because of the presence of empty cells in the multiple contingency tables—all of the female individuals in the high-trust condition cooperated and none withdrew or competed. However, when as a "work-around" we entered the contrast between cooperation and withdrawal as dependent variable in a three-factor ANOVA including gender, this analysis again yielded significant main effects for trust, $F(1, 136) = 8.12, p < .01$, and for groups versus individuals, $F(1, 136) = 24.01, p < .01$. No other effects were significant.

In view of the two significant main effects, we conducted follow-up analyses for just cooperation and just withdrawal. In these analyses we examined the effect of our independent variables on whether a given choice was or was not selected, and therefore

² Lower trustworthiness percentages were not used because pilot testing indicated that such percentages produced suspicion in some participants.

³ Because of the failure to collect expectancy data with two male individuals, degrees of freedom were reduced by 2.

⁴ Because this analysis involved the contrast between the selection of cooperation and withdrawal, it did not include the 23 cases in which neither cooperation nor withdrawal was selected.

Table 1
Expected Cooperation, Experiment 1

Trust	Individuals		Groups	
	Male	Female	Male	Female
Low	38.57	56.57	30.12	52.85
High	63.79	77.84	52.85	54.62

Note. Ratings were on a 100-point scale.

these analyses involved all participants, including those who neither cooperated nor withdrew. As before, we conducted three-factor analyses of variance rather than logistic regression analyses to enable tests of gender effects. These analyses of variance including gender yielded significant main effects for trust on just cooperation, $F(1, 136) = 4.74, p < .05$, and just withdrawal, $F(1, 136) = 9.01, p < .01$, and also main effects for groups versus individuals on just cooperation, $F(1, 136) = 33.40, p < .01$, and just withdrawal, $F(1, 136) = 15.83, p < .01$. No other effects were significant. As indicated by the proportions in Table 2, cooperation was greater with high trust than with low trust and with individuals than with groups, and withdrawal was greater with low trust than with high trust and with groups than with individuals.

Choice: Competition versus the combination of cooperation and withdrawal. A Trust \times Groups Versus Individuals logistic regression for the second, orthogonal contrast resulted in only a significant main effect for groups versus individuals, $\chi^2(1, N = 144) = 5.30, p < .05$. Relative to cooperation and withdrawal, groups competed more than did individuals. Noteworthy here is the nonsignificant main effect for trust, $\chi^2(1, N = 144) = 0.98, p < .32$, and the interaction with groups versus individuals, $\chi^2(1, N = 144) = 0.19, p < .66$. Clearly, our expectation of relatively more competitiveness with high trust, particularly for groups, was not supported.

As would be expected from the dependency between the two types of choice, a Trust \times Groups Versus Individuals logistic regression of just competition yielded the same significant main effect for groups versus individuals, $\chi^2(1, N = 144) = 5.30, p < .05$. (A three-factor ANOVA, including gender, also yielded a significant main effect for groups versus individuals; $F(1, 136) = 5.08, p < .05$.) Groups competed more than individuals.

Reasons for choice. Five reasons for the choice (max own, max joint, min dif, max rel, and distrust) were assessed both with coded open-ended statements and close-ended ratings. Because the two assessments were moderately correlated (.43 for max joint, .32 for max own, .37 for max rel, .32 for min dif, .38 for distrust) and because separate analyses revealed similar results, we report only the analyses for the z -transformed composites. For trust, the only significant effect was a main effect on distrust, $F(1, 136) = 11.70, p < .01$. Distrust was greater with low trust ($M = .21$) than with high trust ($M = -.23$). (Note that the means are in z metric.) This main effect on distrust can be regarded as still another manipulation check.

For groups versus individuals there were main effects on all five reasons: $F(1, 136) = 13.95, p < .01$, for max own; $F(1, 136) = 17.60, p < .01$, for max joint; $F(1, 136) = 10.74, p < .01$, for min dif; $F(1, 136) = 16.66, p < .01$, for max rel; $F(1, 136) = 16.73, p < .01$, for distrust. Groups reported more max own than individuals (.27 vs. -.23), more max rel than individuals (.30 vs.

-.24), and more distrust than individuals (.25 vs. -.27). On the other hand, individuals reported more max joint than groups (.30 vs. -.27), and more min dif than groups (.26 vs. -.38). No other effects were significant, although there was a marginal Groups Versus Individuals \times Gender interaction for distrust, $F(1, 136) = 2.78, p < .098$, that parallels the previously reported interaction for expectancy of cooperation.

Mediation analyses of the groups versus individuals main effect for cooperation. Because the previously reported analyses for cooperation, withdrawal, and competition all revealed significant simple effects for groups versus individuals and because the reported ANOVAs for the five reasons for the choice also revealed significant effects for groups versus individuals, an appropriate next step is to conduct mediation analyses. To facilitate tests of indirect effects (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), we conducted mediation analyses with the standard regression approach. There are two problems that need to be considered before we report these analyses. One is that because the reasons were assessed after the choice they may be a rationalization for the choice. The other is that because the assessments had less than perfect reliability, there could be a spurious relation between any mediator and a particular choice. Thus, whereas the mediation analyses do not provide definitive evidence for mediation, they do provide an opportunity to determine whether the results are at least consistent with the possibility of mediation.

An initial analysis tested for heterogeneity of regression. With cooperation as the dependent variable, we simultaneously entered centered assessments of all five reasons into an analysis of covariance (ANCOVA) along with the factorial combination of the two manipulated variables and gender and the interactions of the reasons with groups versus individuals. There was significant heterogeneity of regression for max joint—for the Groups Versus Individuals \times Max Joint interaction, $F(1, 126) = 17.20, p < .01$. The interaction reduced to four the number of variables that could be tested for mediation.

Next, we simultaneously entered the four remaining reasons into an ANCOVA along with the factorial combination of the two manipulated variables and gender. As reported earlier, the groups versus individuals main effect for cooperation in a standard ANOVA of the two manipulated variables and gender was significant, $F(1, 136) = 33.41, p < .01$. When min dif, max rel, max own, and distrust were added as covariates, the effect of groups versus individuals was reduced, but it remained significant, $F(1, 132) = 7.36, p < .01$. Two of the four reasons were significantly associated with cooperation—these were max rel, $B = -0.19, F(1, 132) = 20.50, p < .01$, and distrust, $B = -0.27, F(1, 132) = 45.28, p < .01$. As tested by MacKinnon et al.'s (2002) z' , the indirect effects of groups versus individuals on cooperation through max rel and distrust were significant; for max rel, $z' =$

Table 2
Means Proportions of Cooperation, Withdrawal, and Competition, Experiment 1

Trust	Cooperation		Withdrawal		Competition	
	Individuals	Groups	Individuals	Groups	Individuals	Groups
Low	.71	.20	.23	.59	.06	.20
High	.83	.43	.06	.31	.11	.26

$-3.62, p < .01$, and for distrust, $z' = -1.51, p < .01$.⁵ These results are consistent with the possibility that the tendency of groups to be less cooperative than individuals was partially mediated by groups' greater concern with maximizing relative outcomes and by groups' greater distrust. Note that mediation by max rel is consistent with the greed interpretation and that mediation by distrust is consistent with the fear interpretation.

Mediation analyses of the groups versus individuals main effect for withdrawal. With withdrawal as the dependent variable, we simultaneously entered all five reasons into an ANCOVA, along with the factorial combination of the two manipulated variables and gender and the double interactions of the reasons with groups versus individuals (to test for heterogeneity of regression). There was significant heterogeneity of regression for max own, $F(1, 126) = 5.60, p < .05$, for max joint, $F(1, 126) = 16.37, p < .01$, and for min dif, $F(1, 126) = 4.05, p < .05$. The interactions reduced to two the number of variables that could be tested for mediation.

We simultaneously entered the two remaining reasons into an ANCOVA along with the factorial combination of the two manipulated variables and gender. As reported previously, the groups versus individuals main effect for withdrawal in a standard ANOVA of the two manipulated variables and gender was significant, $F(1, 136) = 15.83, p < .01$. When max rel and distrust were added as covariates, the effect of groups versus individuals was reduced, but it remained significant, $F(1, 134) = 9.50, p < .01$. Withdrawal was positively associated with distrust, $B = 0.29, F(1, 134) = 41.74$, and negatively associated with max rel, $B = -0.14, F(1, 134) = 10.68, p < .01$. The latter finding indicates that the more participants were concerned with relative advantage, the less they were inclined to withdraw (and thus achieve equal outcomes).

The indirect effect of groups versus individuals on withdrawal through distrust was significant, $z' = 3.61, p < .01$, as was the indirect effect through max rel, $z' = -1.10, p < .01$. These results are consistent with the possibility that the greater tendency of groups than of individuals to withdraw was partially mediated by the greater distrust of groups. The results further indicate that the effect of individuals versus groups on withdrawal occurred despite groups' greater concern with maximizing relative outcomes, or winning.

Mediation analyses of the groups versus individuals main effect for competition. With competition as the dependent variable, we simultaneously entered all five reasons into an ANCOVA with the factorial combination of the two manipulated variables and gender and the double interactions of each choice with groups versus individuals. There was significant or marginal heterogeneity of regression for max own, $F(1, 126) = 11.15, p < .01$, and distrust, $F(1, 126) = 3.31, p < .07$. These results reduce to three the number of variables that could be tested for mediation.

We simultaneously entered the three remaining reasons into an ANCOVA along with the factorial combination of the two manipulated variables and gender. As reported previously, the groups versus individuals main effect for competition in a standard ANOVA of the two manipulated variables and gender was significant, $F(1, 136) = 5.08, p < .05$. When the three remaining reasons were added as covariates, the effect of groups versus individuals was no longer significant, $F(1, 133) = 2.92, p < .09$. Two of the three reasons significantly predicted competition—these were max rel, $B = 0.29, F(1, 133) = 84.58, p < .01$, and max joint, $B = -0.07, F(1, 133) = 4.62, p < .05$. The indirect effects

of groups versus individuals on competition through max rel and max joint were significant; for max rel, $z' = 3.99, p < .01$, and for max joint, $z' = -3.72, p < .01$. These results are consistent with the possibility that the tendency of groups to be more competitive than individuals was partially mediated by the greater concern of groups with maximizing relative outcomes and by the lesser concern of groups with maximizing joint outcomes. Mediation of the groups versus individuals effect on competition by max rel is consistent with the greed hypothesis, but what about max joint? As it is primarily individuals who express a concern with max joint, mediation by max joint is consistent with the identifiability hypothesis, but it could also reflect groups' greater greed or operation of the in-group-favoring norm.

