Draft: 30 May 2005

United We Stand, Divided We Fall:

Group Reactions to Loyal and Disloyal Members

Mark Van Vugt

University of Kent

Kirk S. Chang

University of Lancaster

Abstract

In three experiments we investigated group reactions to disloyal and loyal members, whereby loyalty (disloyalty) was operationalized in terms of staying in (leaving) a group when leaving is personally beneficial, yet harmful to the group. All three experiments confirmed our main prediction that disloyal members are evaluated more negatively than loyal members, especially when they are high status members, whose contributions are relatively more important to group welfare. Additional analyses suggest that disloyal high status members are disliked more because they undermine group identification, cooperation between members, and the cohesion of the entire group.

United We Stand, Divided We Fall:

Group Reactions to Loyal and Disloyal Members

"In thy face I see the map of honor, truth, and loyalty"

William Shakespeare (16th century English playwright)

"Loyalty means nothing unless it has at its heart

the absolute principle of self-sacrifice"

Woodrow Wilson (20th century American president)

The welfare of groups, small and large, depends in part upon the willingness of group members to cooperate with each other and make altruistic sacrifices on behalf of their group. According to the social glue hypothesis (Van Vugt & Hart, 2004), group cooperation can be maintained only if group members show some degree of ingroup loyalty, that is, if they signal a willingness to give up personally rewarding options in order to help the group. Loyalty can be displayed in many different ways, for example, a husband giving up his job to move with his wife's work, soldiers renewing their army contracts while their country is at war, sports fans traveling a long distance to watch an away match of their favorite team, and employees turning down an attractive job offer from a rival company. All these activities involve individuals sacrificing their interests, and, by doing so, they help to promote the welfare and stability of their relationships, teams, organizations and communities (Levine & Moreland, 2002; Van Vugt & Hart, 2004).

In contrast, group welfare and cohesion is generally undermined by acts of disloyalty, such as when a soldier deserts his army unit in combat (Stern, 1995). One member's disloyalty could potentially undermine the performance and

cohesion of an entire group, maybe more so when that member is of high status, and therefore critical to the group's success (e.g., a deserting officer). Disloyalty could have direct as well as indirect effects on group welfare. By leaving, group members take their skills and resources with them, which directly affects group performance if these skills and resources are critical to group achievement. Furthermore, if they move to a group that is in direct competition with their old group, they also indirectly affect the group welfare, for example, when a soldier defects to the enemy (Levine & Moreland, 2002). In addition, by leaving, they send a message to the remaining group members that group membership is not valuable, which might further undermine the morale and identification of members with their group (Moreland & Levine, 1982; Ziller, 1965).

In this research, we are interested in the group reactions to loyal and disloyal members, whereby we operationalize group loyalty in terms of staying with the group despite the presence of an attractive alternative, thereby helping the group survive. Disloyalty is defined in terms of leaving the group to pursue an attractive alternative, thereby harming the group (Rusbult, 1980; Van Vugt & Hart, 2004; Zdaniuk & Levine, 2001). We are interested in both the evaluative, affective, and behavioral responses to loyal and disloyal members, and we look at the consequences of loyalty and disloyalty for group performance, group cohesion and the extent to which members identify with their group. Our primary hypothesis is that group reactions towards disloyalty (loyalty) are more negative (positive) the higher the status of that member. We present three experiments, which, by and large, support our main prediction and test several explanations.

The Social Glue Hypothesis

The social glue hypothesis (Van Vugt & Hart, 2004) asserts that once individuals start to cooperate and exchange resources with each other, their mutual social ties strengthen and, as a consequence, their interaction patterns become more complex and stable over time. This general idea is inspired by a dynamical evolutionary perspective on group processes, which integrates two broad theoretical frameworks on groups, dynamical systems theory (Arrow, McGrath, & Berdahl, 2000; Ziller, 1965) and evolutionary theory (Kenrick, Li, & Butner, 2003; Van Vugt & Van Lange, in press). A dynamical systems perspective assumes that groups are, in effect, self-organizing systems. As individuals interact with each other more frequently, these interactions become stabilized, giving rise to the development of a (complex) group structure. Using dynamical systems language, group interactions settle over time into an attractor state or "equilibrium." A system is said to be in equilibrium if, when a force is impressed on it, a counterforce is produced that returns the system to its original state. Self-correcting mechanisms, operating via negative feedback loops, are in place to keep the system locked in an equilibrium. External factors (so-called control parameters), if they are strong enough, can push the group out of one equilibrium into another one, causing a fundamental change in the group.

An evolutionary perspective on groups gives us insight into the likely states that cooperative groups settle in, and the risk and protective factors for group stability and integrity. According to evolutionary reasoning, cooperative relationships between two (or more) individuals are extremely fragile, and cooperation can only be maintained if individuals extend the time horizon of their relationship (Axelrod, 1984). Yet, if one person defects (a control parameter), the

group might quickly revert to a new equilibrium of all-out defection, leading effectively to the collapse of the group (Kenrick et al., 2003).[1] Given the importance of cooperation for the welfare of groups, it is likely that humans have evolved cognitive and behavioral mechanisms to dampen the impact of such threats, thereby stabilizing cooperation between members (Van Vugt & Van Lange, in press).

One such corrective mechanism is *group loyalty*, the willingness to forego attractive alternatives for one's group membership. In previous research we have shown that group loyalty can be elicited by a relatively simple ingroup/outgroup categorization manipulation such that when members are aware of the presence of an outgroup, they stick with their group even when it is failing (Van Vugt & Hart, 2004). A second protective mechanism for group maintenance is *moralistic aggression* towards those who (threaten to) leave the group, the defectors or deserters (Fehr & Fischbacher, 2003; Trivers, 1972). Showing an intense dislike for and a desire to punish, ostracize or exclude defectors might both deter other members from leaving and convince oneself that it is better to stay put. Moralistic aggression is likely to be a powerful force in maintaining ingroup cooperation. If we consider both types of reactions as expressions of group loyalty then the first (foregoing alternatives) could be interpreted as a *"weak"* version of loyalty and the latter (disliking or harming defectors) as a form of *"strong"* loyalty.

