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All is well that ends well, at least for proselfs: Emotional reactions to equality violation as a function of social value orientation

JEROEN STOUTEN[1]*, DAVID DE CREMER[1] AND ERIC VAN DIJK[2]
[1]*Tilburg University, The Netherlands*
[2]*Leiden University, The Netherlands*

Abstract

In step-level public good dilemmas the equality rule serves as an important distribution rule to tacitly coordinate group members' decisions. In two studies, we examined the motives that may underlie the use of the equality rule. More specifically, we examined whether people use the equality rule out of fairness concerns or out of efficiency concerns. For this purpose, we assessed people's emotional reactions toward a violator of the equality rule when the group succeeded vs. failed, as a function of social value orientation. The results of both experiments showed that proselfs' emotional reactions towards a violator were a function of the success or the failure of the group, whereas prosocials' emotional reactions did not vary as a function of the outcome feedback. These results suggest that prosocials prefer the equality rule out of fairness concerns whereas for proselfs efficiency concerns dominate. Copyright © 2005 John Wiley & Sons, Ltd.

In society, personal and collective interests are often at odds (Dawes, 1980). This particular situation is referred to as a social dilemma (e.g. Komorita & Parks, 1994). A social dilemma is an interdependence situation, in which people can choose to cooperate or not. An example of a social dilemma is the existence of unions that protect the rights of employees. At the individual level it is more profitable for a union member not to pay his or her membership contribution and to still enjoy the benefits of being a member. However, if every member chose this option, the union would not be maintained and everyone would be worse off than if all decided to pay their membership contribution. This situation can be defined as a particular type of social dilemma, more specifically, *a public good dilemma*.

Several forms of public good dilemmas exist. One common form is the step-level public good dilemma. In these types of dilemmas a certain threshold has to be reached in order to provide the public good. How do people decide on their contributions in step-level public good dilemmas? Based on research on coordination rules (Schelling, 1980) it is suggested that under such circumstances people use 'coordination rules' to tacitly coordinate their decisions (van Dijk & Wilke, 1995). One such coordination rule is the equality rule, which prescribes that people divide the threshold that has to

*Correspondence to: Jeroen Stouten, Department of Economic and Social Psychology, Tilburg University, PO Box 90153, 5000 LE Tilburg, The Netherlands. E-mail: jeroen.stouten@uvt.nl

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be surpassed by the total number of members (= equal share) to determine how much they should contribute (e.g. Biel, Von Borgstede, & Dahlstrand, 1999; Deutsch, 1975, 1985; Deutsch & Gerard, 1955; Lane, 1986; van Dijk & Wilke, 1995, 1996; van Dijk, Wilke, Wilke, & Metman, 1999).

Why do people use the equality rule in step-level public good dilemmas? The present research attempts to identify which motives underlie people's preference for an equality rule in step-level public good dilemmas. More specifically, it will be examined whether people evaluate the use of the equality rule in terms of concerns for efficiency (Messick, 1993) or in terms of concerns for fairness (van Dijk & Wilke, 1995).

EQUALITY IN SOCIAL DILEMMAS

An abundance of research has shown that many people use the equality rule as a coordination rule in step-level public good dilemmas, as such determining contribution decisions. However, this research has not addressed the question why the decisions of those people actually stay close to such a rule. In fact, earlier research (e.g. Messick, 1993; Roch, Lane, Samuelson, Allison, & Dent, 2000; Samuelson & Allison, 1994) mainly perceived equality as a decision heuristic, which is simply used to facilitate decision-making. This belief in efficiency is also illustrated by the three characteristics that the above researchers attributed to the equality rule: (1) the rule is simple and easy to understand, (2) it is effective so that it can be applied easily, and, finally, (3) it is easy to justify the application of the rule because of its simplicity.

However, equality, besides being an efficient heuristic, may also be related to notions of fairness (e.g. Lutz, 2001; Messick & Sentis, 1983; van Dijk & Wilke, 2000), as previous research has indicated (see Bazerman, White, & Loewenstein, 1995; Chen, 1999; Edney, 1984). More specifically, research by Bazerman and colleagues (1995) showed that the equality rule was preferred above maximizing personal outcomes. Also, Chen (1999) pointed out that group members considered the equality rule as the fairest rule, particularly when group identity was high. As such, following Messick and Sentis's (1983) argument, it can also be suggested that: 'equality is at the heart of the concept of fairness' (p. 68). Thus, in the remainder of the present paper, references to concerns about fairness imply that people wish to achieve equality (see also Samuelson, 1993).

Following from the above, we argue that it is not clear yet which concerns underlie people's motivation to make use of the equality rule. Indeed, prior research (e.g. Allison & Messick, 1990; Allison, McQueen, & Schaerfl, 1992; Messick, 1993; Samuelson & Allison, 1994) has primarily shown in which situations people do or do not use the equality rule, but it has not addressed why a considerable number of people use the equality rule. We reason that, if people use the equality rule, they may have expectations that others will use equality too. Moreover, if people expect others to use equality, people's reactions toward a violation of equality should give us new insights into whether efficiency or fairness concerns motivate the use and preference of the equality rule. In the following, we therefore argue and demonstrate that in order to investigate what motivates the use of the equality rule, it may be promising to investigate how people react when they find out that others have violated the equality rule. In addition, it will be shown that social value orientation can play an important role in addressing how and why people respond to violations of equality.