Discussion

The importance of the present results primarily relates to the fact that, for both groups and individuals, an experimental manipulation of trust had the expected effect of both increasing cooperation and decreasing withdrawal. The effect on cooperation is consistent with the prior assumption that the greater distrust toward other groups than toward other individuals is partially responsible for the lesser cooperation of groups than individuals. Likewise, the effect on withdrawal is consistent with the prior assumption that the greater distrust toward other groups than toward other individuals is partially responsible for the greater withdrawal of groups than individuals.

What the trust manipulation failed to significantly increase was competition. The failure of this effect may be due to the questionable fairness of competing with a trustworthy, but vulnerable, other. That participants would have regarded competition with a trustworthy other as unfair is, we think, quite possible. Of course, that interpretation was not directly tested by the present data. Several participants did, however, make spontaneous comments to the effect that they felt uneasy about competing with a trustworthy other. Although this interpretation is, for us, post hoc, it is not entirely novel. Van Lange and Liebrand (1991) report evidence that individual participants in both The Netherlands and the United States expected more cooperation from, and cooperated more with, another participant who had been described as highly moral than from another participant described as less moral.

Consistent with repeated past findings, groups competed more, withdrew more, and cooperated less than individuals. Mediation analyses revealed results largely, but not totally, consistent with expectations. There was evidence for mediation of the groups versus individuals main effect on cooperation by distrust and max rel, on withdrawal by distrust and max rel, and on competition by max rel and max joint. The tendency for more max rel to be associated with less cooperation and more competition for groups is consistent with the greed interpretation of discontinuity. The tendency for more max joint to be associated with less competition for individuals is consistent with the identifiability interpretation—although the significant indirect effect may also reflect groups' greater greed or responsiveness to the in-group-favoring norm. The tendency for more distrust to be associated with less cooperation and more withdrawal for groups is consistent with the fear inter-

⁵ The critical z' values for alphas of .05 and .01 are 0.97 and 1.1 respectively (MacKinnon et al., 2002).

pretation of discontinuity. Finally, the negative association between max rel and more withdrawal for groups is not directly related to our hypotheses. Still, it is reasonable that those groups that were concerned with winning should be reluctant to select withdrawal (and thus obtain equal outcomes).

Heterogeneity of regression prevented the testing of all of the implications of our hypotheses. For example, heterogeneity of regression prevented testing for mediation of competitiveness by max own—as implied by the greed hypothesis—and heterogeneity of regression prevented testing for mediation of cooperation by max joint—as implied by the identifiability hypothesis.

The single most important finding is an experimental demonstration of an effect of trust–distrust on cooperation and withdrawal for both groups and individuals. Although distrust between individuals was less than distrust between groups, for those individuals who did distrust it was rational to withdraw and not to cooperate.

Given the results for trust–distrust, a further question relates to the circumstances giving rise to differing degrees of trust or distrust. What we would like to identify is a variable that functions to increase trust, or the expectation that the other group will cooperate, without at the same time carrying a stigma associated with unfair exploitation. A particularly interesting possibility here is perceived categorization of the interacting parties. What we find interesting about similar categorization as a cue for trust, or the expectation that the other group will cooperate, is that such a cue appears not to imply that competition is morally questionable—particularly if the categorization is “mere” categorization and not categorization that is explicitly associated with self-identity. Experiment 2 was designed to investigate the possibility that perceived similar categorization increases competition in groups relative to individuals (unlike in Experiment 1), while at the same time generally increasing cooperation and decreasing withdrawal (as in Experiment 1).

Experiment 2

Prior investigations of categorization in the context of the discontinuity effect have not been encouraging. An unpublished study by S. L. Gaertner and Rust (2000) found no significant effect on PDG choices for an experimental manipulation of categorization—although the basic discontinuity effect was replicated. We have obtained pilot data indicating no significant effect on PDG choices for two different recategorization manipulations. The pilot studies began with the formation of four 3-person groups, which were subsequently combined into two rival 6-person groups or, in a different version, two independent 6-person groups, each working cooperatively on a task. The recategorization worked well, in the sense of increasing liking for former out-group members and creating satisfactory working relations with them. However, when we regrouped participants into their initial 3-person groups and asked them to interact with previous group members on a PDG, their rate of competition was just as large as the rate for groups whose members were never recategorized.

An alternative approach to the problem has been to include in various discontinuity investigations S. L. Gaertner, Mann, Murrell, and Dovidio’s (1989) assessment of whether the participants present in the session were perceived as separate individuals, one group, or two groups. These studies (Insko, Wildschut, & Pinter, 2003; Insko et al., 1998, 2001; Schopler et al., 1995) are somewhat

more encouraging, but they revealed only an inconsistent tendency for the assessment to track the choice results. The two more recent studies (Insko et al., 2001, 2003), however, obtained results that provide a suggestion as to proper understanding of the relationship between categorization and the discontinuity effect. Unlike the prior studies, these studies examined the relationship between categorization and distrust, and they found a significant positive association of distrust with perceived two groups or with the difference between perceived two groups and perceived separate individuals. Although this finding is between observed, rather than manipulated, variables, it is possible that perceived categorization is one determinant of trust.

The possibility that shared categorization increases trust is consistent with existing conclusions by Rabbie, Schot, and Visser (1989) and L. Gaertner and Insko (2000) that own-category favoring allocations in the mere-categorization situation are due to expectations of own-category reciprocation rather than to processes related to social identity (Tajfel & Turner, 1979). Brewer (1981) earlier commented that “membership in a salient social category” may be “one solution . . . to the dilemma of trust” (p. 356). However, if categorization does impact trust, why did S. L. Gaertner and Rust’s (2000) study and our pilot studies fail to find a significant effect of categorization manipulations on PDG choices? Recall that in Experiment 1, trust had a significant effect on the withdrawal PDG-Alt choice and a nonsignificant, but descriptively opposite, effect on the competitive choice. Thus, it is reasonable that with the PDG a trust manipulation would not have a particularly robust effect on the noncooperative choice—a choice that confounds withdrawal and competition. Furthermore, the tendency for directionally opposite effects on the PDG to cancel out would be much more likely if competing with a same-category other were less counternormative than competing with a trustworthy other. If this reasoning is correct, one would expect that with the PDG-Alt matrix similar categorization would increase the tendency for groups to compete more than individuals. Also, as with the trust effects in Experiment 1, similar categorization should increase cooperation and decrease withdrawal. The major purpose of Experiment 2 was to test these expectations and, generally, to investigate the relationship between trust and a manipulation of categorization through assignment of participants to one of two artistic-preference categories.

Despite the cited evidence for a relationship between categorization and trust and Brewer’s (1981) plausible argument for a relationship between categorization and trust, Orbell, Dawes, and Schwartz-Shea (1994) concluded that categorization does not affect trust. They found that, although both men and women generally expected women to be more trustworthy than men, the gender of the opponent had no significant effect on the expected cooperation (trust) or trusting behavior of individual participants in a social dilemma. Orbell, Dawes, and Schwartz-Shea further speculated that the nonsignificant results for gender categories would probably hold for “other social categories by which we develop our expectations about each other” (1994, p. 126).

We have two observations regarding the Orbell, Dawes, and Schwartz-Shea generalization. First, the generalization may not apply to nondilemma situations like those investigated in mere-categorization research. Note that in these situations the two categories constitute the only objective basis for differential awarding of money and, also, that the decision to follow expected reciprocation from own-category members and award money to own-

category members does not put the allocator at risk. Second, even in social dilemmas, the generalization may not apply to groups. Note that a possible implication of the fear, or schema-based distrust, hypothesis is that we are wary of out-groups and such vigilance may make participants particularly attentive to cues regarding expected cooperation. In fact, the schema-based distrust hypothesis can be interpreted as implying that categorization should have a greater effect on the expected cooperation of other groups than of other individuals. To the extent that this is true, the Experiment 2 results should differ from the Experiment 1 results in which it was found that the trust manipulation did not have a significantly greater impact on the assessed distrust of groups than of individuals.

As previously observed, the fear and greed hypotheses have the seemingly paradoxical implication that high trust increases both cooperation and competition. A solution to this paradox is possible to the extent that some groups are relatively more influenced by fear and some are relatively more influenced by greed. Yet what accounts for the difference? One possibility relates to individual differences in shame or guilt. We attempted to investigate this matter by administering a measure of shame and guilt, the Dimensions of Conscience Questionnaire (Johnson, Kim, & Danko, 1989; Johnson et al., 1987). The items in the scale call for 5-point ratings of how bad it would feel to commit certain acts. Johnson and colleagues conducted an initial factor analysis of the items that resulted in two important factors: "(1) shame; embarrassment (basically making a fool of oneself), and (2) guilt; violations of interpersonal confidence and trust" (Johnson et al., 1987, p. 358). The shame factor includes items such as "Spilling food at a buffet dinner," and the guilt factor includes items such as "Allowing someone else to be blamed for something you have done" (Johnson et al., 1987, p. 358).

Data collected previously by Wildschut et al. (2002) and described in detail in Wildschut and Insko (in press) suggest a role for guilt, but not shame, in moderating the influence of an in-group-favoring norm. Consistent with the assumption of an in-group-favoring norm, physically separated group members who anticipated meeting to discuss their single PDG choice were more competitive than group members who had no such expectation. However, this anticipated-meeting variable interacted with guilt such that it was the high-guilt group members rather than the low-guilt group members who showed greater competitiveness in the anticipated-meeting condition. These results suggest, consistent with the findings of Smith, Webster, Parrott, and Eyre (2002), that guilt is more closely linked to moral norms than is shame (see also Tangney, 2003). Because there is reason to believe that high-guilt group members are particularly sensitive to demands of an in-group-favoring norm, we expected that they would be most likely to exploit through competition any vulnerability of the opponent that is implied by similar categorization.

