ACADEMIC PRESS

Available online at www.sciencedirect.com

SCIENCE DIRECT®

Journal of Experimental Social Psychology xxx (2003) xxx–xxx

Journal of Experimental Social Psychology

www.elsevier.com/locate/jesp

Autocratic leadership in social dilemmas: A threat to group stability

Mark Van Vugt,[a,*] Sarah F. Jepson,[a] Claire M. Hart,[a] and David De Cremer[b]

[a] *Department of Psychology, University of Southampton, SO17 1BJ, UK*
[b] *University of Maastricht, The Netherlands*

Received 14 May 2002; revised 28 March 2003

Abstract

This paper investigated the impact of leadership style on the stability of small social dilemma groups. In two experiments, group members were more likely to exit their group and take their resources elsewhere if they were supervised by an autocratic style leader than by a democratic or laissez-faire style leader. The destabilizing influence of autocratic leadership is due to the procedural rather than distributive aspects of this leadership style: More members exited their group under an autocratic style leader, relative to a democratic style leader, regardless of whether or not they received favorable personal outcomes from the leader. Hence, autocratic leadership is not a stable long-term solution to the problem of public goods in groups.

Introduction

The welfare of groups in society depends to a considerable extent on the quality of the goods generated collectively by group members. Although each member probably acknowledges the importance of goods that benefit everyone in the group, it can be difficult to maintain such goods at the highest levels, because every member in principle profits equally from their existence, regardless of whether they made a personal contribution. Hence, group members may be tempted to *free-ride* on the investments of others in the group. In the social psychological literature, such situations are generally referred to as social dilemmas, or more specifically, as *public good dilemmas* (Dawes, 1980; Messick & Brewer, 1983; Olson, 1965; Stroebe & Frey, 1982; Van Lange, Liebrand, Messick, & Wilke, 1992; Van Vugt, Snyder, Tyler, & Biel, 2000).

There are essentially two kinds of public good dilemmas (Komorita & Parks, 1994). In *continuous* public goods, the quality of the generated good is *linearly* dependent upon the number of people that invest in the group. Examples include donating to a charity or contributing to a social movement. In contrast, a discrete or *step-level* public good requires a *minimum* number of investors or amount of investment in the group. Sharing the rent of a house, running a sports team, or setting up a Neighborhood Crime Watch scheme are a few examples of such goods.

To provide and maintain a public good, group members can decide among themselves to make voluntary contributions whenever they are required. But in the long run, a better strategy may be structural change within the group, designed to enforce a regular contribution from each group member (Messick & Brewer, 1983; Olson, 1965; Yamagishi, 1986). A common type of structural change, particularly within small groups, is the appointment of a *group leader* (Van Vugt & De Cremer, 1999, 2002).

Past work has contributed much to our understanding about the conditions under which group members are willing to give up their decisional freedom to a leader to solve a social dilemma in their group (De Cremer, 2000; Foddy & Crettenden, 1994; Messick et al., 1983; Rutte & Wilke, 1984, 1985; Samuelson, 1991; Samuelson & Messick, 1986, 1995; Samuelson, Messick, Rutte, & Wilke, 1984; Wilke, 1991). But there are still some important gaps in that understanding.

First, researchers have focused almost exclusively on one type of leadership, namely an autocratic style (Messick & Brewer, 1983). This has led some analysts to conclude that the only viable solution to social dilemma conflicts is the adoption of a coercive, non-democratic

* Corresponding author. Fax: +44-23-80594597.
E-mail address: mvv@soton.ac.uk (M. Van Vugt).

0022-1031/03/$ - see front matter © 2003 Elsevier Science (USA). All rights reserved.
doi:10.1016/S0022-1031(03)00061-1

regime. For example, in his book *Leviathan*, the philosopher Hobbes (1651/1939) asserted that only a strong central authority or leader figure can save society from the ruthless competition of selfish individuals. This is echoed in the work of many contemporary writers who claim that social dilemma tragedies can only be prevented if groups are willing to implement dictatorial solutions (Arrow, 1951; Hardin, 1968; Messick & Brewer, 1983).

Second, researchers have not been very interested in the consequences for the group of having a leader. There seems to be an assumption that autocratic leadership effectively resolves social dilemmas by forcing members to invest in their group. Although this is true in situations where escape from a group is impossible, in many situations group members not only have a choice between investing or not investing in a group, but also between staying in the group or leaving, thereby affecting the group's welfare and stability (cf. Ziller, 1965).

Stay/exit decisions may have important consequences for a group's ability to provide public goods, particularly step-level goods, because they require a minimum number of members to contribute. Hence, effective leaders must not only be able to solve the free-rider problem in their groups, but also to keep a sufficient number of members committed to those groups, thereby preventing them from taking their resources elsewhere.

This paper extends previous research on leadership in social dilemmas by investigating the consequences of autocratic leadership in public good dilemmas within open group settings—settings where people can move out of groups if they wish. We are particularly interested in the effects of autocratic versus democratic leadership styles on the stay/exit decisions of group members. Contrary to conventional wisdom, we believe that autocratic leadership may not be an effective long-term solution to public good dilemmas, at least within open groups, because autocratic leadership leads people to reconsider their membership and leave the group, thereby removing valuable resources from it. We also want to investigate whether the predicted destabilizing influence of autocratic leadership in groups is due to outcome concerns among group members (lack of opportunity to free-ride) or to concerns about the procedural aspects of this leadership style (lack of procedural control).

Leadership in public good dilemmas

When group members want a leader to regulate the provision of common goods, they must make decisions about who to choose, whether the leader will be elected or appointed, and (perhaps most importantly) how much power the leader should have over the group (Bass, 1990; French & Raven, 1959; Hollander, 1985; Lewin, Lippit, & White, 1939; Van Vugt & De Cremer, 1999; White & Lippit, 1953; Yukl, 1989). The leadership literature describes three broad power styles of leadership within groups, namely autocratic, democratic, and laissez-faire (Bass, 1990; Lewin et al., 1939; Vroom & Yetton, 1973; Yukl, 1989).

Applied to public good dilemmas, *autocratic* style leaders will do whatever they feel is necessary to provide the common good. They decide which group members should contribute how much without asking anyone for input. In contrast, *democratic* style leaders will involve group members in the decision-making process. Democratic leadership can involve either participative (shared) or consultative decision-making (Bass, 1990; Vroom & Yetton, 1973). A participative leader makes decisions in collaboration with group members, often using majority rules or similar social decision schemes, whereas a consultative leader makes decisions himself, after talking with group members about their opinions. In this research, we will concentrate on the *democratic-consultative* leadership style. Finally, a *laissez-faire* style leader does not have or seek control over group members, so they are free to decide for themselves what to do. A laissez-faire leader can, however, provide relevant information, such as the step-level point or the performance of the group.

Research on social dilemmas has shown that group members are generally unwilling to assign an autocratic leader to deal with conflicts over the provision of public goods or the preservation of public resources. For example, Samuelson and Messick (1986) found that rather than having a leader make all the decisions for them, group members preferred to divide resources equally among themselves to avert a resource crisis (see also Samuelson, 1993). And Rutte and Wilke (1985) found that when group members faced a collective resource threat, they preferred to solve it through democratic solutions, such as consensus or majority rules voting, rather than through autocratic leadership.

Finally, Van Vugt and De Cremer (1999, Experiment 1) investigated group members' preferences for different styles of leadership in public good situations. After group members repeatedly failed to provide the public good through voluntary contributions, they had an opportunity to choose a leader to improve their group's performance. Among a range of leaders with different styles, an autocratic leader was preferred the least, whereas a democratic, consultative leader was preferred the most. Taken altogether, these findings suggest that group members regard autocratic solutions as less desirable than democratic solutions for solving the problems associated with social dilemmas.