SOCIAL VALUE ORIENTATION AND THE PREFERENCE FOR EQUALITY

In the previous paragraph, we argued that the equality rule may be used out of a concern for fairness or efficiency. This does not imply, however, that we suggest that only one of the two will be the most

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prevalent. It may well be that *both* concerns underlie the use of the equality rule, and that for some people the fairness motive (i.e. equality) will primarily dominate, whereas for others the efficiency motive will primarily dominate.

To examine this possibility, we will base our predictions concerning this issue on the integrative model of social value orientation (van Lange, 1999). Social value orientation is defined as the weights people assign to outcomes for the self and others in allocation tasks (Messick & McClintock, 1968; van Lange, Otten, De Bruin, & Joireman, 1997). Broadly speaking, people can be classified as prosocial individuals (i.e. primarily aimed at maximizing joint outcomes), competitors (i.e. aimed at maximizing the difference between outcomes for self and other) or individualists (i.e. aimed at maximizing own outcome, regardless of other's outcome). Studies on social value orientation usually combine individualists and competitors into one group that is referred to as proselfs (e.g. De Cremer & van Lange, 2001; van Lange & Liebrand, 1991).

The integrative model of social value orientation, first of all, argues that people differ in the way they assign importance to outcomes for self relative to outcomes for others. More precisely, proselfs relative to prosocials have been shown to care more about their own self-interest, as witnessed by their tendency to cooperate less in groups (De Cremer & van Lange, 2001), to consider cooperation less intelligent (van Lange & Liebrand, 1991), and to consider noncooperative behaviour not as bad (e.g. Liebrand, Jansen, Rijken, & Suhre, 1986; but see Beggan, Messick, & Allison, 1988; Sattler & Kerr, 1991). Thus, in evaluating what happens within social dilemmas, proselfs primarily care about efficiency and can be expected to react toward others violating important coordination rules like equality out of such efficiency concerns.

A second argument of the integrative model is that prosocials not only care about other's outcomes, but more specifically about equality in a way that they wish both themselves and others to receive equal outcomes and contribute equal amounts (i.e. like in the present study). This position explains why prosocials behave noncooperatively if others do not cooperate and vice versa (see De Cremer & van Lange, 2001), and why prosocials recall in a better way than proselfs heuristics in mixed-motive situations focusing on equality like 'play-fair' and 'share and share-alike' (De Dreu & Boles, 1998). From this, it could be expected that prosocials will react toward violations of equality by others out of fairness concerns because they consider equality as their important guideline in social decision-making.

FAIRNESS OR EFFICIENCY? THE USE OF EMOTIONAL REACTIONS

Using social value orientation may not provide much insight to the understanding of the motives underlying the use of the equality rule if we restrict our focus on the contributions that people make. After all, if proselfs use the equality rule primarily out of efficiency concerns and prosocials primarily out of fairness concerns, no differences in contributions need to be found. Both may be expected to apply the equality rule. Therefore, we need to focus on another measure that can help us in disentangling the efficiency and fairness concerns. One such measure can be emotional reactions. In the present paper, we argue that how proselfs and prosocials react emotionally to a violator of equality may teach us more about the motives that underlie people's preference and evaluation of the equality rule.

To see why, it is informative to imagine how proselfs and prosocials would react if they find out that one member of their group violated the equality rule by not contributing. In the typical case, it implies that the group will fail to meet the threshold, consequently failing to provide the public good. In such a situation, both proselfs and prosocials may be upset, and likely to respond in anger, albeit for different

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reasons. Proselfs might be upset because the group failed in providing the public good (i.e. for them efficiency concerns may prevail). Prosocials might be upset because a general norm of fairness is violated (i.e. for them fairness concerns may prevail).

But now imagine what would happen if the public good was provided after all. For example, what if the group finds out that despite their initial failure they can still obtain the public good (e.g. the group members receive the information that the public good will be awarded after all; a procedure that we will use in the present studies)? As soon as the public good is achieved efficiency needs (i.e. obtaining part of the public good) are met. Hence, because group members will then suffer no financial losses, people evaluating the use of the equality rule in terms of efficiency concerns (i.e. proselfs) will react less negatively than if they suffered such financial losses (i.e. less angry, more joyful). This means that despite the presence of such a violator obtaining the public good would lead people to react less negatively if efficiency is their main motive.

Could one expect the same pattern if equality was used out of concerns for fairness? Under these circumstances, violating the equality rule, regardless of whether or not the group succeeds in achieving the public good, can still be seen as a violation of fairness. So, under both outcome conditions (i.e. eventual failure or success) one would then expect that others would react equally negative (i.e. they remain angry). Violating equality will be seen as unfair, independent of whether the group is efficient or not. Hence, failure or success in establishing the public good should not influence people's reactions if fairness concerns are underlying their evaluation of the equality rule. Hence, their (= prosocials) reactions remain the same because equality is violated.

One would thus expect that mainly proselfs will react less negatively when the group eventually succeeds relative to failure (as their aim is to further own interests), whereas prosocials will react negatively regardless of eventual success or failure, because they consider the use of equality in terms of fairness. Put differently, we expect prosocials to evaluate the use of the equality rule in terms of fairness reasons, whereas we expect proselfs to evaluate the use of the equality rule in terms of efficiency.