In addition to measuring expected cooperation, as in Experiment 1, Experiment 2 included two additional expectancy measures, an assessment of abrasiveness and an assessment of agreeableness, both developed by Hoyle, Pinkley, and Insko (1989). Hoyle et al. obtained these measures from a factor analysis of 50 adjectives that participants used to describe everyday interactions either between individuals or between groups. Seven adjectives (*boastful, domineering, demanding, overconfident, proud, competitive, aggressive*) loaded on the abrasiveness factor and seven adjectives (*trustworthy, cooperative, helpful, patient, forgiving, unselfish,*

loyal) loaded on the agreeableness factor. Overall scores indicated that interactions between groups were judged to be higher on abrasiveness and lower on agreeableness than interactions between individuals. Pemberton et al. (1996) obtained similar results for recalled interindividual or intergroup interactions.

It is of interest that one of the factors in the Five-Factor Model, or Big Five (e.g., Digman, 1996; Goldberg, 1992; McCrae & Costa, 1987) is labeled Agreeableness. In fact, Graziano and colleagues have demonstrated a relationship between agreeableness, as measured by the Goldberg (1992) procedure (e.g., warm self-rating minus cold self-rating, kind self-rating minus unkind self-rating) and conflict between individuals (Graziano, Jensen-Campbell, & Hair, 1996) and within a group (Graziano, Hair, & Finch, 1997). However, despite the conceptual similarity with the Big Five assessment, our assessment is not a self-rating, but a rating of interactions, or anticipated interactions, between either individuals or groups.

Because abrasiveness and agreeableness assessments do not specifically relate to matrix choices, they can be easily taken before the individuals, or groups, make explicit matrix choices. The disadvantage of such positioning is that the assessments cannot reflect the influence of group discussion or of individual consideration prior to the explicit choice, but the advantage is that the assessments are less likely influenced by after-the-choice projection or rationalization. The assessment of expected cooperation, on the other hand, was taken, as in Experiment 1, after the choice (but before feedback as to the opponent's actual choice).

In addition to finding categorization effects paralleling those found for trust in Experiment 1, we also, of course, expected to replicate the groups versus individuals effects found in Experiment 1 for cooperation, withdrawal, competition, and the five reasons for the choice.

Method

Participants. The participants were 258 introductory psychology students (120 men, 138 women) from the University of North Carolina at Chapel Hill who participated in partial fulfillment of a class requirement.

Independent variables. The experimental design included two independent variables (groups vs. individuals and categorization) and a gender factor. Groups versus individuals was manipulated by comparing interaction between two 3-person groups with interaction between 2 individuals. Categorization was manipulated by falsely informing the participants either that they all preferred the same artist, Klee or Kandinsky, or that the interacting individuals or groups preferred different artists. Finally, the participants in any given session were always either all men or all women. Additional independent variables were shame and guilt proneness, both measured at the beginning of each session.

Procedure. Participants were initially informed that the Psychology Department had randomly selected them to complete a questionnaire and were given the Dimensions of Conscience Questionnaire measure of shame and guilt proneness. After completing the questionnaire, participants were told that the experiment was part of a larger study relating artistic preference to social interaction, and the present experiment was a pilot test of one of several social interaction tasks. Initially participants viewed pairs of unidentified colored slides, with one member of the pair a picture by Klee and one a picture by Kandinsky. For each pair the participants indicated whether they preferred the picture on the left or the picture on the right. After the experimenter supposedly tallied the preferences, participants were individually informed of their supposed preferences and were immediately assigned to one of two rooms that were connected to a central room. In the same-category condition the 2 individuals, or two 3-person groups, were told that they all preferred the same artist, Klee or Kandinsky. In the

different-category condition participants assigned to one of the rooms were told that they preferred Klee and participants assigned to the other room were told that they preferred Kandinsky. The specific artist names, Klee or Kandinsky, were counterbalanced in both the same- and different-category sessions.

After being assigned to rooms, participants were trained first on the Figure 1 PDG matrix and then on the Figure 2 PDG-Alt matrix, exactly as in Experiment 1. Following the training, individuals were told that they would be meeting at the table in the central room for a 1-min discussion of their decisions, and groups were told that they would be selecting a representative for a similar 1 min discussion. At that point, participants were given a questionnaire containing the Abrasiveness and Agreeableness scales framed so as to relate to anticipated relations with the opponent in the other room. After completing the scales, individuals were given 1 min to consider their decision, and groups were given 1 min to discuss their decision and to select a representative. Following a 1-min meeting in the central room between individuals, or between group representatives, individuals and groups were given an additional minute to record a final decision. Group members understood that the 3 members would make a collective decision, and all participants understood that there was to be only one trial.

After collecting the decisions, the experimenter gave each participant a postexperimental questionnaire containing various assessments, including an assessment of suspicion. Finally, the groups or individuals were awarded the money they had earned, were debriefed, and, as promised earlier, dismissed separately. Except for 3 participants who questioned whether they would be allowed to keep the money, no participants expressed suspicion regarding the procedure or the categorization manipulation.

Dependent variables. As in Experiment 1, the three main dependent variables were the choice to cooperate (X), the choice to withdraw (Y), and the choice to compete (Z). Also, as in Experiment 1, there were a number of assessments on the postexperimental questionnaire relating to expected choice and reasons for the choice. Prior to explicit consideration or discussion of the matrix choice, participants completed Hoyle et al.'s (1989) Abrasiveness and Agreeableness scales. Each scale included seven adjectives that were rated on 9-point scales ranging from 1 (*does not describe*) to 9 (*describes very well*). Reliabilities for the two scales were acceptable: $\alpha = .90$ for Abrasiveness and $.87$ for Agreeableness.

Items not included on the Experiment 1 postexperimental questionnaire were two manipulation checks for the categorization manipulation and two assessments of perceived groupness, or entitativity. The manipulation checks for categorization were, first, questions asking the participants to recall their preferred artist, Klee or Kandinsky, and the artist preferred by the person or group in the other room and, second, a rating of the extent to which the two individuals or groups were perceived as similar. Because the similarity rating, the last item on the postexperimental questionnaire, was added after data collection had begun, the obtained results are based on a subset of the total sample. These ratings were made on a 7-point scale ranging from 1 (*not at all similar*) to 7 (*very similar*).

Entitativity was measured with two different assessment procedures. The first assessment was the S. L. Gaertner et al. (1989) forced-choice measure of perceived categorization. Participants were asked to indicate whether they thought of the six (for groups) or two (for individuals) people who participated in the experiment as "one group," "two separate groups," or "separate individuals." The second assessment asked for ratings on 7-point scales ranging from 1 (*not at all*) to 7 (*very much*) of the extent to which the participants in the session were perceived as "one group," "two separate groups," or "separate individuals."

As in Experiment 1, there were both open-ended and close-ended assessments of five reasons for the choice. Spearman-Brown-corrected correlations between the two judges who scored the open-ended assessment were as follows: $.93$ for max rel, $.79$ for max own, $.86$ for max joint, $.88$ for min dif, and $.95$ for distrust.

for the close-ended item pairs were as follows: $.84$ for max rel, $.93$ for max own, $.88$ for max joint, $.77$ for min dif, and $.92$ for distrust.

As in Experiment 1, because separate analyses of the open- and close-ended assessments yielded similar results, and because the two types of assessment were moderately correlated, we focus on a z -transformed composite of each of the five reasons. Reliability coefficients for these composites were $.92$ for max rel, $.89$ for max own, $.91$ for max joint, $.86$ for min dif, and $.96$ for distrust.

Unit of analysis. Because, unlike in Experiment 1, the two groups or two individuals actually interacted, the unit of analysis was the interaction pair. There were 33 individual pairs and 32 group pairs. By using the pair as the unit of analysis rather than the separate individuals or groups, we obtained three-level assessments of each choice and thus legitimized data analysis with ANOVA. For the competitive choice, for example, the proportion could be $.00$ (neither side competed), $.50$ (one side competed), or 1.00 (both sides competed).

Results

The main analyses relied on a three-factor model that included groups versus individuals, categorization, and gender and, in some instances, they relied on a four-factor model that added either shame or guilt proneness.

Categorization manipulation checks. Two hundred fifty-two of the 258 participants correctly recalled their own preferred artist, and 241 correctly recalled the preferred artist of the other individual or group. Perceived similarity of the two individuals or groups was assessed with only a subsample of the participants by a scale attached to the end of the postexperimental questionnaire. A three-factor ANOVA of these ratings revealed a significant main effect for categorization only, $F(1, 21) = 22.23, p < .01$. Perceived similarity was higher with same categorization ($M = 5.03$) than with different categorization ($M = 2.95$).⁶

Choice: Cooperation versus withdrawal. As in Experiment 1, we approached the three choices initially from the perspective of two orthogonal contrasts: first, cooperation versus withdrawal, and, second, competition versus the mean of cooperation and withdrawal. The means for all three choices are given in Table 3.

A three-factor ANOVA of the first contrast revealed significant main effects for categorization, $F(1, 57) = 10.13, p < .01$, and for groups versus individuals, $F(1, 57) = 38.38, p < .01$. There was also a significant Groups Versus Individuals \times Categorization interaction, $F(1, 57) = 4.47, p < .05$. The categorization main effect indicates that same category, compared with different categories, was associated with relatively more cooperation than withdrawal. The groups versus individuals main effect indicates that groups, compared with individuals, chose withdrawal relatively more than cooperation. The interaction indicates that the latter tendency for groups to choose withdrawal more than cooperation was particularly evident with different categorization.

⁶ In using perceived similarity as a check for the categorization manipulation, we were not intending to suggest a theory as to the relationship between similarity and categorization, but to rely on ordinary linguistic usage. In ordinary language, categories imply classes, or subsets, that differ qualitatively, but not necessarily quantitatively, for example male and female. Thus in ordinary usage, two women may be seen as more similar than a man and a woman—all else being equal. It is true that perceived similarity may relate to a multitude of classes that differ quantitatively, for example, people of differing heights. Given the multitude of classes, it is perhaps understandable why categorization more readily implies groups than does similarity.