Group stability

Another reason why we believe that autocratic leadership is not the best solution to public good dilemmas is that this type of leadership can threaten the stability of a group. *Group stability* refers to the ability of a group to

operate as an intact system over an extended period (Arrow, McGrath, & Berdahl, 2000; Katz & Kahn, 1966). A primary source of instability in groups is membership turnover (Ziller, 1965). Membership stability is affected by two separate forces, the entry of new members into the group and the exit of current group members (Arrow & McGrath, 1995; Moreland & Levine, 1982). Because the exit of a current member (relative to the entry of a new member) is a more immediate threat to group performance on tasks that require a minimum number of contributors, we will focus on the stay/exit decision in this research.

Stability in membership can benefit group performance on many tasks (for a recent overview, see Moreland, 1999). There are several advantages associated with group stability. First, group stability fosters the commitment of individuals to their group. As a result, people are more willing to invest in the group (Moreland & Levine, 1982). Second, it is easier to build shared mental models (e.g., transactive memory) in stable groups (Carley, 1991; Moreland, 1999). Third, and most relevant to our research, membership stability is critical when groups perform tasks that require a minimum number of investors.

The exit problem has received little attention so far in laboratory research on public good dilemmas. Traditionally, this research examines the question how cooperation among group members emerges when they are locked together in a social dilemma (for overviews, see Komorita & Parks, 1994; Van Lange et al., 1992; Van Vugt et al., 2000). In real life, however, group boundaries are often open and individuals can choose between entering or not entering a group, and between staying in or leaving a group (Ziller, 1965). For the provision and management of public goods, an important issue is how individuals (particularly those with a cooperative inclination) can be encouraged to stay in a group when they have the option to leave.[1]

To our knowledge, only two experiments have examined the exit strategy in small groups facing public good dilemmas. Orbell, Schwartz-Sea, and Simmons (1984) gave members of nine-person groups an exit option after they had participated in a public good dilemma. Quite a few members chose this option (46%) when the incentives to exit were high and group discussion was not allowed. Yamagishi (1988) also used a public good dilemma to investigate the impact of exit costs on stay/leave decisions in three-person groups. In addition to differences in exiting between US and Japanese participants, Yamagishi found that when exit costs were low, high group investors were particularly likely to leave a group (in about 40% of the trials).

Autocratic leadership and group stability

In addition to helping groups complete their tasks and satisfy their members' needs, a third generic function of leadership is to *maintain a group as a viable ongoing system* (Bass, 1990; Cartwright & Zander, 1953; Hackman, 1990; Levine & Moreland, 1998; Yukl, 1989). This is indirectly achieved by executing the first two functions, task completion and need fulfillment, successfully. But maintaining group stability can be the primary objective of leadership in open groups, especially if there are attractive exit options, such as rival groups, available (Levine, Moreland, & Ryan, 1998).

To maintain the viability of a group, a leader must ensure that its members are sufficiently committed to stay in the group. Here again the style of leadership can be important. Open, democratic leaders, who actively involve group members in the decision-making process may be more likely to retain members than closed, autocratic leaders. There may be distributive as well as procedural reasons for this. From a distributive perspective, members may be less committed to groups with an autocratic leader, because such a leader gives them little opportunity to free-ride on the efforts of others—recall that free-riding is the dominant behavioral option in public good dilemmas (Komorita & Parks, 1994). From a procedural perspective, members may not want to belong to autocratically led groups, because they want more input into group decision making (Tyler & Smith, 1998).

To our knowledge, there is no direct evidence yet about the impact of leadership style on group stability in social dilemmas. Several lines of research, however, suggest that leadership style may indeed be important. First, in one of the most famous leadership studies, Lewin et al. (1939; White & Lippit, 1953) observed groups of schoolboys that were led by adult teachers who adopted either an autocratic, democratic, or laissez-faire leadership style. Autocratically led groups were slightly more productive than democratically led groups in completing various group tasks, and both were more productive than groups supervised by laissez-faire leaders. But compared to the democratic and laissez-faire groups, there was more discontent, hostility, and aggression among children in the autocratically led groups. Interestingly—and this is a lesser known finding—all of the children in the democratic and laissez-faire groups completed the study, but some of the children in the autocratic groups dropped out before completing all their tasks (Lewin et al., 1939).

Second, social psychological theory and research on organizations hints at a relationship between organiza-

[1] Formally, adding an exit-option departs from the definition of a public good dilemma (Dawes, 1980). However, in this research we are less interested in the game-theoretical properties of dilemmas than in the ecological validity of social dilemma research. Similarly, in the past researchers have added an option to vote for a leader (Messick et al., 1983), introduce a sanctioning system as well as exclude members from the group (Kerr, 1999) to the experimental paradigm.

tional stability and the dominant management style in an organization. Several researchers, for example, have found a negative correlation between job turnover, which can be regarded as exit behavior, and opportunities for workers to influence management when they experience work-related problems (Farrell, 1983; Ley, 1966; Rusbult & Lowery, 1985). These results are also consistent with research on the exit-voice effect (Brockner, Tyler, & Cooper-Schneider, 1992; Folger, 1977; Hirschman, 1970). If voice opportunities are limited, then workers are less likely to remain in an organization.

These two lines of research provide some evidence for the destabilizing effect of autocratic leadership. However, researchers have not explicitly addressed the implications of different leadership styles for the possible collapse of groups. In our research, we thus investigated the impact of leadership style on groups that always need a certain number of people to function. Our main prediction is that people are more likely to exit a group, taking their resources elsewhere, when they are led by someone with an autocratic rather than a democratic or laissez-faire style of leadership.

Experiment 1: Leadership style and group stability

In our first experiment, we compared the effects of autocratic, democratic, and laissez-faire leadership on small groups facing a step-level public good dilemma (Van de Kragt, Orbell, & Dawes, 1983). For reasons of experimental control, we used computer-mediated groups rather than face-to-face groups—a common procedure in social dilemma research (see, for example, Van Vugt & De Cremer, 1999; Yamagishi, 1988). There were three investment task trials, after which individuals were asked whether they wanted to stay in the same group or join a different group for a subsequent task. This was our primary dependent variable.

To examine the effects of leadership style, we manipulated the content of the messages sent by the leader to group members to simulate either an autocratic, democratic, or laissez-faire style (for a similar procedure, see Van Vugt & De Cremer, 1999; Experiment 2). We hypothesized that exit behavior would be more prevalent in the autocratic leadership condition than in the democratic (consultative) or laissez-faire leadership conditions.

Method

Design and participants

Eighty-seven psychology undergraduate students (11 men and 76 women) from an English University participated to fulfill their course requirements. Their ages ranged from 18 to 40 years, with an average of 21.5 years. Each participant was randomly assigned to one of three experimental conditions (leadership style: autocratic vs. democratic vs. laissez-faire). There were between 28 and 30 participants per condition.

Procedure

Six participants were scheduled for each session. When they arrived at the laboratory, they were separated and seated in individual cubicles, each containing a chair, table, and computer. All instructions were presented via the computer. These instructions were standardized for each participant depending upon his or her experimental condition. There were 15 sessions altogether, but in three of them, only five participants showed up. From our viewpoint, this did not matter as long as everyone believed that they were part of a six-person group. So, after the participants in these 5-person sessions were seated, they were led to believe that a sixth person had been delayed, but had just arrived (for a similar procedure, see Van Vugt & De Cremer, 2002). During the debriefing, none of the participants in these groups expressed any suspicion about this information.