THE PRESENT RESEARCH

In the present research, people's emotional reactions will be assessed as a function of social value orientation and group feedback. To date, social dilemma research has paid little attention to these types of reactions (for an exception see e.g. Sanna, Parks, & Chang, 2003), despite the fact that recent literature specifically outlines the importance of emotions in decision-making and justice (e.g. Hertel, 1999; Knapp & Clark, 1991; Loewenstein & Lerner, 2002; Mikula, Scherer, & Athenstaedt, 1998; Weiss, Suckow, & Cropanzano, 1999). In fact, it has been argued that it is of major importance to assess and manage the emotions of group members, because emotions like, for example, frustration may negatively influence interaction and coordination within the group (Humphrey, 2002). Moreover, and also of specific relevance to the present research, Mikula and colleagues (1998) showed that the perception of injustice often results in a range of emotional reactions, which frequently elicit a number of behavioural and perceptual reactions towards those who violate the justice principle (see Schroeder, Steel, Woodell, & Bembenek, 2003). As such, it is important and necessary for our research question to assess people's emotional reactions.

EXPERIMENT 1

To examine whether a violation of equality influences emotional reactions as a function of our independent measures, a paradigm was developed in which one group member clearly violated the

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equality rule. In a scenario situation a step-level public good dilemma was introduced, in which four group members were able to contribute money to the public good. All four members had an equal amount of money, which they could decide to contribute to the public good. If the group members managed to surpass or meet a given threshold, a financial reward was obtained, which then was equally divided among the group members. After contributing to the public good, participants received information that one group member violated the equality rule and, hence, the public good and the associated financial reward could not be obtained. Thereafter, half of the participants were informed that after some deliberation it was decided that they would nevertheless obtain the financial reward, whereas the other half of the participants remained in a failure situation. Following our reasoning above, the most important prediction was that proselfs' emotional reactions would be dependent on the outcome feedback (success or failure in obtaining the public good), whereas prosocials' emotional reactions would not be influenced by outcome feedback.

Method

Participants and Design

Participants were 81 undergraduate psychology students who participated voluntarily. They were each paid 2.50 euros. A 2 (social value orientation) $\times$ 2 (feedback) between participants-design was used.

Procedure

Participants were approached by the experimenter and asked whether they were willing to participate in a paper-and-pencil study. If they agreed they were seated at a table and given a questionnaire.

Assessment of the Social Value Orientation Measure. Before filling out the questionnaire, participants completed the nine-item Decomposed Games measure to assess participants' social value orientation. The Decomposed Games measure has excellent psychometric qualities. It is internally consistent (e.g. Parks, 1994), reliable over substantial time periods (Eisenberger, Kuhlman, & Cotterell, 1992) and is not related to measures of social desirability or indices of mood (e.g. Platow, 1992). The measure consists of nine items, each containing three alternatives of outcome distributions between the participant and an anonymous other. An example of an item looks as follows, choice A: 500, 500, choice B: 560, 300, and choice C: 490, 90. Alternative A represents the prosocial orientation because an equal distribution is preferred in dividing points to the self and to an anonymous other. Alternative B is the individualistic orientation because the outcomes for the self are maximized regardless of the outcomes for the other (560 for the self vs. 300 for the other). Finally, option C is the competitor orientation because the relative difference between the self and the other is maximized (Alternative C: $490 - 90 = 400$ vs. A: $500 - 500 = 0$, and B: $560 - 300 = 260$).

Participants were classified if they made at least six out of nine choices that were consistent with one of the three social value orientations. In this study, 28 persons could be classified as prosocials (34.6%), 32 as individualists (39.5%) and nine as competitors (11.1%). Twelve persons (14.8%) could not be classified according to the criteria. In concurrence with earlier research (De Cremer & van Lange, 2001; van Lange & Liebrand, 1991) individualists and competitors were combined to form one group of proselfs ($n = 41$). Thus, a total of 69 participants could be classified. Further, because our predictions are based on the assumption that people's motives underlying the equality rule can only be examined accurately if they themselves stay close to the equality rule (i.e. which indicates a

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concern for equality), we conducted our analyses on the emotion scale on the classified participants who contributed an amount close to the equality rule. That is, those participants contributing exactly an equal share or a share deviating a maximum of one standard deviation ($239.37 < \text{contribution} < 260.63$; in the present study) were included in these analyses resulting in a total of 65 participants.

Introduction of the Public Good Dilemma. After completing the social value orientation questionnaire, participants read a scenario in which, they, together with three other students, were to launch a students' society at their university (in The Netherlands it is common practice that students participate in these organizations). The example of the student society is consistent with the characteristics of a social dilemma. For example, society members cannot be excluded from the common resources that the society achieves (i.e. non-excludability), and these societies are such closed groups that the common good can only be consumed by society members (i.e. exclusion of non-members). Furthermore, participants were said to possess 500 Dutch guilders (DFL) each (DFL; approximately 225 euros) that they had earned from a student job during the previous academic year. They were offered the opportunity to invest in this society. If the group succeeded in investing a total amount of 1000 DFL (approximately 450 euros) then the university would take all the necessary steps to make this new students' society official. Thus, the threshold in this dilemma game was 1000 DFL. Moreover, if the threshold was reached, then a financial reward of 2000 DFL (approximately 900 euros) would be given by the university board to the group, which would be divided equally among all group members. However, when the threshold was not reached all individual investments would be lost.