Table 3
Mean Proportions of Cooperation, Withdrawal, and Competition, Experiment 2

Category	Cooperation		Withdrawal		Competition	
	Individuals	Groups	Individuals	Groups	Individuals	Groups
Different	.79	.13	.09	.67	.12	.20
Same	.91	.41	.06	.18	.03	.41

Simple effects for cooperation. Given the three significant effects for the contrast of cooperation and withdrawal, it is appropriate to test these effects for just cooperation and just withdrawal. For cooperation, there were significant main effects for categorization, $F(1, 57) = 6.03, p < .05$, and for groups versus individuals, $F(1, 57) = 48.70, p < .01$. The Groups Versus Individuals \times Categorization interaction was not significant, $F(1, 57) = 0.90, p < .35$. Cooperation was greater with same than with different categorization and with individuals than with groups (see Table 3).

Adding either shame or guilt to the three-factor model revealed no additional significant effects.

Simple effects for withdrawal. For withdrawal, there were again significant main effects for categorization, $F(1, 57) = 11.26, p < .01$, and for groups versus individuals, $F(1, 57) = 18.27, p < .01$. Withdrawal was greater with different than same categorization and with groups than individuals. The main effects for categorization and for groups versus individuals on cooperation and withdrawal were directionally opposite—and significantly so. This pattern of results parallels the results for trust and groups versus individuals obtained in Experiment 1.

One other effect was significant for withdrawal, the Groups Versus Individuals \times Categorization interaction, $F(1, 57) = 8.60, p < .01$. The tendency for groups to withdraw more than individuals was relatively greater with different than with same categorization. The categorization effect was significant for groups, $F(1, 57) = 19.61, p < .01$, but not for individuals, $F(1, 57) = 0.09, p < .77$. A parallel interaction did not occur in Experiment 1. The difference between experiments suggests that whereas groups are more reactive to different categorization than are individuals, groups and individuals do not significantly differ in their reaction to low trustworthiness. Individuals, like groups, appear to withdraw when interacting with an opponent low in trustworthiness.

Adding either shame or guilt to the three-factor model revealed no additional significant effects.

Choice: Competition versus the mean of cooperation and withdrawal. A three-factor ANOVA of the contrast between competition and mean of cooperation and withdrawal revealed a significant groups versus individuals main effect, $F(1, 57) = 11.98, p < .01$ and a significant Groups Versus Individuals \times Categorization interaction, $F(1, 57) = 5.49, p < .05$. Relative to the other choices, groups competed more than individuals, particularly with same rather than different categorization. Because of the dependency between the two types of choice, the same effects occurred for just competition (see Table 3). For just groups the contrast of same versus different categorization was significant, $F(1, 57) = 5.56, p < .05$, whereas the directionally opposite difference for individuals was not significant, $F(1, 57) = 0.97, p < .33$.

Guilt effect for groups with same categorization. Adding shame to the three-factor model resulted in no additional effects.

The same was not true, however, for guilt. The theoretically important Groups Versus Individual \times Categorization double interaction was qualified by guilt, $F(1, 49) = 7.15, p < .01$ for the Groups Versus Individuals \times Categorization \times Guilt triple interaction. The double-interaction pattern for groups to compete more with same than different categorization was relatively greater for groups composed of participants that were high in guilt proneness. The Groups Versus Individuals \times Categorization interaction was significant with high guilt, $F(1, 49) = 10.15, p < .01$ (see the means in the two high-guilt columns in Table 4), and the directionally opposite interaction with low guilt was not significant, $F(1, 49) = 0.97, p < .34$ (see the low guilt columns in Table 4). Breaking down the significant double interaction with high guilt, we found that groups competed more with same than with different categorization, $F(1, 49) = 16.49, p < .01$ (.53 vs. .11), and the directionally opposite tendency for individuals was not significant, $F(1, 49) = 0.97, p < .34$ (.00 vs. .12).

Joint guilt and gender effect for groups. Adding guilt to the three-factor model also produced a significant Groups Versus Individuals \times Guilt \times Gender interaction, $F(1, 49) = 4.93, p < .05$ (see Table 5). Completely describing this particular interaction is more challenging than is sometimes the case. We approached the interaction by breaking down the triple interaction into the six possible double interactions: first, Groups Versus Individuals \times Gender separately for low and high guilt; second, Groups Versus Individuals \times Guilt separately for women and men; third, Guilt \times Gender separately for groups and individuals.

Before focusing on the double interactions, note from Table 5 that at a descriptive level, the two largest contrasts of groups and individuals were for low-guilt men (.49 vs. .04), and high-guilt women (.36 vs. .00). At the level of simple effects, both of these contrasts were significant, $F(1, 49) = 7.66, p < .01$, for low-guilt men and $F(1, 49) = 6.01, p < .05$ for high-guilt women. Note, further, that the smallest contrast of groups versus individuals was for low-guilt women. In fact, at a purely descriptive level, the effect did not exist (.13 vs. .13). As we hope becomes clear, the significant double interactions involve relative differences with one or with both of these cell means.

The Groups Versus Individuals \times Gender interaction was significant for low guilt, $F(1, 49) = 5.52, p < .05$, but not for high guilt. Note from the bottom row of Table 5 that the significant double interaction involves a contrast of the largest discontinuity effect, which was for low-guilt men, with the smallest discontinuity effect, which was for low-guilt women. Taken by itself, this double interaction suggests that the significant, overall triple in-

Table 4
Mean Proportion of Competition as a Function of Groups Versus Individuals, Categorization, and Guilt

Category	Low guilt		High guilt	
	Individuals	Groups	Individuals	Groups
Different	.13	.42	.12	.11
Same	.06	.17	.00 ^a	.53

Note. High and low guilt are predicted values one standard deviation above and below the mean.

^a Because proportions cannot be negative, the obtained, predicted value of $-.02$ was truncated at $.00$.

Table 5
*Mean Proportion of Competition as a Function of Groups
 Versus Individuals, Guilt, and Gender*

Guilt	Male		Female	
	Individuals	Groups	Individuals	Groups
High	.10	.28	.00	.36
Low	.04	.49	.13	.13

Note. High and low guilt are predicted values one standard deviation above and below the mean.

teraction was due to the differential, cross-cell behavior of men. However, the further double interactions point to the differential, cross-cell behavior of women.

The Groups Versus Individuals \times Guilt interaction was only significant for women, $F(1, 49) = 5.57, p < .05$. Note from the last two columns of Table 5 that the significant double interaction involves a contrast of the significant groups versus individuals effect for high-guilt women with the nonsignificant (and descriptively nonexistent) groups versus individuals effect for low-guilt women. This significant double interaction points to the relevance of the differential, cross-cell behavior of women in contributing to the overall triple interaction.

Finally, the Guilt \times Gender interaction was significant for groups, $F(1, 49) = 6.92, p < .05$, but not for individuals. The significant double interaction can be seen in the third and fifth columns of Table 5. For female groups, high guilt was associated with more competitiveness, $F(1, 49) = 5.57, p < .05$, but for male groups, the opposite tendency for low guilt to be associated with more competitiveness was not significant, $F(1, 49) = 2.45, p < .124$. Taken by itself, this double interaction pattern suggests that the significant triple interaction flows from the differential, cross-cell behavior of female groups. It is for female groups that increasing guilt was associated with increasing competitiveness. As is argued later, this differential gender pattern is possibly explicable by Taylor et al.'s (2000) theory of gender differences in reactions to stress. However, the described triple interaction involving categorization (Groups vs. Individuals \times Categorization \times Guilt) did not involve gender and thus suggests that there are circumstances in which the gender difference may not play a role. The total data pattern implies that in the context of perceived out-group vulnerability, or of some other circumstance relevant to the in-group-favoring norm, increasing guilt may be associated with increasing competitiveness for both male and female groups.

Reasons for choice. Five reasons for the choice (max own, max joint, min dif, max rel, and distrust) were assessed both with coded opened-ended statements and close-ended ratings. The correlations between the statements and the ratings were as follows: .47 for max joint, .23 for max own, .42 for max rel, .29 for min dif, and .62 for distrust. As in Experiment 1, we report only the results for the z -transformed composites.

For groups versus individuals there were main effects on all five reasons: $F(1, 57) = 7.59, p < .05$, for max own; $F(1, 57) = 64.02, p < .01$, for max joint; $F(1, 57) = 6.00, p < .01$, for min dif; $F(1, 57) = 6.17, p < .05$, for max rel; and $F(1, 57) = 76.24, p < .01$, for distrust. Groups reported more max own than individuals (.25 vs. -.23), more max rel than individuals (.25 vs. -.24), and more distrust than individuals (.63 vs. -.58). On the other hand, indi-

viduals reported more max joint than groups (.59 vs. -.61) and more min dif than groups (.23 vs. -.24). (Recall that the means are in z metric.) These results parallel what was found in Experiment 1.

For categorization, there were significant main effects for min dif, $F(1, 57) = 5.25, p < .05$, and for distrust, $F(1, 57) = 14.56, p < .01$, and a marginal main effect for max joint, $F(1, 57) = 3.81, p < .06$. (The latter effect was significant when gender was omitted from the model, $F(1, 61) = 4.53, p < .05$.) With same, as opposed to different, categorization there was more concern with min dif or fairness (.19 vs. -.24) and with max joint (.15 vs. -.17), and there was less distrust (-.24 vs. .28). These results support the initial assumption that categorization serves as a manipulation of trust. However, the categorization effect for distrust was qualified by a significant Groups Versus Individuals \times Categorization interaction, $F(1, 57) = 22.39, p < .01$. The tendency toward greater distrust for different category opponents was relatively stronger for groups (1.22 vs. .04) than for individuals (-.63 vs. -.52). This result is consistent with an implication of the schema-based distrust hypothesis that participants are particularly wary of out-groups and of cues suggesting trust or distrust. The simple categorization effect for groups was significant, $F(1, 57) = 36.13, p < .01$, but the directionally opposite effect for individuals was not significant, $F(1, 57) = 0.42, p < .52$. The nonsignificant effect for individuals is consistent with the argument of Orbell, Dawes, and Schwartz-Shea (1994) that categories do not affect trust. Note, finally, that the general tendency toward more distrust for groups than for individuals was significant with both different categorization, $F(1, 57) = 88.44, p < .01$, and same categorization, $F(1, 57) = 8.20, p < .01$.⁷

Finally, for gender, there was a significant main effect for min dif, $F(1, 57) = 5.89, p < .05$. Women were more concerned with min dif or fairness than were men (.20 vs. -.23).