A dynamical evolutionary theory of groups can thus provide an account of why group members are likely to exhibit a strongly negative reaction to disloyal members as well as a positive reaction to members who show their commitment to the group. In addition, a dynamical evolutionary perspective could account for the

potentially devastating effects that defectors might have on group performance, group cohesion and the morale of the remaining members.

Research on Antecedents and Consequences of Group Loyalty

Given the importance of group loyalty for the welfare and stability of groups, small and large, there is surprisingly little research on the subject in social psychology. More than 40 years ago, Asch wrote "Loyalty to the group. A worker may be convinced that a call to a strike is unwise, but will lay down his tools because he believes that the welfare of his union will be best served by acquiescence. This quite human and powerful attitude seems not to have found much credence in our psychology" (1959, p. 382).

Various lines of social psychological research have examined the antecedents of weak forms of group loyalty, staying in group and foregoing alternatives, which are reviewed in Van Vugt and Hart (2004). Research on strong loyalty – group reactions to disloyal and loyal members -- is even sparser, and what is available, is rather fragmented in the social psychological literature (Levine & Moreland, 2002). Social dilemma researchers are among the most active in studying group reactions to defectors. For example, Yamagishi (1986, 1988) studied exchanges in four-person groups playing a public good dilemma. In one of the experimental conditions, group members could spend a part of their monetary resources on punishing non-contributors. He found that the desire to punish was strongest among group members with relatively low levels of trust. In addition, Yamagishi discovered that the presence of a punishment system facilitated cooperation among group members. Using quite a similar experimental set-up, Fehr and his colleagues (2002, 2003) recently found that people spend a portion of their earnings to punish group defectors, *even* when they were not

personally harmed by the defectors -- the participants were observers so that they could not themselves profit from a change in the behavior of defectors. Fehr et al. (2002, 2003) also found that reactions to disloyalty were mediated by strong feelings of anger towards defectors, anger being the primary punitive sentiment (Frank, 1988).

A second line of inquiry, conducted in the social identity tradition of intergroup relations (Tajfel & Turner, 1986), studied group reactions toward individuals posing a threat to group identity. Research on the "black sheep" effect found that members with a high group identification were more likely to reject ingroup deviants that low identification members (Coull et al., 2001; Marques et al., 1998). Moreover, there is evidence that derogation of ingroup deviants increases the group identification of those members engaging in this activity (Marques et al., 1998), thus showing the functionality of these types of responses. In an application of this idea to sports teams, Branscombe et al. (1993) found that sport fans that were loyal to their team – by showing unwavering support for their team despite poor team performances – were rated more positively than fans whose support depended upon how well the team was doing (Branscombe, Wann, Noel, & Coleman, 1993).

Finally, there are several studies in small group research on reactions to disloyalty. In a classic experiment, Singer et al. (1963) placed participants into competing groups to discuss various group relevant topics. There was one confederate within each team who either disrupted the group discussion or who left the group entirely to join a rival group. Over time, group reactions appeared to become more negative towards the defector than towards the disrupter. A recent study by Charlton and Bettencourt (2001) found that members of a low status

group who deserted their group to move into a high status group were only liked by their ex-group mates if they did not actively devalue the low status group. But, what if they do? Moreland and McMinn (1999) showed that group members were more distressed when they received a negative evaluation on their group performance from former members than from individuals with no previous attachment to the group. This suggests that groups react negatively to acts that could be interpreted as a sign of disloyalty from former ingroup members.

In summary, studies in three quite different research traditions have found some evidence for negative group reactions towards disloyal members as well as positive reactions to loyal members. Yet, the evidence is not abundant. Furthermore, none of the studies have looked at reactions to loyalty and disloyalty in the way we define it, sacrificing personal interests by foregoing attractive alternatives, which we believe is conceptually clearer (Van Vugt & Hart, 2004). In addition, none of these studies have looked at the consequences of group disloyalty for the performance and cohesion of the group and the morale of the remaining members. Finally, the results of previous studies have not yet been looked at within a broader theoretical framework, like an evolutionary dynamical approach, which can potentially integrate the research within diverse group dynamic fields (e.g., social dilemmas, social identity, social norms, and conformity).

The lack of a research tradition on strong group loyalty is surprising, given the prevalence and importance of this phenomenon in real world groups. From anecdotal evidence it has become clear how harshly groups treat members that are disloyal to their group, for example, by ridicule, ostracism, imprisonment, or even execution. For example, when the Israeli nuclear scientist, Mordechai Vanunu,

revealed the secrets of Israel's nuclear arsenal to the international media, he was kidnapped by the Israeli secret service while staying in Europe and brought to Israel, where he was imprisoned for nearly twenty years without a trial. He is still not able to leave the country (Tomasevic, 2005). In the same vein, the rewards associated with loyal group actions are often extremely positive, including public acclaim, medals for heroism, and election to government, for example, for those who served their country in a war (e.g., Churchill, Eisenhower). Given the paucity of theoretical and empirical work on this important topic, it seems worthwhile to consider what factors might affect group responses to loyal and disloyal members.

Member Status as Moderating Factor

Numerous factors might moderate group reactions to loyal and disloyal members, some of them are reviewed in Levine & Moreland (2002). These factors might be related to characteristics of the group, the person being loyal or disloyal, or to both. As for the first, members of unsuccessful groups are more likely to react negatively to deserters and positively to stayers than the members of successful groups (cf. the saying "rats leaving the sinking ship"). For example, sports teams that are threatened with relegation should respond more negatively to people wanting to leave than teams that are safe from relegation. Yet, if there is no prospect of future success (e.g., when team relegation is inevitable), group members might actually feel sympathy for those who decide to leave in order to improve themselves. Furthermore, group reactions would be expected to be stronger, the more important the group goals are likely to be. If groups are very important for attaining tangible rewards, like money, or symbolic rewards, like status or a positive identity, those that obstruct groups from reaching these goals

should be particularly disliked (Kruglanski & Webster, 1991; Marques et al., 2001).