After explaining the rules of the game, participants decided how much of their personal budget they wished to invest. Then, participants learned about the other group members' contributions: Two members of the group contributed 250 DFL (i.e. they used the equality rule) and the fourth group member contributed either 100 or 200 DFL (respectively low and high violation of equality), thereby violating the equality rule.[1] At this point in time, participants were thus informed that the group had failed in reaching the threshold. However, participants then learned that the university board made use of certain internal rules that made it possible that the group could still succeed and, as such, would receive the financial reward (a practice considered legitimate in experimental studies, see also Samuelson & Allison, 1994). Thereafter, half of the participants learned that after deliberation they would nevertheless receive the financial reward (*success condition*), whereas the other half learned that the financial reward would not be paid out (*failure condition*). Then, participants' reactions regarding the situation in the group were measured. Finally, they were thanked for their participation and paid.

Dependent Measures. All questions were answered on a 7-point scale ranging from 1 (= not at all) to 7 (= very much so). To check participants' understanding of the situation some comprehension questions were asked after the introduction of the public good dilemma. For example, which amount each group member possessed, and how high the threshold was. All participants answered these questions correctly. After this, participants were asked (1) how much they expected that each group member would contribute to the public good, (2) which amount they considered to be the fairest contribution, and, (3) how much they wished to contribute to the public good.

Thereafter, participants' emotional reactions were assessed. As mentioned earlier, an unjust act has been shown to elicit primarily anger and anger-related emotions (see e.g. De Cremer, 2004; Folger &

[1]The magnitude of the violation was the second independent variable in the analyses. Preliminary analyses showed, however, that the degree of violation of the equality rule had no influence on the reactions of the participants and, therefore, was not included in further analyses.

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Cropanzano, 1998). Therefore, participants were asked how 'angry', 'irritated', and 'disappointed' they felt in this situation. These items were combined to form one negative emotion scale (Cronbach's $\alpha = 0.83$). Finally, participants were asked to what extent they considered their current feelings to be the result of perceiving the situation as unfair.

Results

Expectations and Behaviour Prior to Feedback

These measures were taken before the manipulation of outcome feedback was presented and therefore, a one-way analysis of variance (ANOVA) using social value orientation as independent variable was used. First, an analysis of the contribution that participants expected revealed no significant differences and showed that the majority of participants expected that the equality rule would be used by the others (98.6%). Second, an analysis of the amount of contribution that participants considered fairest also did not reveal a significant effect and a great majority of participants said equality was the fairest amount (97.1%). Finally, the analysis of participant's own contribution also revealed no significant differences and the majority of the participants contributed exactly an equal share of 250 DFL (94.2%).

Emotional Reactions

A 2 (social value orientation) $\times$ 2 (feedback) ANOVA on the composite score of the emotions scale showed a main effect for feedback, $F(1, 61) = 8.57$, $p < 0.01$, and an interaction effect between social value orientation and feedback, $F(1, 61) = 4.37$, $p < 0.05$ (see Figure 1).

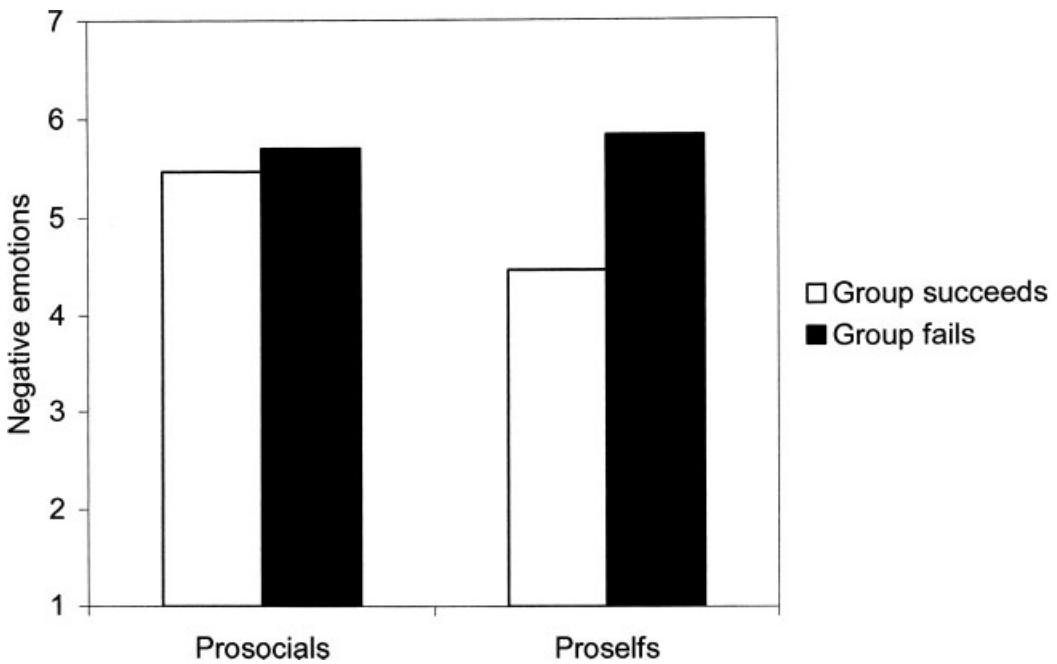

Figure 1. Negative emotions (y-axis) after a violation of equality as a function of outcome feedback (success or failure of the group) and social value orientation (x-axis)

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Tests for simple effects revealed that proselfs displayed less negative emotions when the group succeeded in obtaining the financial bonus ($M = 4.46$, $SD = 1.68$) than when the group failed ($M = 5.84$, $SD = 0.66$), $F(1, 61) = 15.66$, $p < 0.001$. As expected, this difference between the success and failure conditions was not found among prosocials $F(1, 61) < 1$, $p < 0.60$ ($Ms = 5.47$ vs. 5.70, $SDs = 0.78$ vs. 0.99, respectively). Thus, for prosocials the feedback information did not affect their emotional reactions, whereas this was the case for proselfs.