Anticipated agreeableness and abrasiveness. Mean anticipated agreeableness and abrasiveness are given in Table 6. For agreeableness there were significant effects for categorization, $F(1, 57) = 6.46, p < .05$, for groups versus individuals, $F(1, 57) = 38.85, p < .01$, and for the Groups Versus Individuals \times Categorization interaction, $F(1, 57) = 6.98, p < .05$. The tendency toward more anticipated agreeableness with same than different categorization was present for groups (6.55 vs. 5.71) but not for individuals (7.13 vs. 7.18). However, the general tendency toward more anticipated agreeableness for individuals than for groups was significant for both same categorization, $F(1, 57) = 6.61, p < .05$, and different categorization, $F(1, 57) = 38.43, p < .01$. These results parallel the results for distrust but are less problematic because the agreeableness assessment occurred before the choice, or consideration of the choice, and thus is less likely a rationalization of the choice or a projection of own low trustworthiness.

For anticipated abrasiveness, there were again significant effects for categorization, $F(1, 57) = 4.27, p < .05$, for groups versus individuals, $F(1, 57) = 18.56, p < .01$, and for the Groups Versus Individuals \times Categorization interaction, $F(1, 57) = 6.77, p < .05$. As the means in Table 6 indicate, the Groups Versus Individuals \times Categorization interaction implies that the tendency toward more anticipated abrasiveness with different than same categorization

⁷ The same pattern of significant and nonsignificant ANOVA F s and simple effects was obtained for the assessment of expected cooperation.

was present for groups (4.72 vs. 3.80) but not for individuals (3.30 vs. 3.44). The general tendency toward more anticipated abrasiveness for groups than for individuals was not present for same categorization, $F(1, 57) = 1.49, p < .23$, but was present for different categorization, $F(1, 57) = 23.30, p < .01$.⁸

The pattern of results for anticipated abrasiveness approximately parallels the previously described patterns for agreeableness and for distrust. Groups, relative to individuals, were significantly more sensitive to the problematic implications of different categorization. Adding either shame or guilt to the three-factor models for agreeableness and abrasiveness resulted in no additional effects.

Perceived groupness. Participants were asked to indicate whether they thought of the six (for groups) or two (for individuals) people present as one group, two groups, or separate individuals. As was the case for the three PDG-Alt choices, each of these alternatives could assume three values: .00, if selected by neither side, .50, if selected by one side, and 1.00, if selected by both sides. In past research we have avoided asking the two individuals in the individuals condition to indicate the extent to which they were two groups. In the present context of categorization information, however, we assumed, consistent with Brewer and Gardner's (1996) concept of the symbolic representation of groups, that such an assessment was potentially meaningful. We approached the forced-choice judgments with two orthogonal contrasts. The first is a contrast of two groups and separate individuals. The second is a contrast of one group and the combination of two groups and separate individuals. The first contrast relates directly to differentiated entitativity, or the extent to which the two sides were seen as separate groups relative to separate individuals. The second contrast is of less direct interest.

Mean proportions of the extent to which the participants present in a session were judged as one group, two groups, or separate individuals are presented in Table 7. A three-factor ANOVA of the second contrast revealed no significant effects. However, a three-factor ANOVA of the first contrast revealed significant effects for groups versus individuals, $F(1, 57) = 89.36, p < .01$, and for categorization, $F(1, 57) = 5.84, p < .05$. The tendency to perceive two groups relative to separate individuals was greater with groups than individuals and with different categorization than same categorization.

Given the significant main effects for the first contrast, it is appropriate to examine the simple effects for just perceived two groups and for just perceived separate individuals. For perceived two groups there were significant effects for groups versus individuals, $F(1, 57) = 87.74, p < .01$, and for categorization, $F(1, 57) = 9.65, p < .01$. For perceived separate individuals there was only a significant effect for groups versus individuals, $F(1, 57) =$

Table 6
Mean Anticipated Agreeableness and Abrasiveness as a Function of Groups Versus Individuals, and Categorization

Category	Agreeableness		Abrabiveness	
	Individuals	Groups	Individuals	Groups
Different	7.18	5.71	3.30	4.72
Same	7.13	6.55	3.44	3.80

Note. Scores were averaged across 9-point scales.

Table 7
Mean Proportions Judged as One Group, Two Groups, and Separate Individuals

Category	One group		Two groups		Separate individuals	
	Individuals	Groups	Individuals	Groups	Individuals	Groups
Different	.21	.22	.15	.67	.65	.12
Same	.28	.26	.00	.47	.72	.26

Note. Proportions were calculated in each experimental session.

49.88, $p < .01$. The groups condition relative to the individuals condition both increased the tendency to perceive two groups and reduced the tendency to perceive separate individuals. However, the different categorization condition relative to the same-categorization condition only increased the tendency to perceive two groups.

With one exception, an analysis of the 7-point ratings revealed the same effects as the forced-choice measure. Unlike results for the forced-choice judgments, the effect of categorization on the rating of separate individuals was significant, $F(1, 57) = 4.17, p < .05$. Contrary to what might be expected, the rating of separate individuals was higher with same categorization ($M = 4.77$) than with different categorization ($M = 4.10$).

Mediation analyses of the groups versus individuals main effect on cooperation. There were significant ANOVA effects of groups versus individuals for max own, max joint, min dif, distrust, and max rel. To test for heterogeneity of regression, we first entered these five variables simultaneously into a model with the factorial combination of groups versus individuals, categorization, and gender (main effects and interactions) and the interaction of each of the five reasons with groups versus individuals. There was marginal heterogeneity of regression for max joint—for the Individuals Versus Groups \times Max Joint interaction, $F(1, 47) = 3.93, p < .06$. This marginal interaction reduced to four the number of variables that could be tested for mediation. As reported before, the groups versus individuals main effect for cooperation in a standard three-factor ANOVA was significant, $F(1, 57) = 48.70, p < .01$. When the four remaining reasons were added to the model as covariates, distrust was significantly associated with cooperation, $B = -0.23, F(1, 53) = 8.63, p < .01$, but the groups versus individuals main effect remained significant, $F(1, 53) = 5.50, p < .05$. As tested by the MacKinnon et al. (2002) z' , the indirect effect of groups versus individuals on cooperation through distrust was significant, $z' = -2.33, p < .01$. These results are consistent with

⁸ There was also a significant Categorization \times Gender interaction, $F(1, 57) = 5.50, p < .05$, indicating that the tendency toward more anticipated abrasiveness with different than with same categorization was present for men, 4.11 versus 3.22, $F(1, 57) = 9.05, p < .01$, but not for women, 3.86 versus 4.00, $F(1, 57) = 0.04, p < .84$. Because this interaction does not involve groups versus individuals, it does not qualify the more theoretically interesting tendency of groups to anticipate more abrasiveness than individuals with different than same categorization (see Table 6). At a descriptive level the Categorization \times Gender interaction partially flows from the tendency of female individuals to anticipate less (not more) abrasiveness with different than same categorization, 3.16 versus 3.91, $F(1, 57) = 3.87, p < .054$.

the possibility that the tendency of groups to be less cooperative than individuals was partially mediated by groups' greater distrust and replicate what was found in Experiment 1. However, unlike in Experiment 1, there was no evidence for mediation by max rel.

Mediation analyses of the groups versus individuals main effect on withdrawal. A mediation analysis of the groups versus individuals effect on withdrawal is more problematic than is the mediation analysis of the groups versus individuals effect on cooperation in Experiments 1 and 2 or the groups versus individuals effects on withdrawal and competition in Experiment 1. Why is that? Recall that for cooperation in Experiments 1 and 2, and for withdrawal and competitiveness in Experiment 1, the main effects for groups versus individuals were not qualified by significant interactions. In Experiment 1 trustworthiness did not significantly interact with groups versus individuals for any of the choices, whereas in Experiment 2 categorization did significantly interact with groups versus individuals for withdrawal and competitiveness. The presence of interaction variance in withdrawal and competition may thus reduce the possibility of detecting mediation of the groups versus individuals main effect.

Initial analyses revealed marginal heterogeneity of regression for max joint—for the Individuals Versus Groups \times Max Joint interaction, $F(1, 47) = 3.64, p < .07$. This marginal interaction reduced to four the number of variables that could be tested for mediation. As reported earlier, the groups versus individuals main effect for withdrawal in a standard ANOVA of the two manipulated variables and gender was significant, $F(1, 57) = 18.27, p < .01$. When the remaining four reasons were added to the model as covariates, distrust was significantly associated with withdrawal, $B = 0.20, F(1, 53) = 6.33, p < .05$, and the groups versus individuals main effect became nonsignificant, $F(1, 53) = 1.31, p < .26$. The indirect effect of groups versus individuals on withdrawal through distrust was significant, $z' = 2.10, p < .01$. These results are consistent with the possibility that the tendency of groups to withdraw more than individuals was mediated by groups' greater distrust and replicate what was found in Experiment 1. However, unlike in Experiment 1, there was no significant evidence for mediation by max rel.

Mediation analyses of the Groups Versus Individuals \times Categorization interaction on withdrawal. Baron and Kenny (1986, p. 1179) discuss mediation of interactions, or moderators. In view of the theoretical importance of the Groups Versus Individuals \times Categorization interaction for withdrawal, we followed the outline of their recommendations with the addition of an indirect test.

There was a significant Groups Versus Individuals \times Categorization interaction for distrust only. To test for heterogeneity of regression, we constructed a model using the factorial combinations of groups versus individuals, categorization, and gender (main effects and interactions), the two-way interactions of distrust with both groups versus individuals and categorization, and the three-way interaction of distrust, groups versus individuals, and categorization. Withdrawal was the dependent variable. There was no significant heterogeneity of regression.