Characteristics of the person should matter as well. One potentially important characteristic of a loyal or disloyal person is the perceived reason for his behavior (Van Vugt & Hart, 2004). Attributions about loyalty or disloyalty might be influenced by the perceived costs or gains associated with staying or leaving. If a group member stays when staying involves a large personal sacrifice then this individual will be liked more by other members. However, if leaving involves only a small personal gain then the defector should be liked less by the group. This is consistent with evidence indicating that responses to deviants are affected by their attributed motives (Burnstein & Worchel, 1962; Levine & Ruback, 1980).

Another factor might be the degree of perceived similarity between the loyal or disloyal member and rest of the group. People who act loyally might be liked more if they are very similar to others in the group (e.g., in terms of values, attitudes), because this might convince them to remain in the group as well. In contrast, deserters who are perceived to be similar may be disliked more because the group might think that many similar members will follow their example (Ziller, 1965). For the same reason, loyal members with many personal friends in the group might be liked more and disloyal members with many friends might be liked less (Levine & Moreland, 2002).

Status hypotheses. Finally, and important for the present research, group reactions to loyal and disloyal members might differ depending upon the status of that member. In general, we should expect that high status members that are loyal will be liked more than high status that are disloyal. There are several reasons for

this, which we will examine in our experiments. First, high status members will, on average, have more task relevant and group relevant skills and resources than low status members. As a result, they should be more important to group goal achievement, and therefore their decision to stay is more beneficial and their decision to leave is more detrimental to the other group members. Research shows indeed that when high status group members, like leaders, behave disloyally they are more disliked than when ordinary members act disloyally (Bass, 1990; Van Vugt, in press). This is referred to as the *status importance* hypothesis of group loyalty.

Second, high status members earn more respect from other group members and they are held in higher esteem. As a result, they are more likely to be imitated by other members (cf. social impact theory; Latane, 1981). Thus, when high status members act loyally, this should enhance loyalty in other group members and inhibit mass desertion, whereas high status people acting disloyally are likely to enhance mass desertion. This second explanation is therefore described as the *status imitation* hypothesis of group loyalty.

A third, complimentary explanation might be that because high status people are closer to the group prototype than low status people, their behavior has more impact on the social identity of other members (Hogg, 2001). Compared to low status members, high status members who are loyal do more to reaffirm other members' identity and hence are more rewarding. In contrast, high status members who are disloyal undermine the social identity of group members, and, hence, they are more threatening. This latter explanation is referred to as the *status identity* hypothesis of group loyalty.

Overview of Research

We present three experiments to investigate how groups react to loyal and disloyal group members, how reactions might vary as a function of the status of the member, and what mechanisms might explain the predicted differences. In our experiments, participants are members of small, voluntary task groups playing a public good dilemma game (Van Vugt & Hart, 2004). In this game, group members receive a monetary endowment, which they can invest in a group fund or in their personal fund. If the group fund receives enough contributions, the amount of money in the fund is doubled and divided equally among all group members. The status of the group members is manipulated in different ways, for example, by varying the size of the endowment that they receive (for a similar procedure, see Rapoport, Erev & Bornstein, 1992).

After the first trial of the public goods game, group members are told that one of them gets the option to leave the group and play an investment game by themselves, whereby they can expect to earn more money than by staying in the group. This is the loyalty manipulation. Subsequently, half of the participants are told that this member has decided to stay in the group (loyalty condition), whereas the rest are told that the member has decided to leave the group (disloyalty condition).

We then administer various questionnaires to measure the evaluative and emotional responses towards loyal versus disloyal members. Second, we examine the effects that loyal versus disloyal members have on group cooperation, group cohesion, and the extent to which members identify with their group – to test our status hypotheses. In the last experiment, we also give group members the opportunity to use the money that they earned in the game to punish disloyal members.

The main hypothesis is that groups react more positively to loyal members than to disloyal members. In addition, it is hypothesized that the difference in group evaluations of loyal versus disloyal members is more pronounced the higher their status. Third, we test three non-rival hypotheses to account for the moderating role of status. The status importance hypothesis predicts that high status disloyalty is disliked more, primarily because these members have a damaging effect on group performance and rewards. The status imitation hypothesis predicts that high status disloyal members are disliked more, primarily because they instigate others to follow their example and leave the group. Finally, the status identification hypothesis predicts that high status disloyalty is disliked most because this affects the strength with which the remaining members identify with their group. It is possible, of course, that all three mechanisms account for the eroding group effects of high status desertion.

Experiment 1: Strong Group Loyalty as Social Glue

The first experiment provided an initial test of our hypotheses. Participants were allocated to bogus groups of four members each, in which they played a step-level public goods investment game via the computer. Before the start of the game, the endowment sizes between members were varied to induce the status manipulation. After the first trial, the group was told that supposedly one of them would be given an opportunity to play an attractive private investment game. In reality, depending on conditions, either the high status member or the low status member was always elected – the focal participant always received the intermediate endowment size. Furthermore, depending upon the condition, this member either elected to stay in the group or leave. We then

recorded participant's reactions towards the loyal or disloyal members to test our hypotheses.

Method

Design and Participants

Sixty undergraduate students from various departments at the University of Southampton, 49 females and 11 females, participated in this experiment for a combination of course credits and money. Their age ranged from 18 to 34 years, with a median age of 19. Participants were randomly assigned to one of four conditions, following a 2 (member status: high vs. low) x 2 (member choice: loyal vs. disloyal) between-subjects factorial design. In total, there were 15 laboratory sessions consisting of four persons each.[2]

Procedure

Upon entry in the lab, the four individuals that had registered for the same session of the experiment via the computerized departmental research participant system were asked to wait in the same room for about five minutes to give them a chance to meet informally. This was done to create a feeling of group belonging. They were then separated and placed in separate cubicles, containing a chair, table, and desktop computer. All further instructions were administered via the computer. After a brief training in computer use, the task was explained to the participants. Via the computer, they were going to participate in a group investment game, together with the three other participants. The task would consist of a number of trials. In reality, there were two trials but we did not reveal this to participants to avoid endgame effects (Murnighan & Roth, 1983).