Unfairness

A 2 (social value orientation) × 2 (feedback) ANOVA on the extent to which participants ascribed their emotional reactions to perceiving the situation as unfair revealed a significant interaction, $F(1, 61) = 4.01$, $p = 0.05$.

Tests for simple effects for proselfs revealed a marginally significant tendency, showing that proselfs ascribed their emotional reactions more to unfairness when the group failed ($M = 5.87$, $SD = 1.14$) than when the group succeeded ($M = 4.94$, $SD = 2.11$), $F(1, 61) = 3.52$, $p = 0.06$. However, among prosocials there was no such difference between the success and failure conditions, $F(1, 61) = 1.10$, $p < 0.30$ ($Ms = 5.36$ vs. 6.00, $SDs = 2.01$ vs. 0.66, respectively).

To check whether unfairness mediated the interaction between social value orientation and feedback on negative emotions, a series of regression analyses were performed (see Baron & Kenny, 1986; Figure 2). To test for mediation, four steps need to be taken. First, the effects of the independent variables (Feedback, Social Value Orientation, Feedback × Social Value Orientation) on the dependent variable (Negative Emotions) have to be tested. Second, the effects of the independent variables on the proposed mediator (Unfairness) have to be tested. Third, the mediating variable unfairness has to influence significantly the dependent variable, negative emotions. Fourth, the effect of the independent variable has to be reduced when the mediating variable is added.

A first regression analysis on negative emotions showed a main effect for feedback, $\beta = 0.34$, $p < 0.01$, and an interaction effect between feedback and social value orientation, $\beta = 0.24$, $p < 0.05$, similar to the ANOVA results. A second regression analysis on unfairness showed an interaction effect between feedback and social value orientation, $\beta = 0.25$, $p = 0.05$, which is also similar to the ANOVA

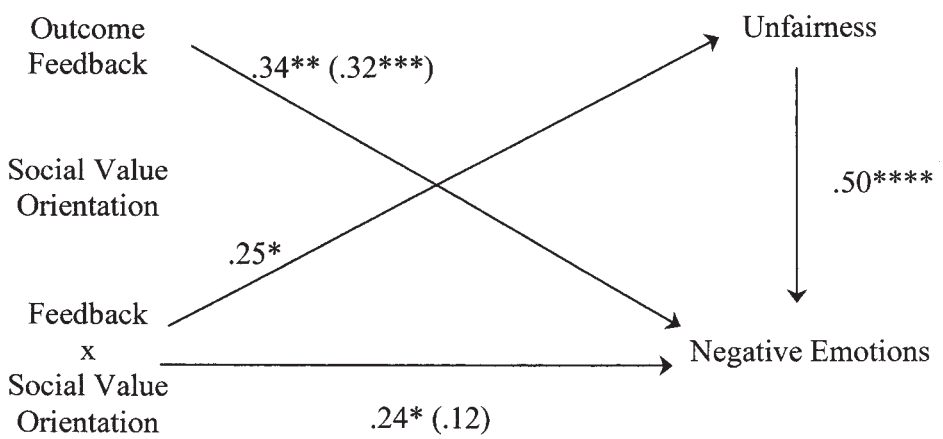

Figure 2. Path diagram with the regression weights for outcome feedback, social value orientation, unfairness, and negative emotions. *$p < 0.05$, **$p < 0.01$, ***$p < 0.005$, ****$p < 0.001$

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results. Finally a regression analysis with the variables feedback, social value orientation, feedback × social value orientation, and unfairness on negative emotions revealed, first of all, a significant effect for the covariate unfairness, $\beta = 0.50$, $p < 0.001$. Further, a significant effect for feedback, $\beta = 0.32$, $p < 0.005$ emerged, and, most importantly, it was shown that the interaction between feedback and social value orientation was no longer significant, $\beta = 0.12$, $p < 0.26$. A Sobel test showed that this reduction was marginally significant, $z = 1.85$, $p = 0.064$, suggesting that the interactive effect of social value orientation and feedback on negative emotions can, at least partly, be explained by perceptions of unfairness.

Discussion

Experiment 1 showed that a violation of the equality rule by one group member elicited negative emotional reactions among the other group members. More importantly, however, prosocials' negative emotional reactions were not influenced by whether or not the group obtained the financial bonus, whereas for proselfs the feedback manipulation did influence their negative emotions. The results thus seem to indicate that prosocials reacted because equality was violated. Hence, they evaluated the act of violating the equality rule in terms of fairness. However, proselfs were primarily interested in their own outcomes because they reacted negatively when the public good was not obtained. In contrast, when outcomes were positive their reactions were less negative. Hence, proselfs evaluated the violation of equality primarily in terms of efficiency.

EXPERIMENT 2

In Experiment 1, we focused on negative emotions as prior research on injustice indicated that primarily anger-related emotions would be elicited. However, does this finding also imply that proselfs will react more positively after the group succeeds? In other words, if proselfs primarily pursue satisfaction of their efficiency concerns, will they experience feelings of relief after hearing that the group eventually succeeds? Several reasons exist for also examining positive emotions. First, in addition to examining negative emotions, it is also necessary to look at positive emotional reactions (see e.g. development of emotion scales such as PANAS; Watson, Clark, & Tellegen, 1988), particularly since recent evidence has shown that positive and negative emotions constitute different dimensions (see e.g. Larsen & Diener, 1992). Second, justice researchers have noted that injustice not only elicits negative reactions, but rather that such 'situations can produce widely different emotions' (Mikula et al., 1998, p. 781). Third, no evidence exists yet showing that distribution rules in social settings like social dilemmas affect positive emotions.