Public goods task. Once they were seated, participants received detailed instructions concerning the nature of the task, which was described as a "group investment task" that resembled a variety of investment problems in everyday life. As an example, we used public television in the UK, a classic public goods dilemma (Komorita & Parks, 1994). Public TV can only be provided if a sufficient number of people purchase a TV-license. But, once it is provided, people can watch TV whether or not they have purchased such a license. Hence, it is attractive not to purchase a TV-license, but if too many do so, the good may not be provided at all.

Next, participants then received information about the rules of the task and the possible outcomes for themselves and the other group members. They were told that there would be two similar tasks, each consisting of up to five trials (to avoid "endplay" effects, we did not specify the exact number of trials per task). Each group member received £3 for each trial (approximately $5), an amount that they could either keep or invest in a collective good for the group (a monetary bonus). On each trial, a minimum of *four* out of *six* group members (two-thirds of the group) had to invest their endowment to achieve the bonus (an extra £5 per group member). If four people or more invested their endowments, then the bonus was provided to everyone, regardless of whether they made a contribution. However, if fewer than four people invested their endowments, then the bonus was not provided and those who invested lost their endowments. Participants were told that due to budgetary constraints, the money they earned during the experiment would not be paid out directly, but rather converted into lottery tickets for a raffle with attractive monetary prizes (up to £25) that would be held after the experiment was completed. To increase their chances of winning a prize, it was thus wise for them to win as

many lottery tickets as possible (for a similar procedure, see Van Vugt & De Cremer, 1999).

To ensure participants' understanding of the task, we administered a short quiz with questions regarding each of the four different outcome scenarios (e.g., "How much money do you earn when you invest your £3 and so do at least three others in your group?" "... when you keep your £3, but al least four others in the group invest their £3?"). The correct answers were provided as feedback on the screen, which were displayed each time the participant gave a wrong answer. Each question was repeated until the participant answered it correctly.

Manipulation of leadership style. Participants were told next that a leader would be assigned to the group during the investment task. To justify this, we explained that we were interested in studying the role of leaders in helping groups to solve investment problems. We told participants that a postgraduate student had been recruited to act as their leader. This person would monitor via the computer their group's performance to ensure that their group would do well.

The leader presented himself to participants via a standard email message. In the *autocratic* leader condition, he said:

> Hi. I will be your group leader during the tasks. In order to ensure that you win the group bonus, I will automatically remove the start-up money from four of you. I will not consult anyone about my decision, so you will not have a say in whether you make an investment or not. Each time I will simply remove the start-up money from four members I choose to make sure your group gets the bonus. After each task the computer will let you know which group members have contributed.

In the *democratic leader* condition, the group leader said:

> Hi. I will be your group leader during the tasks. In order to ensure that you win the group bonus please let me know whether you are willing to contribute or not. I will then remove contributions from four of those who have volunteered. If not enough people volunteer, however, I will have to remove the start-up money from someone who has not volunteered, just to make sure four people invest their money. After each task, the computer will let you know which group members have contributed.

Finally, in the *laissez-faire* condition, the group leader said:

> Hi. I will be your group leader during the tasks. For each task let me know whether you are willing to contribute, and I will remove the start-up money from those of you who have volunteered. Hopefully, at least four people will make a contribution in each task.

Investment task and feedback. After receiving a summary of the instructions, the first investment task began. It consisted of three trials. Group outcome feedback was standardized across the autocratic and democratic leadership conditions. After each trial, the leader reported that four members had made an investment, so the group had won the bonus for that particular trial. The leader also identified those who made an investment, whereby the participant was named in two out of three trials. This is in line with the a priori investment probability that two-third of group members were needed to provide the good in each trial.

After the third trial, there was suddenly a computer message from the experimenter. Participants were told that the first task was completed, and that the second task would start soon. They could either stay in the same group or join a *different* group that was working simultaneously on the same two tasks in a different part of the building. They were told that staying would mean working under the same leader again, whereas leaving would mean working in a group with no leader.

It was made explicit that *leaving* would *harm* a group's chances of winning the bonus during the trials of the second task, because a minimum of four investors per group was still needed to win.

Dependent measure

Stay/exit choice. The stay/exit measure consisted of a single choice "For the second task do you want to stay in the same group or join the other group? (1 = same group, 2 = other group)."

Debriefing

After answering this question, the experiment was, in fact, terminated. Participants were led to a room where they received a thorough debriefing, including the true purpose of the research and the content of the manipulations. We also checked their knowledge about the experiment. None of the participants was suspicious about the authenticity of the messages they received from the leader, nor could anyone guess what our main hypothesis was. Finally, we explained that because people's earnings were affected by the experimental condition they were in, every participant would have an equal chance of winning the raffle. Winners of two £25 prizes would be randomly picked from a list of all participants after the entire experiment was over. This lottery was later held and the prizes were paid.

Results and discussion

We used parametric as well as non-parametric tests to analyze the data from this experiment and the second experiment. In addition to significance tests, we also report the effect sizes; small, medium, or large effect sizes correspond, respectively, to η^2's = .01, .06, and .15 (Cohen, 1977).

Manipulation check

To examine the success of the manipulation of leadership style, we asked several questions at the end of the

experiment. First, we checked whether participants recalled the leadership information correctly: "What was the procedure for investing in the previous trials?" (1 = the leader decided which one of us contributed without consulting us, 2 = the leader consulted us about whether we wished to contribute, and 3 = we could decide for ourselves whether we wanted to contribute"). All participants correctly recalled this information.

We also asked participants to rate their agreement (1 = strongly disagree, 5 = strongly agree) with statements describing the dominance of the leader's style: "During the task the leader made me feel redundant" and "I felt my freedom was being threatened by the leader." Because these ratings were highly correlated, they were averaged to form a single scale ($\alpha = 0.72$). There was an overall effect of leadership style on the scale score, $F(2, 84) = 9.40$, $p < .001$ ($\eta^2 = .18$). Post hoc comparisons using Tukey's HSD method revealed that members of autocratically led groups found the leader more dominant ($M = 3.83$, $SD = 1.59$) than did members of democratically led ($M = 3.37$, $SD = 1.51$; $p < .01$), and laissez-faire led groups ($M = 2.28$, $SD = 1.08$; $p < .001$). Also, the democratic leader was rated as more dominant than the laissez-faire leader ($p < .01$). Furthermore, the means in the autocratic, $t(29) < 1$, and democratic conditions, $t(27) = 1.34$, *ns*, did not differ significantly from the scale midpoint (3), whereas the mean in the laissez-faire condition did, $t(28) = -5.71$, $p < .01$.

Because these differences were in the expected direction, our manipulation of leadership style seemed to be successful.

Stay/exit choice

The percentages of participants making a stay/exit choice across the three-leadership conditions were compared in a crosstabs analysis.

The exit percentage across the entire sample was 17.2%. There were no gender differences in stay/exit choices, $\chi^2(1, N = 87) < 1$ ($\eta^2 = .001$).

A subsequent analysis across the three conditions showed a statistically significant association between exit and leadership style, $\chi^2(2, N = 87) = 12.64$, $p < .001$ ($\eta^2 = .14$).[2] Our main hypothesis was that exiting would occur more often in the autocratic leadership condition than in the other two leadership conditions. To test this hypothesis, we performed three planned comparisons, one contrasting the autocratic condition with the democratic and laissez-faire conditions combined, one contrasting the autocratic and democratic conditions, and one contrasting the democratic and laissez-faire conditions. In support of our hypothesis, the first contrast was significant—a much greater percentage of members chose the exit option in the autocratic condition (36.7%; 11 out of 30 members) than in the other conditions combined (7%; 4 out of 57 members), $\chi^2(1) = 11.59$, $p < .001$ ($\eta^2 = .14$). The contrast between the autocratic (36.7%) and democratic conditions (11%; 3 out of 28 members) was also significant, $\chi^2(1) = 5.33$, $p < .03$ ($\eta^2 = .09$). Finally, there was no significant difference between the democratic (11%) and laissez-faire conditions (3.4%; 1 out of 29 members), $\chi^2(1, n <= 57) < 1$ ($\eta^2 = .02$).