Before the start of the investment game, each participant received a unique identification code, chosen from the letters A, B, C, D. In reality, the participant

was always given the letter "C." Each group member was then given a monetary endowment, any amount of that they could invest in either a private fund or the group fund. After the trial, if the total contributions to the group fund was at least £1, the fund would be doubled and divided equally among the four member. This amount would then be added to the private fund of each group member. If, however, the group fund contained less than £1 each group member would loose the amount they contributed to the group fund. This game structure fulfils the conditions for a step-level public goods game (Van Vugt & De Cremer, 1999). We then made explicit that, for budgetary reasons, the money they would earn in the task would be converted into lottery tickets for a draw with two prizes of £100 each, which was going to be held after the entire experiment was completed. Before the start of the task, we manipulated the endowment size for each group member.

Manipulation of status and pretest of manipulation. Before the start of the task, we manipulated the endowment size for each member. The endowment size for each member was decided supposedly at random by the computer. Members B and C always received an endowment of £0.30, whereas A was given £0.40, and D was given £0.20. Thus, A got assigned to the high status position and D to the low status position. Because we did not want to raise suspicions about our hypotheses to the research participants, we pre-tested this manipulation among a sample of 20 students.

We asked them to read the scenario above and give a rating to each of the group members, A to D, in terms of several status-related ratings, such as (1) the influence of their group contribution: "How important is member ..'s contribution to the performance of the group?" (2) the criticality of their endowment: "How

critical is member ..'s endowment in terms of the group's success on the task" and (3) their status rating: "How highly do you regard member ..'s status within this group?" (1 = not at all, 7 = extremely). Finally, we asked the sample to rank members A, B, C, and D in terms of their influence on the group outcome (1= most influential member, 4 = least influential member).

The results of this pre-test confirmed the potential success of our manipulation. After aggregating the status measure ($\alpha = .91$), we performed a repeated measures way ANOVA with Member as the within subject factor. This was significant, $F(3,57) = 21.47$, $p < .001$. The difference between A and the rest was significant, $F(1,19) = 20.05$, $p < .001$, as well as between D and the rest, $F(1,19) = 25.37$, $p < .001$, whereas the difference between B and C was not significant, $F(1,19) < 1$. As predicted, member A received the highest status ranking ($M = 6.12$, $SD = 1.09$), followed by B ($M = 5.38$, $SD = 1.32$) and C ($M = 5.35$, $SD = 1.31$), with member D being rated lowest in status ($M = 4.77$, $SD = 1.58$).

Manipulation of member choice. After the first trial of the group investment game in which each group member decided upon their investment, the participants were instructed by the computer that one of the group members would shortly be given an opportunity to engage in a private investment game, whereby they could invest money in a private fund with immediate returns or delayed returns. This was done supposedly to compare decisions in group investment games with private investment games. In order to increase the attractiveness of this option, they were further told to expect greater monetary gains from participating in the private game than the group game. And, importantly, it was made explicit that, regardless of their decision, the group investment game would

continue with group members having the same endowment sizes as on the first trial and with the same step-level of the public good (£1).

The computer would ostensibly randomly decide which group member would be eligible to choose to enter this private game. In the high status-condition, member A was always elected, and in the low status-condition, it was always member D. This was followed by the loyalty/disloyalty manipulation. The participant was told that the elected member had 30 seconds to decide whether to stay or leave the group and enter the private game. To make this more lively, participants saw a clock on their screen ticking back from 30 second to zero.

In the *loyalty* condition, they were subsequently told that group member had decided to stay in the group. In contrast, in the *disloyalty* condition, the group member had decided to leave the group. Subsequently, and before the start of the second trial, we administered a computerized questionnaire to the participants with the following questions.

First, we asked them to rate the loyal/disloyal member on three traits: "Member x is trustworthy," "..greedy," "..smart" (1 = not at all, 9 = extremely).

Second, we asked four questions regarding their identification with the group ($\alpha = .90$): "I identify with this group" "I feel I have a lot in common with the people in this group" "I feel I belong in this group" and "I see myself as someone from this group."

Then the second trial started and we asked participants how much of their endowment of £0.30 they wised to invest in the group fund?

After these questions, the task ended and participants were asked to complete various demographic questions, such as age, sex, and year of study as well as questions to recall the information that they received as part of the

manipulations. They also completed a number of personality questionnaires, which we do not use here. They then received a careful debriefing with the true purpose of the experiment. They were told not to discuss this with any of their fellow students for the duration of the experiment. They were subsequently thanked for their efforts and dismissed. The lottery prize winners were contacted at a later date and they received their prize money from the experimenter.

Results and Discussion

Manipulation Checks

We asked our participants to recall the endowments that group members had received prior to the task. All but four participants correctly identified that A had been given £0.40, B and themselves £0.30 each, and D £0.20. Hence, we continued our analysis with a sample of 56 participants. The pretesting of the status manipulation revealed quite clearly that participants correctly identified A as the high status member and D as the low status member of the group. Hence, we assume that the status manipulation was successful.

Second, all 56 participants (100%) correctly recalled whether member A or D, depending upon the condition, had decided to stay in the group or leave. We also asked them to rate this member in terms of their loyalty to the group (1= not at all loyal; 9 = extremely loyal). As predicted, in the disloyalty condition, this member was perceived as less loyal ($M = 3.48$, $SD = 1.95$) than in the loyalty condition ($M = 6.83$, $SD = 2.14$), $F(1,52) = 36.97$, $p < .001$. Furthermore, both means differed significantly from the midpoint of the scale, respective *t*'s (26 and 28) = -4.05 and 4.60, *p*'s <.001. There was no evidence for a Status main effect on the loyalty-question, $F(1, 52) = 1.52$, $p < .23$, nor for a Status x Choice

interaction, $F(1, 52) < 1$. This result suggests that this manipulation was successfully induced.