Thus, the focus of Experiment 2 was on participants' positive emotional reactions after one group member violated the equality rule. More precisely, success should lead to the accomplishment of efficiency and thus elicit feelings of relief (particularly if the group initially failed). Therefore, we assessed positive emotions related to happiness. Following this, it should thus be expected that these emotions are more likely to be influenced by feedback among proselfs.

Another improvement concerned the use of a public good dilemma in which participants played together with three other group members and actually experienced the impact of our feedback manipulation. Participants were assigned to a four-person group and played a step-level public good dilemma. Again, participants received information about whether or not the threshold was achieved, and, as such, whether or not the financial reward was obtained. In agreement with Experiment 1, we

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expected that prosocials' emotional reactions would remain the same, regardless of whether the group failed or succeeded. Proselfs, on the other hand, were expected to adapt their positive emotional reactions as a function of the group's outcome feedback.

Method

Participants and Design

One hundred and three undergraduate psychology students participated in exchange for course credits and an additional 2 euros. A 2 (social value orientation) $\times$ 2 (feedback) between-subjects design was used. Participants were assigned randomly to the feedback conditions.

Procedure

Upon arrival in the laboratory, participants were welcomed and seated into separate cubicles, each containing a table, a chair, and a computer. All instructions were provided via the computer.

Assessment of the Social Value Orientation Measure. As in Experiment 1, participants were asked to complete the nine-item Decomposed Games measure to assess their social value orientation. In the present study, 28 (27.2%) participants could be classified as prosocials, 34 (33%) as individualists, and 17 (16.5%) as competitors. Twenty-four participants (23.3%) could not be classified according to the criteria of the Decomposed Games measure. Individualists and competitors were classified as proselfs ($n = 51$). Thus, a total of 79 participants could be classified. As in Experiment 1, to analyse the emotional reactions of the participants, only classified participants whose contribution was equal to or less than one standard deviation ($5.94 < \text{contribution} < 14.06$) from the equality rule, resulting in a total of 56 participants, were included.

Introduction of the Public Good Dilemma. After completing the social value orientation scales, participants were introduced to the public good dilemma. Participants were led to believe that they were part of a group of four people and that each member of the group would be allocated a different identification number (in reality, however, each participant received number 3).

The task was introduced as an investment game in which they could earn money for themselves and the group. All participants received an endowment of 20 points. A group bonus of 80 points could be obtained if the group as a whole managed to contribute 40 points. If the threshold of 40 points was not reached, participants would lose their contribution. All the points that they kept would accrue to themselves.

After participants were cued for their understanding of the dilemma game (all participants answered the comprehension questions correctly), they were told that they would participate in a number of contribution sessions. In addition, to increase commitment to the task, participants learned that all the points that they earned across all contribution sessions would be exchanged for monetary reward (1 point = 0.055 euro).

[2]There is a discrepancy between Experiment 1 and 2 with respect to the numbers of participants that were eliminated. A possible explanation may be that Experiment 1 was a scenario study in which people had to indicate how they might react. Hence, in such situations, one's own financial interest is not really at stake and therefore self-interest usually plays a less important role; consequently, deviations from the equality rule should be less frequent.

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Manipulation of Feedback. After participants decided how much of their personal endowments they would contribute to the public good, they were informed that the group had not succeeded in contributing enough points to receive the financial reward. Then, contributions of all group members were shown on the computer screen. They learned that two persons contributed 10 points, and that one person (= violator) contributed only 2 points. This means that two persons used the equality rule, and that the other person violated the equality rule.

Thereafter, they were informed that there was a possibility for the group to earn the financial reward after all. That is, a chance procedure (see e.g. Samuelson & Allisson, 1994, for the validity of such procedures) would be run on the computer to see if the financial bonus could still be awarded or not. In addition, participants learned that there was a 50% chance that the bonus could be awarded or not. Such a chance procedure communicates an implicit positive message of potential success (i.e. that the financial reward still could be obtained). Hence, such a procedure should facilitate the elicitation of positive emotions (see Brendl & Higgins, 1996).

As a result of this chance procedure, half of the participants learned that the group failed in attaining the financial bonus, whereas the other half of the participants was told that they succeeded in earning the financial reward.

Dependent Measures. All questions were answered on a 7-point scale (1 = not at all to 7 = very much so). The dependent measures were the same as in Experiment 1 except for the emotion scores. In the present study the positive emotions 'happy', 'elated', and 'relieved' were assessed. These items were combined to form one average positive emotion score (Cronbach's $\alpha = 0.61$). Finally, participants were thanked, debriefed, and paid.

Results

Expectations and Behaviour prior to Feedback

These measures were taken before the manipulation of outcome feedback was presented. First, a one-way ANOVA with social value orientation as independent variable was conducted on the scores of (1) the amount that participants expected the other participants to contribute, (2) the contribution participants considered to be fairest, and (3) their own contribution to the public good. These analyses revealed an effect for social value orientation on the question of the fairest amount, $F(1, 77) = 12.33$, $p < 0.005$, and the actual amount that participants contributed, $F(1, 77) = 6.94$, $p < 0.05$, but not on the expected contribution, $F(1, 77) = 1.80$, $p < 0.19$. For both questions regarding the fairest contribution ($Ms = 12.93$ vs. 10.24, $SDs = 4.57$ vs. 2.26; respectively) and participants' actual contribution ($Ms = 12.25$ vs. 9.82, $SDs = 4.08$ vs. 3.82; respectively) it was found that prosocials donated more points to the public good than proselfs.