As indicated previously, in a model with the factorial combinations of groups versus individuals, categorization, and gender, the Groups Versus Individuals \times Categorization interaction for withdrawal was significant, $F(1, 57) = 8.60, p < .01$. When distrust was entered into the model as a covariate, distrust was significantly associated with withdrawal, $B = 0.17, F(1, 56) = 5.57, p < .05$, and the Groups Versus Individuals \times Categorization interaction

was no longer significant, $F(1, 56) = 1.77, p < .19$. The indirect effect of the Groups Versus Individuals \times Categorization interaction through distrust was significant, $z' = 2.11, p < .01$. These results are consistent with the possibility that lower levels of distrust within same-category group interactions mediated the tendency for same-category groups to withdraw less than different-category groups.

Mediation analyses of the groups versus individuals main effect on competition. As indicated before, one consideration complicating the test for the mediation of the groups versus individuals main effect was the presence of competitiveness variance associated with the double interaction of groups versus individuals and categorization. The presence of additional competitiveness variance associated with the Groups Versus Individuals \times Categorization \times Guilt triple interaction and the Groups Versus Individuals \times Guilt \times Gender interaction may have further limited the possibility of detecting possible mediation of the groups versus individuals main effect.

Initial analyses revealed no significant heterogeneity of regression for any of the five reasons for choice. As reported, the groups versus individuals main effect for competition in a standard ANOVA of the two manipulated variables and gender was significant, $F(1, 57) = 11.98, p < .01$. When the five reasons for choice were added to the model as covariates, there was a marginal association with competition for max rel, $B = 0.09, F(1, 52) = 3.95, p < .06$, but the groups versus individuals main effect remained significant, $F(1, 52) = 4.35, p < .05$. The indirect effect of groups versus individuals on competition through max rel, $z' = 1.55, p < .01$ was significant. This indirect effect for max rel replicates what was found in Experiment 1. As in Experiment 1, the tendency of groups to be more competitive than individuals was partially predicted by the greater concern of groups with maximizing relative outcomes. We did not replicate the Experiment 1 finding that the tendency of groups to be more competitive was partially predicted by the lesser concern of groups with maximizing joint outcomes.

Mediation analyses of the Groups Versus Individuals \times Categorization interaction on competition. Baron and Kenny's (1986) seminal paper dealing with moderation and mediation detailed two ways in which one could investigate the possibility of mediation of an interaction effect. In one case, an interaction effect on a dependent variable can be attributed to a mediator because one of the manipulated variables differentially affects the mediator at different levels of the other manipulated variable. This is the type of analysis we described for the significant Groups Versus Individuals \times Categorization interaction on withdrawal. Categorization differentially affected levels of distrust (the mediator) for groups relative to individuals.

We can attempt a similar analysis of the Groups Versus Individuals \times Categorization interaction on competition. As reported earlier, there was a significant Groups Versus Individuals \times Categorization interaction only for distrust. We constructed a model including the factorial combination of groups versus individuals, categorization, and gender (main effects and interactions), the two-way interactions of distrust with both groups versus individuals and categorization, and the three-way interaction of distrust, groups versus individuals, and categorization. Competition was the dependent variable. No evidence for heterogeneity of regression was obtained.

In the next step, distrust was added as a covariate to the standard three-factor model. In this model distrust was not significantly associated with competition, $B = 0.06$, $F(1, 56) = 0.93$, $p < .35$, and the Groups Versus Individuals \times Categorization interaction remained significant, $F(1, 56) = 6.22$, $p < .05$. These results imply that the data are not consistent with the possibility of mediation in the first sense of “mediated moderation” presented by Baron and Kenny (1986). However, further analyses found that the data are consistent with the second (albeit more complex) type of mediated moderation they described. In this second case, the significant association between a two-factor interaction and the dependent variable can, in Baron and Kenny’s (1986, p. 1179) language, be “funneled” through an interaction of the mediator with one of the two manipulated variables. The key question addressed by this type of analysis is the degree to which the significant two-factor interaction is reduced when moving from a model that includes the potential mediator as a covariate to an identical model that also includes an interaction of the mediator with one of the manipulated variables.

Because there were significant or marginal main effects of categorization on three of the reasons (min dif, distrust, max joint), we searched for interactions of any of these three reasons with groups versus individuals when competition was the dependent variable. Why did we examine the reasons that were altered by categorization rather than by groups versus individuals? The answer is that we wanted to find a reason that would “stand in” for categorization in the Groups Versus Individuals \times Categorization interaction. We proceeded by constructing a model that added all of the three reasons as covariates and the interactions of each reason with groups versus individuals to the standard three-factor model including groups versus individuals, categorization, and gender. None of the groups versus individuals interactions with the reasons was significant.

Because there were significant main effects of groups versus individuals on all five reasons, we, next, searched for interactions of any of the five reasons with categorization. This was done within the context of the standard three-factor model, plus all five reasons and their interactions with categorization, again with competition as the dependent variable. Consistent with the argument presented above, our rationale for examining those reasons that were altered by groups versus individuals, rather than by categorization, is that we wanted to find a reason that would “stand in” for groups versus individuals in the Groups Versus Individuals \times Categorization interaction. There was a significant Categorization \times Max Rel interaction, $F(1, 47) = 24.16$, $p < .01$, indicating that the relation between max rel and competition was stronger with same categorization than with different categorization. More specific tests indicated that when max rel was high (1 standard deviation above the mean), competition was greater with same than with different categorization, $B = 0.20$, $F(1, 47) = 18.07$, $p < .01$, but when max rel was low (1 standard deviation below the mean), competition was lower with same than with different categorization, $B = -0.12$, $F(1, 47) = 8.04$, $p < .01$.

As indicated previously, when tested with the standard, three-factor model, the Groups Versus Individuals \times Categorization interaction on competition was significant, $F(1, 57) = 5.49$, $p < .05$. When max rel was added to this three-factor model as a covariate, it was positively associated with competition, $B = 0.09$, $F(1, 56) = 4.69$, $p < .05$, but the Groups Versus Individuals \times Categorization interaction remained significant, $F(1, 56) = 5.95$,

$p < .01$. When we moved from the standard, three factor model plus max rel to a model that also included the Categorization \times Max Rel interaction, however, the Categorization \times Max Rel interaction was significant, $F(1, 55) = 20.99$, $p < .01$, and the Groups Versus Individuals \times Categorization interaction was no longer significant, $F(1, 55) = 1.49$, $p < .23$. The reduction in the magnitude of the Groups Versus Individuals \times Categorization interaction that occurred by the addition of the Categorization \times Max Rel interaction was significant, $z' = 2.21$, $p < .01$.⁹ The data are consistent with the possibility that groups but not individuals were significantly more competitive with same than with different categorization because (a) groups were more concerned with winning than were individuals and (b) same categorization increased competition when concern with winning was high but not when it was low. Put in Baron and Kenny’s (1986) terms, max rel mediated the moderating effect of groups versus individuals on categorization.¹⁰

Mediation analyses of the categorization main effect on cooperation. Unlike the categorization effects on competition and withdrawal, the categorization effect on cooperation was not qualified by an interaction with groups versus individuals. Such uniqueness raises a question concerning the possibility of media-

⁹ The magnitude of the reduction in the direct Groups Versus Individual \times Categorization interaction effect on competition when the Categorization \times Max Rel interaction was added to the model is mathematically equivalent to that of the indirect Groups Versus Individual \times Categorization interaction effect on competition “through” the Categorization \times Max Rel interaction, and its significance can therefore be tested by calculating z' (MacKinnon et al., 2002). To achieve this, we created a Categorization \times Max Rel product and used it as dependent variable in a standard, three-factor ANOVA with max rel as a covariate. This analysis confirmed that, as implied by the main effect of groups versus individuals on max rel (see Baron & Kenny, 1986, p. 1179), there was a significant association between the Groups Versus Individuals \times Categorization interaction and the Categorization \times Max Rel interaction, $F(1, 56) = 6.42$, $p < .01$. We then used the association between the Groups Versus Individuals \times Categorization interaction and the Categorization \times Max Rel interaction as Path A in the Sobel formula and the association of the Categorization \times Max Rel interaction with competition, above and beyond the other terms, as Path B in the Sobel formula to calculate z' . Acceptance of this approach depends on the test for heterogeneity of regression not being significant. We verified that the association between the Categorization \times Max Rel term and competition was not significantly qualified by a “quadruple interaction” involving the Groups Versus Individuals \times Categorization term.

¹⁰ A similar approach was also taken for the Groups Versus Individuals \times Categorization \times Guilt interaction on competition, and we again found evidence for a significant reduction in the magnitude of this interaction when the Categorization \times Max Rel interaction was added to the model, $z' = 1.63$, $p < .01$ with gender in the model and $z' = 2.06$, $p < .01$, without gender in the model. Without gender in the model all of the preliminary tests (i.e., Paths A and B in the Sobel formula) were significant. With one exception this was also true with gender in the model. The exception was the marginal association between the Groups Versus Individuals \times Categorization \times Guilt interaction and the Categorization \times Max Rel interaction treated as a dependent variable, $F(1, 48) = 3.29$, $p < .076$ [as implied by a marginal Groups vs. Individuals \times Guilt interaction on max rel, $F(1, 49) = 3.38$, $p < .071$]. Overall, these results are consistent with the implication that it was the high guilt group members who were particularly alert to the relativistic advantage of competing in the context of same categorization.

tion of cooperation by variables other than distrust or expected cooperation. As previously indicated, there were main effects of categorization on three reasons for the choice: distrust, max joint, and min dif. When entered simultaneously, along with the interactions with categorization and the factorial combinations of categorization, groups versus individuals, and gender, there was no evidence for heterogeneity of regression. As was reported, the categorization main effect on cooperation in a standard ANOVA of the two manipulated variables and gender was significant, $F(1, 57) = 6.03, p < .05$. When the three reasons that showed a categorization main effect were added to the model as covariates, only distrust was significantly associated with cooperation, $B = -0.24, F(1, 54) = 9.59, p < .01$, and the categorization main effect became nonsignificant, $F(1, 54) = 0.86, p < .36$. The indirect effect of categorization on cooperation through distrust was significant, $z' = -2.41, p < .01$. These results are consistent with possible total mediation of the effect of categorization on cooperation by distrust. Different categorization increased distrust, and increased distrust predicted decreased cooperation.