Group Reactions

Evaluations. Would impressions of member A's personality differ depending upon their choice and status in the group? To address this, we performed a MANOVA on the three personality impressions (Member x is trustworthy, greedy, smart). There was a multivariate main effect for Choice, $F(3, 50) = 8.15$, $p < .001$, with univariate effects on all three items. We found that participants considered this member less trustworthy ($M = 4.04$ vs. 5.83, SD's = 1.72 and 1.89), $F(1, 55) = 16.31$, $p < .001$, more greedy ($M = 4.81$ vs. 3.41, SD's = 2.11 and 1.52), $F(1, 55) = 7.69$, $p < .001$, but also smarter ($M = 6.78$ vs. 5.68, SD's = 1.85 and 1.82), $F(1, 55) = 3.28$, $p < .08$, when they were disloyal than when they were loyal.

The multivariate main effect was qualified by an interaction between status and choice, $F(3,50) = 3.38$, $p < .05$, with an univariate effect for trustworthy, $F(1, 55) = 6.80$, $p < .02$. As predicted, differences in perceived trustworthiness of the loyal versus disloyal member were more pronounced when this member was of high status (M's = 6.43 vs. 3.33, SD's = 2.03 and 1.56) rather than low status (M's = 5.27 vs. 4.60, SD's = 1.62 and 1.68).

Group Identification

According to the status identity hypothesis of group loyalty, we predicted that group reactions would be stronger toward disloyal than loyal high status members because high status defection would undermine people's identification with their group. We conducted an ANOVA on the composite group identity-scale (alpha = 0.89) with a 2 (Status) x 2 (Choice) design. The average group

identification score was 4.49 (SD = 1.99), which is slightly below 5, the scale midpoint.

The univariate analysis revealed no significant main or interaction effects between any of the factors, all F's (1, 52) < 1. This suggests that the negative group reactions towards disloyal high status members, in particular, are unlikely to be the result of a loss of group identification as a result of an important group member leaving the group.

Group Cooperation

According to the status importance hypothesis of group loyalty, the undermining effect of disloyal high status members would be primarily due to their eroding impact on group cooperation and performance. Hence, we should expect to find differences in ingroup cooperation as a result of our manipulations. As predicted, there was a main effect for Status, $F(1, 52) = 12.91$, $p < .001$, and a marginal effect for Choice, $F(1,52) = 3.04$, $p < .10$, on a person's group contribution that could be any amount of £0.30, the participant's endowment size.

These main effects were qualified by a significant interaction between Status and Choice on the contribution level, $F(1, 52) = 7.16$, $p < .001$. Participants contributed significantly less, in pence, as a result of the departure of a high status member (M = 12.08, SD = 13.73) than in any other condition – high status loyalty (M = 22.50, SD = 8.26), low status loyalty (M = 24.67, SD = 6.40) and low status disloyalty (M = 26.87, SD = 5.87).

Group Loyalty and Cohesion

Experiment 1 tested a third, non-rival explanation for the detrimental effects of high status disloyalty. The status imitation hypothesis predicts that high status defection is particularly bad for group welfare and cohesion because high

status members serve as a source of influence and their behavior is therefore likely to be imitated by other members. To test this we performed a logistic regression analysis on the stay/leave decisions among participants after they had been informed about member A's decision. As predicted, this analysis revealed a main effect for Choice, $\chi(1, N = 56) = 6.04$ and Status, $\chi(1, N = 56) = 7.55$, qualified by an interaction between Status and Choice, $\chi(1, N = 56) = 3.97$, $p < .05$. The results show that high status disloyalty resulted in an increase in leave decisions (96%), compared to the low status disloyalty (47%), low status loyalty (33%) and high status loyalty conditions (50%).

Summary

In sum, Experiment 1 provided a first test of the social glue hypothesis of group loyalty. We manipulated the loyalty/disloyalty of one of the members and found that disloyal members were rated more negatively (greed) and less positively (trustworthiness) than loyal members. Furthermore, group reactions depended upon the status of the disloyal member: High status disloyal members were perceived as less trustworthy. Cooperation and loyalty rates also declined significantly when group members were confronted with defection from a high status member. This supported the status importance and status imitation hypotheses of group loyalty. There was no evidence in this experiment that the defection of a high status member undermined the strength of members' group identification.

Experiment 2: Loyalty, Status and Group Size

The first aim of this second experiment was to replicate the findings of Experiment 1 on the strong loyalty hypothesis, the idea that groups evaluate

disloyal members more negatively than loyal members. To this end, we extended the list of personality impressions.

The second aim was to test the moderating role of member status, but with a slightly different status manipulation than in the previous experiment. Status can be measured in terms of differences between group members in endowment size, reflecting differences in actual or potential group contribution (as we did in Experiment 1). Another way to manipulate status is by keeping the endowment sizes equal but varying the group size (Rapoport et al., 1989). For example, a "rich" member in a three member group would have more influence on group goal achievement than a member with an equal endowment size in a five person group, thus increasing the relative status of the member in the smaller group.

A third aim was to test several non-rival hypotheses for the potentially disintegrating effects on the group of the disloyalty of high status members. So far, we found that high status defection decreased group contribution as well as group loyalty from the remaining members, which is in line with the status importance and status imitation hypotheses. No support was found so far for the idea that high status disloyalty would undermine group identification, the status identity hypothesis.

Method

Design and Participants

Sixty undergraduates at the University of Southampton, 41 females and 19 males, participated in this experiment for a combination of course credits and money. Their age ranged from 18 to 24 years, with a median of 19. Participants were randomly assigned to one of four conditions, following a 2 (member status: high vs. low) x 2 (member behavior: loyal vs. disloyal) between-subjects factorial

design. There were 16 laboratory sessions, in total, 10 containing three individuals and six containing five individuals each.

Procedure

The experimental procedure and instructions to participants were largely similar to Experiment 1, with a few notable exceptions.