The observed levels of exiting, if translated into real group decisions, would have had implications for the autocratically led groups only. On average, these groups would have lost more than one-third of their members (36.7%), a little more than two members on average per group of six. Because each group required *at least* four members (all contributors) to reach the step-level of the good, a considerable number of autocratically led groups thus would have failed to win the bonus on the second task.

Experiment 2: Why does leadership style affect group stability?

Experiment 1 was the first demonstration of an effect of leadership style on group stability. We wanted to replicate this finding in a second experiment and investigate possible explanations for the destabilizing effect of autocratic leadership. We used a similar paradigm as in Experiment 1, but with two modifications. First, the number of trials per investment task was extended from 3 to 8 to give participants more opportunities to interact with and form impressions of the group leader. The second modification concerned the exit option. In Experiment 2, participants knew from the start that there was another group working elsewhere in the laboratory. We believed that this information would help participants to make a stay/exit decision later on in the experiment. Hence, before the first investment task began, we told the six members of each group that we would randomly form two groups of three members each. To maintain comparability between the two experiments, the size of the good and the provision point were exactly the same as before (a £5 bonus per member if two-third of the group members invested).

Individuals were (ostensibly) randomly assigned to one of the two smaller groups at the beginning of the experiment. One of those groups had a leader assigned to it. In fact, participants were always "assigned" to the group with the leader. As in Experiment 1, individuals

[2] The individual rather than the group was the unit of analysis in these experiments. This seemed justified because there was no real interaction among the six participants in each group session. Nevertheless, we checked (see Kenny, Kashy, & Bolger, 1998) for possible non-independence effects by including group ($n = 15$) as a factor in the analysis. There was no effect for this factor, $\chi^2(14, N = 87) = 13.65$, $p = .48$ ($\eta^2 = .02$).

were given an opportunity to switch groups at the end of the first investment task

The main objective of Experiment 2 was to search for a viable explanation for the effect of leadership style on group stability. We thought that the influence of an autocratic leadership style could be due to either the distributive (outcome) or the procedural aspects of such leadership. According to distributive theories of leadership (Bass, 1990; Hollander, 1985; Thibaut & Kelley, 1959), leaders are primarily evaluated in terms of the favorability and fairness of outcomes that they produce for group members. In public good dilemmas, the best possible individual outcome is free-riding (Komorita & Parks, 1994), but an autocratic leader could well prevent people from receiving that outcome, unlike a democratic or laissez-faire leader, who would give people some decisional freedom. From a distributive viewpoint, group members should thus be more keen to leave an autocratically led group, because they would receive (or expect to receive) unfavorable personal outcomes. We will refer to this as the *distributive* hypothesis.

Alternatively, there may be *procedural* reasons why group members want to exit an autocratically led group (Thibaut & Walker, 1975; Tyler & Smith, 1998). Under autocratic leadership, group members have neither direct (decision) control nor indirect (process) control over the decision-making process. Autocratic leaders do not allow members to have input into their decisions, nor do they consult them before they make a decision. Conversely, democratic leaders provide members with considerable process control (consultative leaders) and some decision control (participative leaders). Finally, laissez-faire leaders provide members with a lot of both decision and process control. Researchers have consistently shown the importance of procedural issues in the endorsement of leadership (for a recent overview, see Tyler & Smith, 1998). Some studies have shown that the quality of procedures can be more important than the quality of outcomes in that endorsement (e.g., Tyler, 2000). This leads to an alternative prediction regarding autocratic leadership as a destabilizing force in public goods: Group members may exit groups with automatic leaders out of frustration with the procedural aspects of that leadership style. We will refer to this as the *procedural* hypothesis.

It is also possible that distributive and procedural factors combine to produce the destabilizing influence of autocratic leadership on groups during public good dilemmas (Brockner & Wiesenfeld, 1996). Perhaps group members are more keen to exit an autocratically led group when they also receive unfavorable personal outcomes. However, they may be encouraged to stay when those outcomes are more favorable. We shall refer to this as the *interaction* hypothesis.

To explore these issues, we added an extra factor to our paradigm. Participants were supervised by an autocratic or democratic (consultative) leader, and their endowment was used either very frequently (low outcome favorability) or very rarely (high outcome favorability) by the leader during the investment task. If the distributive hypothesis is correct, then more people should exit their group in the low than in the high outcome favorability condition, and this effect should be independent of leadership style. In contrast, if the procedural hypothesis is correct, then more people should exit their group under autocratic leadership than under democratic leadership, and this effect should be independent of outcome favorability. Finally, the interaction hypothesis suggests that outcome favorability should have a greater influence on stay/exit decisions under an autocratic leader (with unfavorable procedures) than under a democratic leader (with favorable procedures). To further explore these issues, we also asked group members after the experiment about their reasons for staying or exiting.

In Experiment 2, the laissez-faire leadership style was used as a control condition, because it was impossible to manipulate outcome favorability in this condition (everyone is free to decide whether they want to invest or not when the group has a laissez-faire leader). Furthermore, we introduced a design improvement in Experiment 2. To enhance comparability among the leadership conditions, we gave the same bogus outcome feedback in the laissez-faire condition as in the democratic and autocratic conditions—on every trial, every group reached the level of contributions needed to win the bonus.

Method

Design and participants

One hundred and twenty six undergraduate students (97 women and 29 men) from an English University participated to fulfill their course requirements. Their ages ranged from 18 to 45, with an average of 21.2 years. Each participant was randomly assigned to one of four experimental conditions, following a 2 (leadership style: autocratic vs. democratic) by 2 (outcome favorability: high vs. low) design. In addition, we added a fifth, laissez-faire leadership style condition to the design. Each of the conditions contained between 24 and 26 participants.

Procedure

Twenty-one group sessions were run. The procedures were similar to those used in Experiment 1, with a few exceptions. Before the first task, each participant was assigned to one of two three-person groups, A or B, and told that a leader would be assigned at random to one of the groups. In reality, every participant was assigned to group A, which always had the leader.

Next, participants were told that they would be performing two investment tasks within their group,

each consisting of about 10 trials. The first task actually consisted of eight trials. On each trial, all group members received an endowment of £3. To win the bonus of £5 per member, a minimum of two out of three group members had to invest their endowments. As in Experiment 1, participants were told that they would not actually receive the money they won. Instead, that money would determine the number of lottery tickets they received for a raffle (with various cash prizes), to be held at the end of the experiment.

Manipulation of leadership style. The leadership style manipulation was the same as the one employed before. Participants had a leader who (a) invested the endowments from two out of three group members, without any form of consultation about who would make those investments (autocratic condition), or (b) consulted with members about who would make investments (democratic condition), or (c) left if up to members to decide whether they wished to invest or not (laissez-faire condition). The same messages that we used in Experiment 1 were used again.