Emotional Reactions

A 2 (social value orientation) × 2 (feedback) ANOVA on the composite score of the positive emotions revealed only a significant interaction, $F(1, 52) = 4.39$, $p < 0.05$ (see Figure 3).

Tests for simple effects showed that proselfs exhibited stronger positive emotions when the group succeeded than when the group failed ($M = 3.61$, $SD = 0.23$ vs. $M = 2.75$, $SD = 0.22$ respectively), $F(1, 52) = 7.17$, $p < 0.05$. No such difference was found between the success and failure conditions for prosocials ($M = 2.81$, $SD = 0.28$ vs. $M = 3.08$, $SD = 0.34$, respectively), $F(1, 52) < 1$, $p < 0.53$.

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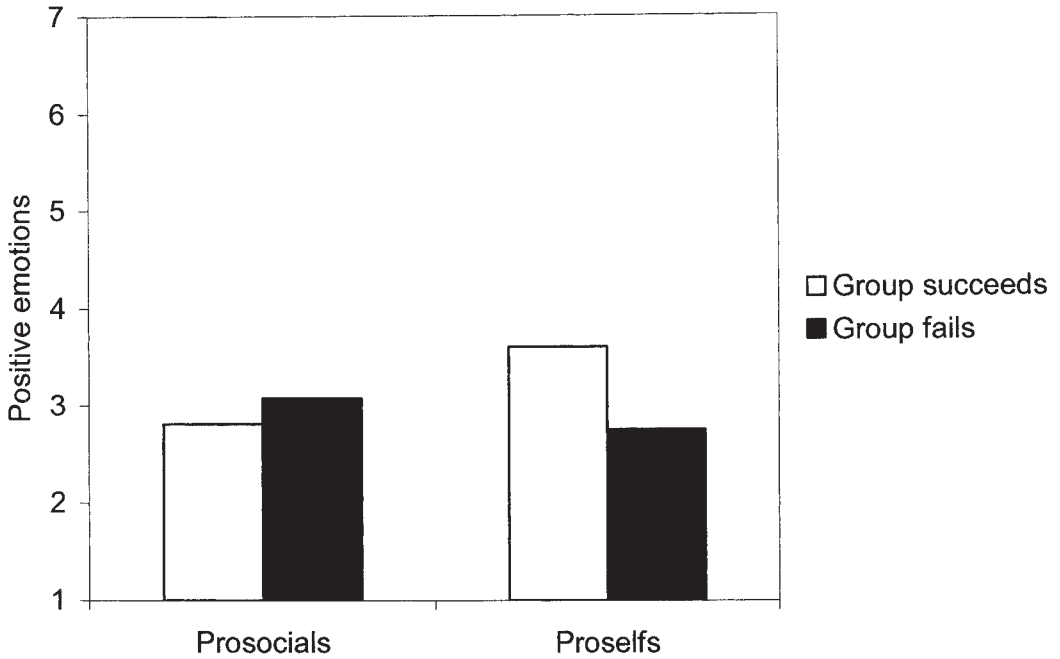

Figure 3. Positive emotions (y-axis) after a violation of equality as a function of outcome feedback (success or failure of the group) and social value orientation (x-axis)

Discussion

As in Experiment 1, the results of Experiment 2 showed that participants' emotional reactions were a function of the interaction between social value orientation and feedback. That is, proselfs were sensitive toward feedback information to base their positive emotional reactions on. In contrast, prosocials' positive emotions were not influenced by the feedback conditions. Thus, prosocials seem to evaluate the use of the equality rule primarily in terms of fairness concerns, whereas proselfs' main motive to evaluate the use of the equality rule is efficiency.

GENERAL DISCUSSION

The present research attempted to gain more understanding in the motives that guide the use of the equality rule. An important aspect of this research is that we were able to integrate two different perspectives on the equality rule. These perspectives are that equality is related to efficiency and to fairness (i.e. equality). The results of the two experiments indicate that both motives are important determinants of the use and evaluation of the equality rule, but that people's social value orientation determines which of these motives dominate. Prosocials' emotional reactions in situations of injustice appear to be primarily determined by concerns for fairness because they remain more negative and less positive regardless of whether or not the public good is achieved. Proselfs' emotional reactions, however, are dependent on the outcome feedback, because when the public good is provided they are less negative and more positive in their reactions. Hence, proselfs seem to be primarily the result of

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efficiency concerns. These findings are in line with Messick's (1999, p. 217) statement that 'Cooperators see the cooperation/competition distinction as a moral dimension, whereas competitors see it as morally neutral'.

Thus, based on these findings, we can say that equality in contributions (and outcomes; as the present study used symmetric public good dilemmas) is an instance of fairness. This finding aligns well with recent research on the integrative model of social value orientation (van Lange, 1999). Research on this model has demonstrated that, in addition to maximizing joint outcome, prosocials are truly motivated to pursue equality in outcomes and contributions (De Cremer & van Lange, 2001), and that they perceive this act more in terms of what social value orientation researchers refer to as morality (Liebrand et al., 1986; van Lange, 1992).