First, the status manipulation was different. Depending upon conditions, participants arrived in the lab in either groups of 3 or 5 each. In this experiment, the endowment size for each member was fixed at £3 and the step level for reaching the group bonus was set at £7 in the group of 3 and £11 in the group of 5. These values were chosen so that they resembled those in the first experiment to manipulate the relative status of each member. Thus, in the 3-person groups, each member's status was relatively higher than in the 5-person group because the importance of group contributions in the first group was higher. Again, because we did not want to raise suspicions about our hypotheses to the participants, we pre-tested this manipulation among a sample of 20 students.

We asked them to read the public good scenario, focusing first on a three member group (A to C) and then on a five member group (A to E), and give ratings to one specific group member (member A) in terms of several status-related ratings, such as (1) the influence of their group contribution: "How important is member A's contribution to the performance of the group?" (2) the criticality of their endowment: "How critical is member A's endowment in terms of the group's success on the task" and (3) their status rating: "How highly do you regard member A's status within this group?" (1 = not at all, 7 = extremely).

The results of this pre-test confirmed the potential success of our manipulation. After aggregating the status measure ($\alpha = .72$), we performed a

repeated measures ANOVA with Group Size as the within subject factor. The difference between the 3 and 5 member group was significant, $F(2, 38) = 5.49$, $p < .03$. As predicted, member A received higher status as group member ($M = 5.85$, $SD = 1.53$) in the small group than in the larger group ($M = 4.75$, $SD = 1.77$).

The choice manipulation was identical as in Experiment 1. Member A was given the choice between working with other group members on the public investment game or working alone on a private investment game, the latter was said to be more financially rewarding.

Directly after member A had made their choice, we administered a computerized questionnaire to the participants with the same questions as in Experiment 1 and a few more.

First, we asked them to rate the loyal/disloyal member on a number of different attributes, four positive traits: "Member A is trustworthy," "..agreeable," ".. responsible," "..nice," and two negative traits: " "..greedy," "..selfish" (1 = not at all, 9 = extremely).

Second, we asked the same four questions regarding their identification with the group as in the first experiment ($\alpha = .90$).

Then the second trial started and we asked participants how much of their endowment of £0.30 they wised to invest in the group fund?

Finally, we told the participants that for the forthcoming trial they had been elected to choose to enter the private game. They were giving 30 seconds to choose. After that, we asked them whether they wanted to (0) leave the group or (1) stay in the group as an indication of their own loyalty to the group.

After completing some final questions to check their understanding of the task, participants then received a careful debriefing revealing the true purpose of the experiment. They were subsequently thanked for their efforts and dismissed. The lottery prize winners were contacted at a later date and they received their prize money from the experimenter.

Results and Discussion

Manipulation Checks

All 60 participants correctly recalled the £3 endowment that each group member had received prior to the task. Furthermore, depending upon the condition, everyone correctly recalled whether they were part of a 3 or 5 person group. Because the pilot revealed quite clearly that members were attributed a higher status position in the 3 person group than in the 5 person group, we assume that the status manipulation was successfully induced in Experiment 2.

Second, all 60 participants correctly recalled whether, depending upon the condition, member A had decided to stay in the group or leave. We also asked them to rate member A in terms of their loyalty to the group (1= not at all, 9 = extremely). As predicted, in the disloyalty condition, member A was perceived as less loyal ($M = 3.47$, $SD = 1.53$) than in the loyalty condition ($M = 6.43$, $SD = 1.83$), $F(1, 56) = 45.08$, $p < .001$. Furthermore, both means differed significantly from the midpoint of the scale, respective t's $(29) = -5.51$ and 4.29, p's $< .001$. There was no evidence for a Status main effect on the loyalty-question nor for a Status x Choice interaction, both F's$(1, 56) < 1$. This result suggests that this manipulation was successfully induced.

Group Reactions

Evaluations. Would the impressions of member A's personality differ depending upon their choice and status in the group? To address this, we first subjected the six attributes to a Principal Components Analysis with Varimax rotation, which resulted in a one-factor solution, with the four positive attributes loading positively on this factor, which accounted for 73.15% of variance, and the two negative attributes loading negatively onto this factor. Thus, after reverse coding the negative attributes we created a single trait scale ($\alpha = .81$) with a high score indicating a positive impression and a low score a negative impression of the member.

We then performed an ANOVA on the trait scale ($M = 5.21$, $SD = 1.61$) including the full factorial design. There was a significant effect for Choice, $F(1, 56) = 40.29$, $p < .001$, showing that participants evaluated member A less positively, thus more negatively, when the member was disloyal ($M = 4.22$, $SD = 1.36$) rather than loyal to the group ($M = 6.21$, $SD = 1.17$).

We also obtained the predicted interaction between Status and Choice, $F(1, 56) = 5.99$, $p < .02$. As can be seen in Figure 1, differences in evaluations between loyal and disloyal members were more pronounced when the member was of high status (a difference of 2.76 scale points) rather than low status (a difference of 1.22 scale points).

Group Identification

The status identity hypothesis of group loyalty predicts that group reactions would be stronger toward disloyal than loyal high status members because a member's disloyalty would undermine group identification among the remaining members. Our analysis revealed main effects for Status, $F(1, 56) = 5.10$, $p < .03$, and for Choice, $F(1, 56) = 3.46$, $p < .07$, which were qualified by an

interaction between these factors, $F(1, 56) = 3.87$, $p = .05$. The means of this effect are displayed in Figure 2. As can be seen, the difference in group identification as a result of high status loyalty or disloyalty was greater than as a result of low status loyalty or disloyalty. Compared to the other conditions, only the high status loyalty condition led to a higher group identification ($M = 5.82$, $SD = 1.78$). These results suggest that group identification might be strengthened or weakened depending upon the loyalty or disloyalty of a high status member, in particular.