Manipulation of outcome favorability. Across all three leadership conditions, *group* outcome feedback was standardized—the group always won the bonus. In the autocratic and democratic conditions, however, *individual* outcome feedback was manipulated. This new factor was crossed with the two leadership conditions. In the *low* outcome favorability condition, each participant's endowment of £3 was used in six out of eight trials by the leader, which exceeds the probability of being selected by chance. In contrast, in the *high* outcome favorability condition, each participant's endowment was used in just two out of eight trials, which is well below the probability of being selected by chance. Thus, participants were individually much better off (four times £3 equals £12) in the high outcome favorability condition (expected payoff: £34) than in the low outcome favorability condition (expected payoff: £22). In neither of these conditions did the leader justify his or her selection of endowments. We felt that any justification might influence stay/exit decisions in an unpredictable way. For example, if the leader said that the selection of endowments was due to chance or to effort, then some people might not have believed the feedback (Bies & Shapiro, 1988).

After the first task was completed, participants received an email message from the experimenter. They were told that they could either stay in group A or join group B for the second task, which both groups would be performing at the same time. Staying would mean working under the same leader, whereas leaving would mean working in a leaderless group. As in Experiment 1, we made the consequences of exiting a group clear. By *leaving*, participants would *harm* a group's chances of winning the bonus, because a minimum of two contributors per group was still needed to win.

Dependent measures

Stay/exit choice. The stay/exit measure consisted of a single choice: "For the forthcoming task do you want to stay in this group or move to the other group (1 = stay, 2 = move)?"

Reasons for staying vs. exiting. After they made this choice, we asked participants to rate their agreement (1 = strongly disagree, 7 = strongly agree) with eight reasons for why they chose to stay or exit the group. Four statements addressed satisfaction with the *distributive* aspects of the leadership styles: "I chose this option because I was satisfied with the outcomes I received from the leader," "I considered the outcomes I received to be fair," "The leader harmed my personal interests," (reversely coded), and "This leader helped me to increase my income." Another four statements addressed satisfaction with the *procedural*aspects of the leadership styles (adapted from Tyler & Lind, 1992): "I was able to influence the decisions of the leader," "This leader acted in a procedurally fair way," "The leader treated us with respect," and "The leader was honest and trustworthy."

Debriefing

The debriefing procedure was the same as in Experiment 1. Again, we found no evidence that participants were suspicious about the authenticity of the email messages they received from the leader, and no one could guess our research hypothesis. The same lottery procedures used in the first experiment were again described to participants and later used.

Results and discussion

Manipulation checks

Leadership style. To examine the success of the manipulation of leadership style, we again asked participants: "What was the procedure for making investments in the previous task?" (1 = the leader decided which one of us contributed without consulting us, 2 = the leader consulted us about whether we wished to contribute, and 3 = we could decide). All 126 participants recalled this information correctly.

As before, we also asked participants to rate their opinion (1 = not at all and 7 = extremely so) about statements describing the leadership style: "To what extent did the group leader make you feel redundant?" "To what extent did the leader decide what should be done and how it should be done?" "To what extent did the leader allowed group members complete freedom in their decisions" (reversely coded), and "To what extent did you find the leader was bossy or dominating."

These scores were averaged to create a single dominance scale ($\alpha = 0.80$), and subjected to a one-way ANOVA involving the three leadership conditions (collapsing across the two outcome favorability conditions). This test was significant, $F(2, 123) = 90.01$, $p < .001$ ($\eta^2 = .32$). Post hoc comparisons using Tukey's HSD method revealed that the autocratic leader ($M = 5.86$, $SD = 0.98$) was indeed considered to be more dominant than either the democratic ($M = 4.04$, $SD = 1.06$; $p < .001$) or the laissez-faire leader ($M = 2.75$, $SD = 0.95$; $p < .001$). The democratic and laissez-faire leaders also differed significantly from each other ($p < .001$). Finally, as expected, the autocratic, $t(49) = 13.35$, $p < .001$, and laissez-fair leaders' ratings, $t(24) = -6.60$, $p < .001$, differed significantly from the midpoint of the judgment scale (4), whereas the democratic leader's ratings did not, $t(50) < 1$.

Finally, we conducted a 2 (leadership style: autocratic vs. democratic) by 2 (outcome favorability: high vs. low) ANOVA to see if leader ratings were influenced by the favorability of outcomes. This analysis revealed a significant main effect for Leadership Style, $F(1, 97) = 68.27$, $p < .001$ ($\eta^2 = .17$). But the Outcome Favorability main effect and the Leadership Style × Outcome Favorability interaction were not significant (both F's < 1; both η^2's $= .001$). Thus, it appears that the leadership manipulation was indeed successful.

Outcome favorability. We asked participants how many times their endowments were used by the leader. In the high and low outcome favorability conditions, all participants recalled this information correctly (depending upon the condition, the correct answer was in either "two" or "six out of eight trials").

Stay/exit choice

The exit percentage across the sample was 25.4%. As in Experiment 1, there were no gender differences in this behavior.

The percentages of participants making a stay/exit choice in each of the three leadership conditions (collapsed across the two outcome favorability-conditions) were compared in a crosstabs analysis, as in Experiment 1. This analysis showed a statistically significant association between leadership style and exit, $\chi^2(2, N = 126) = 9.61$, $p < .01$ ($\eta^2 = .08$).[3] Again, we conducted three planned comparisons. The first comparison contrasted the autocratic condition with the other two leadership conditions. As in Experiment 1, this contrast was significant. A much greater percentage of members chose the exit option (40%; 20 out of 50 members) in the autocratic condition than in the other two conditions combined (15.8%; 12 out of 76 members), $\chi^2(1, N = 126) = 9.33$, $p < .01$ ($\eta^2 = .32$). The contrast between the autocratic (40%) and democratic conditions (17.6%; 9 out of 51 members) was also significant, $\chi^2(1, N = 101) = 6.16$, $p < .02$ ($\eta^2 = .06$). Finally, there was no significant difference between the democratic and laissez-faire conditions (17.6% and 12%; 3 out of 25 members), $\chi^2(1, n = 76) < 1$ ($\eta^2 = .005$).

As in Experiment 1, the observed levels of exiting, if extrapolated to real groups, would have had implications for groups with autocratic leaders only. On average, these groups would have lost more than one member per group of three (40% exit). Many of these groups thus would have failed to win the bonus on the second task, because each group needed contributions from at least two members to win.

Can the destablizing influence of autocratic leaders be attributed to the distributive or the procedural aspects of that leadership style (or maybe to a combination of those factors)? A logistic regression analysis was used to study the combined impact of leadership style (autocratic vs. democratic) and outcome favorability (low vs. high) on participants' stay/exit choices. According to the distributive hypothesis, we would expect only a main effect of outcome favorability: Members are more likely to exit when the outcomes associated with a group leader are personally unfavorable, regardless of that leader's style. In contrast, the procedural hypothesis would predict a main effect of leadership style, independent of outcome favorability. Finally, the interaction hypothesis would predict an interaction between leadership style and outcome favorability.

We found a marginally significant main effect for Outcome Favorability, $\chi^2(1) = 3.37$, $p < .07$ ($\eta^2 = .03$). As expected, more people exited when outcomes were unfavorable (36.5%) than when outcomes were favorable (20.4%). There was also a significant main effect for Leadership Style, $\chi^2(1, n = 101) = 6.40$, $p < .015$ ($\eta^2 = .06$). As noted earlier, more people exited in the autocratic condition (40%) than in the democratic condition (17.6%). Finally, the Leadership Style × Outcome Favorability interaction was not significant, $\chi^2(1) < 1$ ($\eta^2 = .001$). Thus, the effect of leadership style was not dependent upon whether group members received favorable or unfavorable personal outcomes from the group leader.