The present findings can as such be seen as extending previous research on the equality rule in social dilemmas in several ways. First, earlier studies on the use of equality examined whether people use the equality rule and under which circumstances they may deviate from it (Allison et al., 1992; Allison & Messick, 1990; De Cremer, 2003; Messick, 1993; Roch et al., 2000; Samuelson & Allison, 1994), and concluded that people use the equality rule as a decision heuristic. That is, this rule is used because it is simple and easy to apply in symmetric social dilemma situations. In support of this simplicity interpretation, research showed that when, for example, goods are indivisible (i.e. individual shares are not easy to calculate), and the allocation situation thus becomes more difficult, people are motivated to take more than an equal share (Allison et al., 1992). Again, the major limitation of this type of research has been that it did not address directly the question which motives guide people's use of the equality rule in social dilemmas, something the present research aimed to do.

The present research examined this question by introducing a new research paradigm in which the group's contributions did not meet the threshold because one group member violated the equality rule. If equality is a coordination rule used by most people in symmetric social dilemmas, it can be assumed that group members expect others to use the rule as well. As such, assessing people's reactions as a consequence of someone not using the equality rule may provide much insight into the motives guiding equality. If people react negatively upon this violation, regardless of whether or not the public good is obtained, support is found that the use and evaluation of equality are guided not only by efficiency concerns, but also by a fairness concern constituting morality (Messick, 1999); something that the present research showed.

Second, the present research demonstrated our predictions on people's emotional reactions. To date, social dilemma research has largely failed in assessing people's emotional reactions (although some first steps have recently been taken, see e.g. Sanna et al., 2003), though recent claims have been made that emotions play an important role in decision-making (Loewenstein & Lerner, 2002). By demonstrating these emotional effects, the present research as such provides evidence that unjust acts may reveal emotional consequences, indicating that instances of justice in mixed-motive situations can also be thought of as an affective event (see also Cropanzano & Ambrose, 2001; Weiss et al., 1999). Interestingly, the findings also indicate that unjust behaviour by one group member elicits emotional reactions among others. In turn, it may then be that these elicited emotions may instigate a variety of actions towards the violator (Schroeder et al., 2003). Future social dilemma research is urged to examine how people's emotional reactions may determine such behavioural reactions.

Before closing, some limitations and strengths of the present research need to be mentioned. A potential limitation is that social value orientation was assessed rather than manipulated. Although this is common practice, recent studies have introduced an operationalization of social value orientation by situationally cueing the respective social motives (De Dreu & McCusker, 1997; De Dreu, Giebels, & Van der Vliet, 1998). Future research may use this manipulation to unravel further when fairness or efficiency concerns determine the use of the equality rule.

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Another potential limitation is that in our first experiment we used a scenario-based approach. Particularly in imaginary situations, people's attitudes about how they might behave may not match up that well with their actual behaviour (cf. Ajzen & Fishbein, 1977; particularly attitude strength in such situations may be low, see also Kraus, 1995). Furthermore, especially people's negative reactions (as a function of social value orientation) about the situation in the group may also have been influenced by concerns about self-presentation or self-enhancing processes. However, it is also relevant to note that evidence exists that the measurement of social value orientation is independent of tendencies toward favourable self-presentation (Platow, 1992), making it less realistic that participants were afraid of exhibiting their emotions. Second, the fact that the results of Experiment 1 revealed good evidence for the moderating role of social value orientation also shows that the scenario setting may have motivated participants to react like in real-life instances. This observation follows Lind and Tyler's (1988) argument that the use of scenarios using known situations to the participants (as was the case in the present research: the description of a students' society) is believed to enhance mundane realism.

Further, because we used symmetric public good dilemmas in the present research we were not able to distinguish whether prosocials were more focused on equality of final outcomes or on equality of contributions (i.e. unequal contributions also result in unequal final outcomes in symmetric situations). Interestingly however, prior public good dilemma research (van Dijk & Wilke, 1995) suggests that step-level public good dilemmas (i.e. dilemmas in which the public good will only be provided if contributions surpass a certain threshold) may evoke a stronger focus on contributions than on final outcomes.

A final potential limitation is that we focused only on emotional reactions, and did not include behavioural reactions. However, for now, our approach suffices because our primary aim was to gain an understanding of the reasons how people evaluate the use of the equality rule. It is likely, however, that emotions will guide people's specific actions like exit and retributive behaviour. Future research is needed that examines the link between emotions and such behaviours in social interdependence settings. Further, the use of equality could also be determined by the culture one lives in, implying that equality also appeals to people because it is normative. In fact, Hofstede (1991) argued 'organizations in a masculine society stress results and want to reward on the basis of equity, organizations in a feminine society, however, are more likely to reward people on the basis of equality' (p. 93). Thus, equality may not always be favoured and, therefore it would be exciting for future research to conduct studies on equality and emotions in social dilemmas in different cultures.

The important strength of the present research is that our approach provided insight into the motives guiding people's use and evaluation of the equality rule by employing a new research paradigm and by assessing people's emotional reactions (something prior social dilemma research has largely failed to do). This approach showed across two studies that proselfs evaluate equality more in terms of efficiency, whereas prosocials evaluate its use more in terms of fairness. Prosocials' emotional reactions remained evenly strong, regardless of the group's outcome. Proselfs' emotional reactions, however, diminished when personal outcomes became more positive (i.e. the group succeeded). As such, proselfs seem to rely more on the assumption that: 'All is well, that ends well'.

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