Group Cooperation

The status importance hypothesis of group loyalty predicts an eroding impact of high status disloyalty on group cooperation. As predicted, Experiment 2 yielded a main effect for Choice, $F(1,56) = 21.41$, $p < .001$, and for Status, $F(1, 56) = 7.41$, $p < .01$, which were qualified by an interaction between Status and Choice on the contribution level, $F(1,56) = 14.52$, $p < .001$. Consistent with the prediction, participants contributed significantly less as a result of the departure of a high status member ($M = 0.53$, $SD = 1.06$) than in the high status loyalty condition ($M = 2.60$, $SD = 0.63$), $t(28) = -6.48$, $p < .001$, the low status loyalty condition ($M = 2.33$, $SD = 0.82$), $t(28) = -5.21$, $p < .001$, or the low status disloyalty condition ($M = 2.13$, $SD = 1.19$), $t(28) = -3.89$, $p < .001$.

Group Loyalty and Cohesion

The status imitation hypothesis predicts that high status disloyalty is particularly detrimental for group welfare because high status members serve as a source of influence and are therefore likely to be imitated by other members. To test this, we performed a logistic regression analysis on the stay/leave decisions of participants. As predicted, this analysis revealed a main effect for Choice, $\chi(1, N =$

60) = 18.20, which was qualified by an interaction between Status and Choice, $\chi(1, N = 60) = 3.20$, $p = .06$. The results show that high status disloyalty resulted in an increase in leave decisions (86.7%) compared to the high status loyalty (13.3%). In the low status condition, the difference between disloyalty (73.3%) and loyalty (40%) was less clear-cut.

Summary

Taken together, Experiment 2 provided further evidence for the group loyalty hypothesis. We found that disloyal members were rated more negatively and less positively than loyal members, especially when they were high status members. As in Experiment 1, the results supported the status importance and status imitation hypotheses for the destabilizing influence of high status disloyalty. We found that group contributions and group loyalty declined significantly when members were confronted with high status defection. Unlike Experiment 1, there was also some support for the status identification hypothesis: High status disloyalty resulted in a loss in group identification among the remaining group members.

Experiment 3:

Emotional and Behavioral Reactions to Group Disloyalty

The main aim of this final experiment was to investigate whether group reactions to loyal and disloyal members would be expressed emotionally, in addition to the evaluative and behavioral reactions obtained in previous experiments. In addition, we examined whether member disloyalty would enhance the desire for punishment. Punishing was costly in this experiment. For example, participants could reserve £0.20 from their account to punish a disloyal member and this meant that £0.20 would be subtracted from both the disloyal

member's account as well as the participant's account. Thus, punishing had tangible monetary consequences and we were interested in examining whether the participants would use this sanction instrument.

Previous research has demonstrated that group members are quite keen to sanction defectors in their group. For example, Yamagishi (1986, 1988) found that members with a low trust in others invested roughly 30-40% of their resources in setting up a sanctioning system to punish noncooperators. Similarly, recent experiments by Fehr and colleagues (Fehr & Gachter, 2002; Fehr & Fischbacher, 2003) suggest that the desire to punish defectors is so strongly engrained in the human psychological system that people spend their earnings to punish defecting group members even when these members have done them no personal harm – participants observe other people being harmed and can then spend money on costly punishment. We were interested in whether costly punishment would be used against loyal and disloyal members and whether the use of this instrument would vary with the status of the member.

Hence, we used the same procedure and instructions as in the previous experiments but we added a list of emotions as well as a measure of punishment. For the status manipulation, we used the same manipulation as in Experiment 1, which induced status differences by varying the endowment size per member.

Method

Design and Participants

Sixty psychology undergraduates at the University of Southampton, 36 females and 24 males, participated in this experiment for a combination of course credits and money. The median age was 20 and varied between 18 and 37. Participants were randomly assigned to one of four cells of a 2 (member status:

high vs. low) x 2 (member choice: loyal vs. disloyal) between-subjects factorial design. There were 15 laboratory sessions, in total, and four persons per session.

Procedure

The experimental procedure and instructions to participants were identical to Experiment 1 and the same status and choice manipulations were used.

Directly after member A (high status) or D (low status) had made their choice to stay in or leave the group, we administered a questionnaire to the participants with the following questions.

First, we measured their emotional reactions by asking them to complete a list of 24 emotions, both positive and negative, that was loosely based on the PANAS (Watson, Tellegen, & Clark, 1980). The full list is displayed in Table 1. "When thinking about this member's decision I feel happy angry," "..determined," ".. relieved," "..optimistic" "..rejected," etcetera (0 = do not agree at all, 100 = totally agree).

Second, we asked them to rate the loyal/disloyal member on the same traits as in Experiment 2: "This member is agreeable", "..trustworthy", "..nice", "..responsible" "..greedy," and "selfish," (1 = not at all, 9 = extremely).

Finally, we asked them how much of their endowment size, £3 in all conditions, they wanted to use to punish member A (D). It was explicitly stated that they could not spend more than £3 and that any amount they would use for punishing this member would be subtracted from their account at the end of the experiment.

After completing some final questions, participants then received a careful debriefing revealing the true purpose of the experiment. They were subsequently

thanked for their efforts and dismissed. The lottery prize winners were contacted at a later date and they received their prize money from the experimenter.

Manipulation Checks

All participants correctly recalled the £3 endowment that each group member had received prior to the task. Furthermore, depending upon the condition, everyone correctly recalled whether they were part of a four person or 6 person group. Because the pilot in Experiment 1 revealed quite clearly that members were attributed a higher status position when their endowment size was higher, we assume that the status manipulation was successfully induced in Experiment 3.

Second, all participants correctly recalled whether, depending upon the condition, member A or D had decided to stay in the group or leave. We also asked them to rate this member in terms of their loyalty to the group (1= not at all loyal; 7 = extremely loyal). As predicted, in the disloyalty condition, the member was perceived as less loyal ($M = 2.77$, $SD = 1.57$) than in the loyalty condition ($M = 7.27$, $SD = 1.29$), $F(1,56) = 143.67$, $p < .001$. Furthermore, both means differed significantly from the midpoint of the scale, respective t's (29 and 29) = 13.91 and -4.31, p's <.001. There was no Status main effect on the loyalty measure nor a Status x Choice interaction, both F's(1, 56) < 1. This result suggests that this manipulation was successfully induced.