Reasons for staying versus exiting

We also investigated the reasons for group members' decisions to stay or leave by analyzing their ratings of the eight reasons described earlier. These were subdivided into two sets of four reasons each, namely distributive reasons and procedural reasons. We averaged the responses to each set of four reasons to create two

[3] As in Experiment 1, we checked for possible non-independence by including group ($n = 21$) as a factor in the analysis. Again, there was no effect for this factor, $\chi^2(20, N = 126) = 19.08$, $p = .52$ ($\eta^2 = .01$), suggesting that there was no influence of the particular group session that participants attended.

separate scales, *outcome satisfaction* and *procedural satisfaction*. Both the outcome and procedural satisfaction scales were internally consistent (respective α's = 0.81 and 0.77) and the interscale correlation was modest ($r = .31$), albeit significant ($p < .001$).

There were clear differences in outcome and procedural satisfaction depending on whether group members decided to exit the group or not, F's$(1, 124) = 24.72$ and 23.08, both p's $< .001$ (η^2's = .20 and .17). Exiters were less satisfied than stayers with the outcomes (M's = 4.05 vs. 5.10, SD's = 1.10 and 1.02) and procedures (M's = 2.91 vs. 4.34, SD's = 1.44 and 1.46) associated with their leaders.

Scores on the satisfaction scales were also analyzed in separate 2 (leadership style: autocratic vs. democratic) by 2 (outcome favorability: high vs. low) ANOVAs. For outcome satisfaction, we found only a significant main effect for Outcome Favorability, $F(1, 97) = 12.05$, $p < .001$ ($\eta^2 = .11$), but no Leadership Style main effect, F's$(1, 97) < 1$ (η^2's $< .01$) and no Leadership Style $\times$ Outcome Favorability interaction, F's$(1, 97) < 1$ (η^2's $< .01$). Group members were more dissatisfied when their outcomes were unfavorable ($M = 4.56$, $SD = 1.12$) rather than favorable ($M = 5.30$, $SD = 0.99$), although in both conditions, satisfaction was reasonably high (compared to the scale midpoint; t's$(51, 48) = 3.61$ and 9.19, both p's $< .01$).

For procedural satisfaction, only the main effect of Leadership Style was significant, $F(1, 97) = 24.16$, $p < .001$ ($\eta^2 = .20$). Group members were more dissatisfied with procedures in the autocratic leadership condition ($M = 3.01$, $SD = 1.09$) than in the democratic leadership condition ($M = 4.08$, $SD = 1.17$). Only the first mean differed significantly from the scale midpoint, $t(49) = -6.42$, $p < .001$. There was no main effect for Outcome Favorability, $F(1, 97) < 1$ ($\eta^2 < .01$), and no Leadership Style $\times$ Outcome Favorability interaction, F's$(1, 97) < 1$ ($\eta^2 < .01$).

Finally, we performed an analysis to see whether procedural satisfaction would mediate the effects of leadership style on stay/exit choices. This was a logistic regression with leadership style and outcome favorability as predictors and procedural satisfaction as the covariate. This analysis revealed a significant effect of procedural satisfaction on stay/exit decisions, $\chi^2(1) = 13.84$, $p < .001$, but the main effect of leadership style was no longer significant, $\chi^2(1) = 0.70$, $p = .42$ (in the original analysis: $\chi^2(1) = 6.40$, $p < .015$), whereas the outcome favorability effect, $\chi^2(1) = 2.32$, *ns* (in the original analysis: $\chi^2(1) = 3.37$, $p < .07$) and the interaction between leadership style and outcome favorability, $\chi^2(1) < 1$, remained virtually the same. These results are consistent with the idea that procedural concerns underlie the effects of leadership style, although they should be interpreted with caution, given that the reasons were rated after the stay/exit choices were made.

General discussion

Autocratic leadership is regarded by many analysts as the most efficient solution to group conflicts involving the distribution of scarce resources or the provision of public goods (see Hardin, 1968; Hobbes, 1651/1939; Messick & Brewer, 1983; Olson, 1965; Yamagishi, 1986). The aim of our research was to challenge this view by studying the longer-term consequences of an autocratic style of leadership. We hypothesized that autocratic leaders would threaten group stability by provoking members to exit the group, thus removing vital resources from it.

Individuals worked together in small, computer-mediated groups on a step-level public good task under the supervision of either an autocratic, democratic, or laissez-faire leader. In the autocratic and democratic conditions, participants received bogus success feedback, whereas in the laissez-faire condition either bogus success feedback (Experiment 2) or no outcome feedback (Experiment 1) was given. After engaging in an investment task, each group member was given an opportunity to leave the group and join a different group for a subsequent task.

Perhaps because their groups were successful, more people choose to stay in their groups, rather than leave. But in both experiments, just as we predicted, people in the autocratic conditions were more likely to choose the exit option than were people in the other leadership conditions. In fact, the proportion of exiters in the autocratic condition was so high that many groups would have failed, because they lost the critical number of group members needed to produce the good. These findings show that autocratic leadership is not a viable solution to the provision and maintenance of step-level public goods, at least in groups with permeable boundaries (Ziller, 1965).

Autocratic leadership: A threat to group stability

Why does leadership style affect group stability? In Experiment 2, we tested a distributive versus procedural explanation for the destabilizing influence of autocratic leadership. We found that when group members received favorable personal outcomes from their leader, they were less likely to exit than when their outcomes were unfavorable. Although this effect was only marginally significant, it shows that group stability is, at least partly influenced by the capability of leaders to provide favorable outcomes for group members.

That is not the whole story, however, because the influence of leadership style on group members' stay/exit choices did not interact with the favorability of outcomes, suggesting that other factors affected how members responded to an autocratic leader. Analyses of the reasons that members gave for their stay/exit choices were consistent with a procedural explanation for the destabilizing influence of autocratic leadership: Under

an autocratic leader, group members were unhappy about the amount of control they could exercise over the decision-making process.

This procedural account reflects the leadership literature, which argues that the primary difference between autocratic and democratic (consultative) leadership lies in the amount of control that group members have over the decision-making process (Bass, 1990; Yukl, 1989). Researchers have found that process control is often more important for the endorsement of leadership than decision control, and that process control is valued even when it does not influence decision control (Tyler, Rasinski, & Spodick, 1985). The procedural explanation is also consistent with theoretical work on the exit-voice hypothesis (Hirschman, 1970), which suggests that there is a trade-off in the use of exit and voice among dissatisfied group members. If opportunities to voice their concerns are lacking, then group members will resort to exit, and if exit opportunities are absent, then they will resort to voice.

Our experiments revealed no systematic difference in exit behaviors between the democratic and laissez-faire leadership conditions. Group members had more decision control under a laissez-faire leader than under a democratic leader, but this did not produce a different exit rate. This suggests again that group members were primarily focused on the procedural rather than the distributive qualities of different leadership styles.

Two alternative motives may underlie the importance of procedural concerns in reactions to different leadership styles (Tyler & Smith, 1998), and these need to be explored in future research. First, based on a notion of extended self-interest, group members may prefer to stay in a group with a democratic rather than autocratic leader, because having some input into the decision-making process may lead to better personal outcomes in the long-run than having no input at all (Thibaut & Walker, 1975). Second, the group-value model (Tyler & Lind, 1992) should be considered. Inspired by social identity theory (Tajfel & Turner, 1978), this model argues that a leadership style communicates important relational information to the group. In contrast to an autocratic style, a democratic style leader conveys to group members that their input is appreciated, and that they are respected members of their group. People may thus believe that group membership is more worthwhile under a democratic rather than an autocratic leader whether or not they receive favorable personal outcomes. Future research should make an effort to learn which of these two motives accounts for the destabilizing influence of autocratic leadership style, perhaps by manipulating members' identification with their group (Van Vugt & De Cremer, 1999).