Discussion

Competitiveness and guilt. The single most noteworthy result of Experiment 2 was the successful identification of a cue for trust that increased the usual tendency for greater competitiveness between groups than between individuals. As expected, same categorization resulted in a greater tendency for groups to compete than individuals. The theoretical rationale for the prediction was that competing in an attempt to maximize matrix outcomes is most reasonable when it is expected that the opponent will cooperate. If it is expected that the opponent will compete, the rational choice is to withdraw. Recall that the prediction failed in Experiment 1—possibly because competing with groups composed of members who were personally prone to be trustworthy seemed unfair or morally questionable.

It might be argued that it is also morally questionable to compete with someone who is in the same category—and indeed there was a nonsignificant tendency for individuals to be less competitive in the same-category condition (see Table 3). Groups, however, appear to have few such scruples and, relative to individuals, were more competitive with same categorization. The tendency of groups to take advantage of vulnerable out-groups is suggested by three of our hypotheses concerning the general tendency of groups to be more competitive than individuals: First, group members provide each other with social support for self-interested behavior; second, groups are influenced by an in-group-favoring norm; third, group members cannot be identified by the members of the other group as being personally responsible for the selfish-competitive choice.

The particular importance of an in-group-favoring norm is implied by a further result, an interaction indicating that the tendency of groups to compete more than individuals with similar categorization only occurred for participants who were high in guilt proneness. Because the tendency to take advantage of a vulnerable out-group appears more immoral than moral, such a result may initially appear counterintuitive. However, the interaction is consistent with the possibility that high-guilt-prone participants were particularly sensitive to the implications of in-group norms. The following quote from LeBon (1895/1896) illustrates the basic idea:

Taking the word “morality” to mean constant respect for certain social conventions and the permanent repression of selfish impulses, it is quite evident that crowds are too impulsive and too mobile to be moral. If, however, we include in the term morality the transitory display of certain qualities such as abnegation, self-sacrifice, disinterestedness, devotion, and the need of equity, we may say, on the contrary, that crowds may exhibit at times a very lofty morality. (p. 43)

Just as transitory crowds may exhibit such “lofty morality,” so also may transitory groups.

The quotation from LeBon suggests both that temporary crowds may make in-group norms salient and also that the group context counteracts the “repression of selfish impulses.” The later point was also developed by McDougall (1920):

The group spirit secures that the egoistic and the altruistic tendencies of each man’s nature, instead of being in perpetual conflict, as they must be in its absence, shall harmoniously cooperate and reinforce one another throughout a large part of the total field of human activity. (p. 79)

As described previously, the idea that high-guilt-prone group members are particularly responsive to an in-group-favoring norm was suggested by data collected by Wildschut et al. (2002), which are described in detail in Wildschut and Insko (in press). Consistent with the assumption of an in-group-favoring norm, physically separated group members who anticipated meeting to discuss their single PDG choice were more competitive than group members who had no such expectation. However, this anticipated-meeting variable interacted with guilt proneness such that the high-guilt-prone group members, but not the low-guilt-prone group members, competed more in the anticipated-meeting condition.

What accounts for the role of guilt in the production of group competitiveness? In the present experiment, interaction among the high-guilt-prone members may have involved distinctive processes that contributed to the effect and that we did not observe. It is, however, instructive that in the Wildschut & Insko (in press) study guilt proneness increased group competitiveness when interaction among the high-guilt-prone group members was merely anticipated and did not actually occur. Such results suggest that the high-guilt-prone group members were motivated to minimize potential guilt feelings by conforming to the in-group-favoring norm and thus to avoid the disapproval of their behavior by in-group members or by themselves. This in turn suggests that the underlying mechanism may be the maintenance of self-esteem. Although we are speculating beyond the evidence, our speculation is consistent with Cialdini and Trost’s (1998) theory that one of the goals of conformity to social norms is the maintenance of a good-person self-concept.

An implication of the three-way interaction involving guilt on competitiveness is that it helps explain the paradox of expected cooperation. It is the high-guilt group members who were more inclined to take advantage of the vulnerable out-group and to compete—consistent with the in-group-favoring norm hypothesis. Low-guilt group members, on the other hand, were relatively less inclined to compete when the out-group was perceived as vulnerable—though the directionally opposite tendency was not significant (see Table 4).

Cooperation, withdrawal, and distrust. Although the most salient difference between the experiments relates to competitive-

ness, there were also differences in the results for withdrawal and distrust. Results for cooperation, however, did not differ between experiments.

Experiment 1 found that there were significant main effects of trust and groups versus individuals on the contrast of cooperation and withdrawal. Cooperation was greater and withdrawal was less with individuals than with groups and with high trust than low trust (see Table 2). Experiment 2 found parallel main effects on the contrast of cooperation and withdrawal, and, in addition, also found a significant interaction of categorization with groups versus individuals. Follow-up tests indicated that the tendency toward more withdrawal with different categorization was only significant for groups (see Table 3). This result differs from Experiment 1 in which the effect of trust on the contrast of cooperation and withdrawal was not significantly larger for groups than for individuals. The difference between experiments suggests that, whereas groups and individuals do not differ in their reactions to low trustworthiness, groups are more sensitive to cues, such as dissimilar categorization, suggesting low trustworthiness.

The previous interpretation is consistent with the fact that the assessment of distrust revealed an interaction of groups versus individuals with categorization such that dissimilar categorization increased distrust more for groups than for individuals (and, in fact, was only significant for groups). The parallel interaction of manipulated trust with groups versus individuals was not significant in Experiment 1. This pattern suggests that the reason dissimilar categorization did not significantly increase withdrawal for individuals in Experiment 2 was the absence, for individuals, of a significant effect of dissimilar categorization on distrust. These results are somewhat consistent both with Orbell et al.'s (1994) generalization regarding a lack of individual reactivity to categorical information suggestive of trust–distrust and to an implication of the schema-based-distrust hypothesis that groups are particularly attentive to cues suggesting trust–distrust. We say “somewhat” consistent because the effect of categorization on cooperation did not significantly differ between groups and individuals.

Importance of distinguishing between competition and withdrawal. Initially we speculated that a possible reason for the failure of prior studies to find a categorization effect on the noncooperative PDG response was that this response confounds withdrawal and competition. That is, whereas same categorization may decrease withdrawal for some groups, it may increase competition for other groups. The results obtained with the PDG-Alt matrix are consistent with this speculation. For groups, same categorization both decreased withdrawal and increased competition.

Possible mediation of the groups versus individuals main effects for cooperation and withdrawal, but not competition, by distrust. Despite the absence of a significant Individuals Versus Groups \times Categorization interaction on cooperation, there was a significant overall tendency for more cooperation between individuals than between groups and an overall tendency toward less distrust between individuals than between groups. Furthermore, the mediation analysis suggested a possible indirect linkage from groups versus individuals to trust–distrust to cooperation. As in Experiment 1, the mediation analyses in Experiment 2 revealed results consistent with the possibility of mediation, or partial mediation, of the difference between groups and individuals for both cooperation and withdrawal by trust–distrust. Whereas such evidence is only circumstantial, the assumption that the greater distrust of

groups would lead to less cooperation and more withdrawal is intuitively plausible.

Notwithstanding the evidence for distrust mediation of cooperation and withdrawal obtained in both experiments, evidence for max rel mediation of cooperation and withdrawal found in Experiment 1 did not replicate in Experiment 2. For withdrawal, this failure of Experiment 2 to replicate Experiment 1 is not of particular concern because the direction of the mediation in Experiment 1 was to reduce, rather than to increase, the greater withdrawal of groups than individuals.

What about mediation of the groups versus individuals main effect on competition? Experiment 1 found evidence for mediation by max rel and max joint. Max rel was positively linked and max joint was negatively linked to the greater competitiveness of groups than individuals. The positive max rel linkage is consistent with the greed and in-group-favoring norm hypothesis, and the negative max joint linkage is consistent with the greed, in-group-favoring norm, and identifiability hypotheses. If one focuses on the indirect effects, similar results were obtained in Experiment 2 for max rel but not for max joint.

The obvious omission from the Experiment 2 results is evidence for mediation of the Groups Versus Individuals \times Categorization interaction on competition by trust–distrust. According to the greed and in-group-favoring norm explanations, the greater trust that flows from same as opposed to different categorization should lead to more intergroup competitiveness with same than with different categorization. This is because trust or expected cooperation implies that the opponent is vulnerable to exploitation. Although we obtained evidence that similar categorization increased both trust and competitiveness between groups, the mediation analyses revealed that trust was not significantly associated with competitiveness.

Recall that we did find evidence for distrust mediation of the main effect of groups versus individuals on cooperation and on withdrawal (Experiments 1 and 2) and for distrust mediation of the Groups Versus Individuals \times Categorization interaction for withdrawal (Experiment 2). Possibly the difference from mediation of the Groups Versus Individuals \times Categorization interaction for competition is due to the greater number of complicating interactions for competition. Still, there is another possible reason for the difference. Perhaps participants were more willing to report trust–distrust related to cooperation and withdrawal than trust–distrust related to competition. Possibly, as was argued in Experiment 1, participants may have been uncomfortable associating expected cooperation, or trust, with competition. This problem might have been reduced if we had asked for a rating of vulnerability rather than a rating of expected cooperation. Unfortunately, this is something that we did not do.

Possible mediation of the Groups Versus Individuals \times Categorization interaction for withdrawal by distrust and for competition by the Categorization \times Max Rel interaction. As has been indicated, tests for mediation of the groups versus individuals main effects for withdrawal and competition are made somewhat problematic by the presence of interactions. To address this matter directly, we followed Baron and Kenny's suggestions regarding the testing of the mediation of interactions. For withdrawal the analysis was straightforward. The mediation tests were consistent with the possibility that the greater withdrawal of groups than of individuals with different than with same categorization was mediated by distrust. These results are in agreement with the initial

assumption that, particularly for groups, same categorization creates more expected cooperation than does different categorization.

Tests for mediation of the Groups Versus Individuals \times Categorization interaction on competition led to evidence consistent with possible mediation by the Categorization \times Max Rel interaction. When we moved from a standard, three-factor model with max rel as a covariate to a model that also included the Categorization \times Max Rel interaction, the Groups Versus Individuals \times Categorization interaction was reduced significantly in magnitude and was no longer significant. The results of the analyses are consistent with the possibility that groups but not individuals were more competitive with same than with different categorization because (a) groups, relative to individuals, were more concerned with winning and (b) same categorization, relative to different categorization, increased competition when concern with winning was high but not when it was low. We regard this evidence as particularly important because it provides suggestive support for the role of the perceived vulnerability of the same-category-other group in producing competition. Perhaps the evidence for the role of groups' greater concern with winning can be explained by something other than the greater perceived vulnerability of the same than the different category other, but we believe that an explanation in terms of perceived vulnerability is the most compelling possibility.

Are categorization effects totally due to expected cooperation? Is it possible that categorization could alter more than just expected cooperation? As has been acknowledged, it is possible that categorization might also increase a related process of expected vulnerability. Is it possible, however, that categorization might set off concerns with other, less tangible outcomes? We attempted to examine this possibility by conducting a mediation analysis of the main effect of categorization on cooperation. We took this approach for two reasons. First, categorization did not significantly interact with groups versus individuals. Second, as cooperation is not as immediately greed related as is competition and is less directly fear related than is withdrawal, processes other than greed and fear might have a greater impact on cooperation than on competition and withdrawal. However, the results were consistent with the possibility that the main effect of categorization on cooperation was solely due to expected cooperation. We do acknowledge that with more self-defining categories, as opposed to "mere" categories, the results might have been different. There is an interesting research question concerning why some categories, for example a category relating to one's ethnicity, may sometimes be self-defining.

Agreeableness and abrasiveness. An advantage of assessing the five reasons for the choice is that the measures were taken with full knowledge of the group discussion and/or of thoughts that arose when considering the decision. On the other hand, a disadvantage is that the assessment may reveal, not an effect of the reasons on the choice, but an effect of the choice on the reasons. Because of the latter problem, the results for anticipated agreeableness and anticipated abrasiveness are particularly important. Both of these assessments were taken before the group discussion and/or time to consider the decision. However, they revealed a tendency for groups relative to individuals to anticipate less abrasive and more agreeable interactions with same than different categorization. Such results are consistent with the distrust assessment taken after the choice and provide evidence that that assessment was not just a rationalization for the choice.

Gender. An unexpected result was the significant Groups Versus Individuals \times Guilt \times Gender interaction for competitiveness. Breaking down this interaction indicated that it was partially due to the significantly larger discontinuity effect for low-guilt men than for low-guilt women and partly due to the greater competitiveness of high-guilt than low-guilt female groups relative to the comparable contrast for male groups (see Table 5). These results stand in contrast to the slight gender difference found in between-individuals competitiveness in the context of n -person games (Stockard, Van de Kragt, & Dodge, 1988) and two person games and/or dyadic bargaining interactions (Colman, 1995; Walters, Stuhlmacher, & Meyer, 1998). Our results indicate that there are situations in which gender differences, possibly even of substantial magnitude, do exist, but in some circumstances women may be more competitive than men and in other circumstances men may be more competitive than women.

Consider, first, the circumstance in which women were more competitive. The data indicate that there was a significant tendency for the variation from low guilt to high guilt to be associated with increased intergroup competitiveness for women but not for men. In fact, male groups showed a nonsignificant tendency in the opposite direction (see Table 5). Increasing guilt was significantly associated with increasing competitiveness only for female groups. It is important to reiterate, however, that gender did not qualify the overall finding in the context of same categorization or out-group vulnerability for guilt to be positively associated with intergroup competitiveness.

What accounts for the gender difference in the general association of intergroup competitiveness with guilt? A possible answer flows from the Taylor et al. (2000) theory of gender differences in reactions to stress that Schopler et al. (2001) had previously evoked to explain a different, but possibly related, gender difference in the discontinuity effect. The Schopler et al. study included a four-level manipulation of Thibaut and Kelley's (1959) index of correspondence (with symmetric matrices the simple correlation between the two outcomes across the cells of the matrix). Thibaut and Kelley conceived of this correlation as an index of conflict of interest. Schopler et al. found that, as the correlation across the four cells of the PDG became increasingly negative, competitiveness between groups, but not between individuals, increased—particularly for female groups. The pattern indicated that when the index was highly negative female groups were relatively more competitive than male groups, but as the index approached zero, the gender difference decreased and reversed in direction. Stated less technically, the results indicated that as the potential threat increased, female groups, relative to male groups, became increasingly competitive.

Schopler et al.'s (2001) results for the conditions in which the index was highly negative (and the potential threat was great) may be related to the present results if high-guilt proneness can be interpreted as not only concern with being a good group member but also concern for the welfare of the group. A possible generalization is thus that female groups become more competitive as they become more predisposed to having high concern for the welfare of the group or as the intergroup context becomes more threatening. The predisposition to see threat and the actual potential of threat may be "opposite sides of the same coin."

Schopler et al. (2001) related their results to Taylor et al.'s (2000) theory regarding gender differences in reactions to stress. An aspect of the Taylor et al. theory is that the male fight response

is related to androgen hormones such as testosterone and linked to sympathetic reactivity, whereas the female fight response is more cerebral and more confined to situations requiring defense, historically group situations in which they were the primary caregivers. With the benefit of hindsight, Taylor et al.'s theory could be applied to the present results. Note, further, that Taylor et al.'s theory could be interpreted as applying more obviously to intergroup than to interindividual relations.

Finally, consider the circumstance in which men were more competitive than women—the greater discontinuity effect for low-guilt men than low-guilt women (see the bottom row of Table 5). This significant double interaction may also relate to Schopler et al.'s (2001) results. As stated earlier, Schopler et al. (2001) found that as the degree of correspondence became less negative both female and male groups became less competitive. However, the variation was more marked for female groups than for male groups. Thus, with high negative correspondence female groups were relatively more competitive than male groups, but with low negative correspondence male groups were relatively more competitive than female groups. It was as if male groups were more predisposed to be competitive than female groups—but this predisposition only became evident in relatively nonthreatening circumstances.

Earlier, we assumed that high guilt relates not only to concern with being a good group member, but also to concern with the welfare of the group. From this assumption, it follows that low guilt implies less concern for the welfare of the group, and this, in turn, links Schopler et al.'s (2001) finding of relatively more competitiveness of male groups in less threatening situations and the present finding of relatively more competitiveness of male groups when neither gender was particularly concerned with the welfare of the group. This again suggests, consistent with Taylor et al.'s theory, that female competitiveness is more “rational” in the sense that, for groups at least, competitiveness more likely occurs in situations in which there is actual threat or the perception of actual threat.

We, however, would again like to emphasize that in the context of perceived vulnerability in the out-group, there was no significant gender difference in the overall tendency for increasing guilt to be associated with increasing intergroup competitiveness. Stated differently, when there was a possible tactical advantage, high-guilt male groups and high-guilt female groups did not significantly differ in their competitiveness. This suggests that, as Taylor et al. (2000) imply, there are circumstances in which men, as well as women, may be “cerebral” in the context of potential conflict.

Specific take-home message. Whereas the results for the auxiliary assessments and gender differences do provide important evidence regarding the discontinuity effect, such evidence should not distract from what we regard as the four most salient results, or interpretations, of the present research.

First, both similar categorization and high trustworthiness information increased cooperation for both groups and individuals.

Second, low-trustworthiness information increased withdrawal for both groups and individuals, but dissimilar categorization increased withdrawal only for groups—consistent with the fact that whereas low-trustworthiness information increased distrust for both groups and individuals, dissimilar categorization increased distrust only for groups.

Third, consistent with the assumption that greed-based competition flows from the expectation that the opponent will cooperate

and is therefore vulnerable, same categorization increased competition for groups but not for individuals.

Fourth, consistent with the possibility that an in-group-favoring norm partially explains the competitive behavior of group members, the tendency of groups to be more competitive with same categorization was only present for group members who were high in guilt.

More general take-home message—Two moralities. Related to the paradox of expected cooperation is another paradox: the paradox of individual and group morality (Wildschut & Insko, in press). What seems moral in interindividual relations may not appear moral in intergroup relations. LeBon (1895/1896) and McDougall (1920), as the earlier quotes illustrate, were aware of the distinction. Unfortunately, following Floyd Allport's (1924) critique of the group-mind concept, the distinction between the two moralities was, for many years, lost to social psychology. It is, however, interesting that the distinction between the two moralities did exist in the writing of the theologians Barth (1960) and Niebuhr (e.g., 1932, 1941)—although they were apparently unaware of the writings of LeBon and McDougall. Here is an illustrative quote from Niebuhr (1941):

The group is more arrogant, hypocritical, self-centered and more ruthless in the pursuit of its ends than the individual. An inevitable moral tension between individual and group morality is therefore created. “If,” said the great Italian statesman, Cavour, “we did for ourselves what we do for our country, what rascals we would be.” (p. 222)

Within social science the idea is perhaps most pointedly stated in the following quote from Ridley (1996): “when Joshua killed 12 thousand heathen in a day and gave thanks to the Lord afterward by carving the 10 commandments in stone, including the phrase ‘Thou shalt not kill,’ he was not being hypocritical” (p. 192).

Research by Insko et al. (1998, 2001) has indicated that one approach to resolving this paradox is for group members to recognize that in the long run, group interest may be better served through intergroup cooperation than through intergroup competition, that is, by behaving consistently with individual morality rather than with group morality. The basic idea was earlier advanced by Pruitt and Kimmel (1977) and by game theorists such as Axelrod (1984) and Luce and Raiffa (1957). Predating game theory, the importance of a future orientation was emphasized by Niebuhr (1932), as illustrated by this final quote:

A wise statesman is hardly justified in insisting on the interests of his group when they are in unjust relation to the total interest of the community of mankind. Nor is he wrong in sacrificing immediate advantages for the sake of higher mutual advantages. His reluctance to do this is precisely what makes nations so imprudent in holding to immediate advantage and losing ultimate values of mutuality. (p. 267)

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