Strengths, limitations, and implications

Before closing we wish to note some limitations and a strength of our research. An apparent limitation of our research involves the bogus success feedback that participants received about the provision of the good. In the autocratic and democratic conditions, as well as the laissez-faire condition in Experiment 2, every group was successful at providing the good. This may explain why more group members chose to stay in their group than exit. But, the fact that exiting occurred more frequently under autocratic leaders, even when they were successful at producing the good, illustrates the strong resistance against this leadership style. An aversion to autocratic leadership has also been found in other studies (Nielsen & Miller, 1997; Peterson, 1997; Rutte & Wilke, 1985; Samuelson, 1993; Van Vugt & De Cremer, 1999). For example, in a group decision making study, Nielsen and Miller (1997) found that groups that began with a dictatorial decision rule nearly always reverted to a democratic rule, regardless of how well or poorly they were performing. However, we should be careful in assuming that the resistance against autocratic leadership is universal, because most research on leadership (including ours) has been conducted with samples from Western democratic societies (cf. Bass, 1990).

A second limitation involves our manipulation of leadership style. Recall that the leader in our experiments was somebody from outside the group who was assigned to lead on an unclear basis, rather than being elected by group members or appointed on the basis of particular leadership skills. Leaders are presumably more legitimate sources of influence under the latter conditions (Hollander & Julian, 1970; Van Vugt & De Cremer, 1999). Fewer members might have exited the autocratically led groups if their leaders had been elected or appointed on merit.

Furthermore, based upon the leadership literature (Bass, 1990; Cartwright & Zander, 1953; Lewin et al., 1939; Yukl, 1989), we chose to compare three different leadership styles, two of which were fairly extreme (autocratic and laissez-faire styles) and a third (a democratic style) that tended more towards the autocratic than the laissez-faire style. In natural groups, leaders may adopt a more flexible leadership style, sometimes open and democratic and at other times more distant and authoritarian. Further research should examine the impact of having a leader with a hybrid leadership style on exit behaviors, using both laboratory groups and natural groups.

A final limitation concerns our operationalization of group stability. We focused exclusively on the effects of members exiting their groups. We did so because stay/exit decisions have an immediate impact on group performance in step-level tasks. However, it would also be interesting to explore the role of leadership style in the recruitment of newcomers to groups (cf. Orbell & Dawes, 1993). It may be that autocratic leadership is a "double whammy" for groups, because autocratic leaders are poor at both retaining members and at-

tracting new members to replace them. Groups led by such persons may thus be very unstable, even more so than we have shown here.

A strength of our research is its focus on membership stability within a social dilemma context. Social dilemma research has largely ignored membership dynamics by studying cooperation within closed groups only (for exceptions, see Orbell et al., 1984; Yamagishi, 1988). Most natural groups, however, are open systems involved in continuous exchanges with their environment. These groups must try to preserve some degree of stability to survive (Arrow et al., 2000). Our research indicates that the presence of an attractive rival group can threaten the group's existence (cf. Levine et al., 1998). The use of a step-level task, which requires a minimum number of contributors, enabled us to demonstrate this convincingly.

A final issue concerns some implications of our research for public good dilemmas in the real world. In light of our findings, we believe that an autocratic style of leadership is not a viable long-term solution to social dilemmas, at least in open group settings. An autocratic leader in an open group may not be able to secure the welfare of the group in the long run, because group members will be tempted to leave the group. To ensure that there are always enough members, such a leader could decide to close the boundaries of the group, either psychologically via threats and sanctions (Kerr, 1999), or even physically (like the Berlin Wall; Hirschman, 1970). Yet these practices may not be feasible or socially desirable among groups operating within Western democratic traditions. To preserve group stability, an autocratic leader may thus be forced to give group members input into the decision-making process, perhaps by adopting a democratic or laissez-faire leadership style.

Uncited references

Baron and Kenny (1986), Lind, Kanfer, and Earley (1990).

Acknowledgments

The authors thank John Levine, Dick Moreland, and Tim Wildschut for their helpful comments on drafts of this paper.

References

Arrow, H., & McGrath, J. E. (1995). Membership dynamics in groups at work. A theoretical framework. In B. M. Staw, & L. L. Cummings (Eds.), *Research in organizational behavior: Vol. 17* (pp. 373–411). Greenwich, CT: JAI.

Arrow, H., McGrath, J. E., & Berdahl, J. L. (2000). *Small groups as complex systems*. London: Sage.

Arrow, K. J. (1951). *Social choices and individual values*. New Haven, CT: Yale University Press.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator distinction in social-psychological research: Conceptual, strategic, and statistical consideration. *Journal of Personality and Social Psychology, 51*, 1173–1182.

Bass, B. M. (1990). *Bass and Stogdill's handbook of leadership: Theory, research and management applications* (3rd ed.). New York: Free Press.

Bies, R. J., & Shapiro, D. L. (1988). Voice and justification: Their influence on procedural fairness judgments. *Academy of Management Journal, 31*, 676–685.

Brockner, J., Tyler, T. R., & Cooper-Schneider, R. (1992). The influence of prior commitment to an institution on reactions to perceived unfairness: The higher they are, the harder they fall. *Administrative Science Quarterly, 37*, 241–261.

Carley, K. M. (1991). A theory of group stability. *American Sociological Review, 56*, 331–334.

Cartwright, D., & Zander, A. (1953). *Group dynamics*. New York: Row, Peterson, and Company.

Cohen, J. (1977). *Statistical power analysis for the behavioral sciences*. New York: Academic Press.

Dawes, R. M. (1980). Social dilemmas. *Annual Review of Psychology, 31*, 169–193.

Farrell, D. (1983). Exit, voice, loyalty, and neglect as responses to job dissatisfaction: A multidimensional scaling study. *Academy of Management Journal, 26*, 596–607.

Foddy, M., & Crettenden, A. (1994). Leadership and group identity as determinants of resource consumption in a social dilemma. In U. Schulz, W. Albers, & U. Mueller (Eds.), *Social dilemmas and cooperation* (pp. 207–232). Berlin: Springer.

Folger, R. (1977). Distributive and procedural justice. Combined impact of voice and improvement on experienced inequity. *Journal of Personality and Social Psychology, 35*, 108–119.

French, J. R. P., & Raven, B. (1959). The bases of social power. In D. Cartwright (Ed.), *Studies in social power* (pp. 118–149). Ann Arbor: University of Michigan, Research Center Group.

Hackman, J. R. (1990). *Groups that work (and those that don't)*. San Fransisco: Jossey-Bass.

Hardin, G. (1968). The tragedy of the commons. *Science, 162*, 1243–1248.

Hollander, E. P. (1985). Leadership and power. In G. Lindzey, & E. Aronson (Eds.), *The handbook of social psychology* (3rd ed., Vol. 2, pp. 485–537). New York: Random House.

Hobbes, T. (1651/1939). *Leviathan*. New York: Modern Library.

Kenny, D. A., Kashy, D. A., & Bolger, N. (1998). Data analysis in social psychology. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 1, pp. 233–265). Boston, MA: McGraw-Hill.

Kerr, N. L. (1999). Anonimity and social control in social dilemmas. In M. Foddy, M. Smithson, S. Schneider, & M. Hogg (Eds.), *Resolving social dilemmas* (pp. 103–120). Philadelphia: Psychology Press.

Komorita, S. S., & Parks, C. D. (1994). *Social dilemmas*. Dubuque, IA: Brown & Benchmark.

Levine, J. M., & Moreland, R. L. (1998). Small groups. In D. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 415–469). New York: McGraw-Hill.

Levine, J. M., Moreland, R. L., & Ryan, C. (1998). Group socialization and intergroup relations. In C. Sedikides, J. Schopler, & C. Insko (Eds.), *Intergroup cognition and intergroup behavior* (pp. 283–308). Mahwah, NJ: Lawrence Erlbaum.

Lewin, K., Lippit, R., & White, R. K. (1939). Patterns of aggressive behavior in experimentally created social climates. *Journal of Social Psychology, 10*, 171–199.

Ley, R. (1966). Labor turnover as a function of worker differences, work environment, and authoritarianism of foremen. *Journal of Applied Psychology, 50*, 497–500.

Lind, E. A., Kanfer, R., & Earley, P. C. (1990). Voice, control, and procedural justice: Instrumental and noninstrumental concerns in fairness judgments. *Journal of Personality and Social Psychology, 59*, 952–959.

Messick, D. M., & Brewer, M. B. (1983). Solving social dilemmas: A review. In L. Wheeler, & P. Shaver (Eds.), *Review of personality and social psychology: Vol. 4* (pp. 11–44). Beverly Hills, CA: Sage.

Messick, D. M., Wilke, H. A. M., Brewer, M. B., Kramer, R. M., Zemke, P. E., & Lui, L. (1983). Individual adaptations and structural change as solutions to social dilemmas. *Journal of Personality and Social Psychology, 44*, 294–309.

Moreland, R. L. (1999). Transactive memory: Learning who knows what in work groups and organizations. In L. Thompson, D. Messick, & J. Levine (Eds.), *Shared cognition in organizations: The management of knowledge* (pp. 3–31). New York: Lawrence Erlbaum.

Moreland, R. L., & Levine, J. M. (1982). Socialization in small groups: Temporal changes in individual-group relations. In L. Berkowitz (Ed.), *Advances in experimental social psychology: Vol. 15* (pp. 137–192). New York: Academic Press.

Nielsen, M. E., & Miller, C. E. (1997). The transmission of norms regarding group rules. *Personality and Social Psychology Bulletin, 23*, 516–525.

Olson, M. (1965). *The logic of collective action: Public goods and the theory of groups*. Cambridge, MA: Harvard University Press.

Orbell, J. M., & Dawes, R. M. (1993). Social welfare, cooperators' advantage and the option of not playing the game. *American Sociological Review, 58*, 787–800.

Orbell, J. M., Schwartz-Sea, P., & Simmons, R. T. (1984). Do cooperators exit more readily than defectors? *American Political Science Review, 78*, 147–162.

Peterson, R. S. (1997). A directive leadership style in group decision-making can be both virtue and vice: Evidence from elite and experimental groups. *Journal of Personality and Social Psychology, 72*, 1107–1121.

Rusbult, C. E., & Lowery, D. (1985). When bureaucrats get the blues: Responses to dissatisfaction among federal employees. *Journal of Applied Social Psychology, 15*, 80–103.

Rutte, C. G., & Wilke, H. A. M. (1984). Social dilemmas and leadership. *European Journal of Social Psychology, 14*, 294–309.

Rutte, C. G., & Wilke, H. A. M. (1985). Preference for decision structures in a social dilemma situation. *European Journal of Social Psychology, 15*, 367–370.

Samuelson, C. D. (1991). Perceived task difficulty, causal attributions, and preferences for structural change in resource dilemmas. *Personality and Social Psychology Bulletin, 17*, 181–187.

Samuelson, C. D. (1993). A multivariate evaluation approach to structural change in resource dilemmas. *Organizational Behavior and Human Decision Processes, 55*, 298–324.

Samuelson, C. D., & Messick, D. M. (1986). Inequities in access to and use of shared resources in social dilemmas. *Journal of Personality and Social Psychology, 51*, 960–967.

Samuelson, C. D., & Messick, D. M. (1995). When do people want to change the rules for allocating shared resources?. In D. Schroeder (Ed.), *Social dilemmas* (pp. 143–162). New York: Praeger.

Samuelson, C. D., Messick, D. M., Rutte, C. G., & Wilke, H. A. M. (1984). Individual and structural solutions to resource dilemmas in two cultures. *Journal of Personality and Social Psychology, 47*, 94–104.

Stroebe, W., & Frey, B. S. (1982). Selfinterest and collective action: The economics and psychology of public goods. *British Journal of Social Psychology, 21*, 121–137.

Thibaut, J. W., & Kelley, H. H. (1959). *The social psychology of groups*. New Brunswick: John Wiley.

Tyler, T. (2000). Why do people cooperate with groups? Support for structural solutions to social dilemma problems. In M. Van Vugt, M. Snyder, T. R. Tyler, & A. Biel (Eds.), *Cooperation in modern society: Promoting the welfare of communities, states, and organizations* (pp. 64–82). London, UK: Routledge.

Tyler, T. R., & Lind, E. A. (1992). A relational model of authority in groups. In M. Zanna (Ed.), *Advances in experimental social psychology* (4th ed., Vol. 25, pp. 115–191). New York: Academic Press.

Tyler, T. R., Rasinski, K., & Spodick, N. (1985). The influence of voice on satisfaction with leaders: Exploring the meaning of process control. *Journal of Personality and Social Psychology, 48*, 72–81.

Tyler, T., & Smith, H. J. (1998). Social justice and social movements. In D. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 2, pp. 595–632). New York: McGraw-Hill.

Van de Kragt, A. J. C., Orbell, J. M., & Dawes, R. M. (1983). The minimal contributing set as a solution to public goods problems. *American Political Science Review, 77*, 112–122.

Van Lange, P. A. M., Liebrand, W. B. G., Messick, D. M., & Wilke, H. A. M. (1992). Introduction and literature review. In W. Liebrand, D. Messick, & H. Wilke (Eds.), *Social dilemmas: Theoretical issues and research findings* (pp. 3–28). Oxford, England: Pergamon Press.

Van Vugt, M., & De Cremer, D. (1999). Leadership in social dilemmas: The effects of group identification on collective actions to provide public goods. *Journal of Personality and Social Psychology, 76*, 587–599.

Van Vugt, M., & De Cremer, D. (2002). Leadership and cooperation in groups: Integrating the social dilemma and social identity perspectives. *European review of social psychology: Vol. 13* (pp. 155–184). London: Psychology Press.

Van Vugt, M., Snyder, M., Tyler, T., & Biel, A. (2000). *Cooperation in modern society: Promoting the welfare of communities, states, and organizations*. London, UK: Routledge.

Vroom, V. H., & Yetton, P. W. (1973). *Leadership and decision-making*. Pittsburgh: University of Pittsburgh Press.

White, R. K., & Lippit (1953). Leader behavior and member reaction in three social climates. In D. Cartwright, & A. Zander (Eds.), *Group dynamics* (pp. 318–335). New York: Row, Peterson and Company.

Wilke, H. A. M. (1991). Greed, efficiency and fairness in resource management situations. In M. Hewstone, & W. Stroebe (Eds.), *European review of social psychology: Vol. 2* (pp. 165–187). Chichester: Wiley.

Yamagishi, T. (1986). The structural goal/expectation theory of cooperation in social dilemmas. In E. Lawler (Ed.), *Advances in group processes: Vol. 3* (pp. 51–87). Greenwich, CT: JAI Press.

Yamagishi, T. (1988). Exit from the group as an individualistic solution to the free-rider problem in the US and Japan. *Journal of Experimental Social Psychology, 24*, 530–542.

Yukl, G. A. (1989). *Leadership in organizations*. Engelwood Cliffs, NJ: Prentice-Hall.

Ziller, R. C. (1965). Toward a theory of open and closed groups. *Psychological Bulletin, 64*, 164–182.