Group Reactions

Emotions. Would members differ in their emotional responses to loyal and disloyal members, and, would there be an effect of status? To answer these questions, we first performed a factor analysis on the 24 emotion scores ("When I think about this group member's decision, I feel…. 0 = do not agree at all, 100 =

totally agree). Using a Varimax rotation procedure, this resulted in a 4-factor solution, with the first two factors accounting for, respectively, 28.8% and 26.4% of the variance, and the third and fourth factors accounting for just 8.4% and 6.7 % of the variance in emotion scores. The item factor scores are depicted in Table 1. As can be seen from the table, the first factor represents a range of positive emotions, such as happy (.73), relieved (.74), and excited (.74). The second factor represents a range of negative emotions like angry (.70), annoyed (.82), and hostile (.78). Because factors 3 and 4 explained relatively little variance and there were just a few emotions loading on these factors (i.e., determined, nervous, and sympathetic), we decided to omit these from further analyses.

We then computed a positive (PES) and negative emotion scale (NES) by averaging the items loading onto each of these two factors, using as inclusion criterion a loading of .7 or above on one factor, yet below .5 on any of the other factors. Both the PES ($M = 48.89$, $SD = 24.78$) and NES ($M = 26.22$, $SD = 26.27$) were reliable, with respective alphas of .92 and .94. Furthermore, PES and NES correlated significantly with each other ($r = -.72$, $p < .001$).

As a third step, we conducted a MANOVA with the full factorial design on the PES and NES. As predicted, we found a main effect for Choice, $F(2, 55) = 56.87$, as well as a significant interaction between Status and Choice, $F(2, 55) = 3.61$, $p < .04$. There as no multivariate effect for Status, $F(2, 55) = 1.88$, $p < .17$.

Univariate analyses produced significant effects for the Status x Choice interaction on both PES, $F(1, 56) = 4.86$, $p < .03$, and NES, $F(1, 56) = 5.05$, $p < .03$. The means, displayed in Figures 3a and 3b, show that the difference in emotional reactions, both positive (M diff = 44.23) and negative (M diff = 49.46), towards loyal versus disloyal members was greater when this member was critical to the

group's success (high status) than when this member was not critical (low status) – respective M diff's = 24.41 and 30.97.

Evaluations. Would the impressions of this member's personality differ depending upon their choice and status in the group? To address this, we first subjected the six attributes to a principal components analysis, which resulted in a one-factor solution, with the four positive attributes loading positively on this factor, which accounted for 68.1% of variance, and the two negative attributes loading negatively onto this factor. Thus, after reverse coding the negative attributes we created a single trait scale ($\alpha = .90$) with a high score indicating a positive impression and a low score a negative impression of the member.

We then performed am ANOVA on the trait scale (M = 5.53, SD = 1.90) including the full factorial design. There was a significant effect for Choice, $F(1, 56) = 127.23$, $p < .001$, showing that participants evaluated member A less positively, thus more negatively, when the member was disloyal (M = 3.99, SD = 1.26) rather than loyal to the group (M = 7.07, SD = 0.94). No main effect for Status emerged, $F(1,56) < 1$.

We also obtained the predicted interaction between Status and Choice, $F(1, 56) = 7.75$, $p < .01$. As can be seen in Figure 4, differences in evaluations between loyal and disloyal members were more pronounced when the member was of high status (a difference of 3.44 scale points) rather than low status (a difference of 2.32 scale points).

Costly punishment. The amount of punishment (0-300 pence) that participants had set aside for dealing with the disloyal member was analyzed in an ANOVA with the complete factorial design. One participant gave more than the maximum penalty so this person was dismissed from further analysis. We found a

main effect for Choice, $F(1, 55) = 9.29$, $p < .01$, and marginal effects for both Status, $F(1, 55) = 2.97$, $p < .10$, and Status x Choice, $F(1, 55) = 3.00$, $p < .09$. The means of the interaction effect are displayed in Figure 5. As shown quite clearly, participants were keener to punish in the high status disloyal condition (M = .51.67, SD = 87.13) than in any of the other conditions. This confirms our prediction that group members are willing to engage in quite costly actions to deal with disloyal members, in particular when they are of high status.

Group Identification

The status identity hypothesis of group loyalty predicts that group reactions would be stronger toward disloyal than loyal high status members because a member's disloyalty would undermine group identification among the remaining members. We created an overall group identification score ($\alpha = 0.94$) which we subjected to an ANOVA including the complete design. Our analysis revealed a main effect for Status, $F(1, 56) = 5.83$, $p < .02$, which was qualified by an interaction between these factors, $F(1, 56) = 3.90$, $p = .05$.

The means revealed that the difference in group identification as a result of high status loyalty versus disloyalty (M's = 6.23 vs. 3.90, SD's = 1.80 and 1.81; M diff = 2.33) was greater than as a result of low status loyalty or disloyalty (M's = 4.87 vs. 4.63, SD's = 2.47 and 2.09; M diff = 0.24). Compared to the other conditions, only the high status loyalty condition led to a higher group identification (M = 6.23, SD = 1.80), $t(14) = 2.65$, $p < .02$. These results suggest that group identification might be strengthened or weakened depending upon the loyalty or disloyalty of a high status member, in particular.

Summary

To summarize, Experiment 3 provided further evidence for the strong loyalty hypothesis by showing that disloyal members, especially those of high status, received stronger negative and weaker positive emotional and evaluative reactions than loyal members. Furthermore, participants were more prepared to punish high status disloyal members even when punishment was personally costly and there were no material gains.

General Discussion

The social glue hypothesis (Van Vugt & Hart, 2004) asserts that in order to maintain cooperation in groups, there must be mechanisms in place to foster group stability and prolong group life, one of them being the manifestation of group loyalty. As an extension of this idea, we examined how groups would react to acts of loyalty or disloyalty from one of its current members. Inspired by evolutionary dynamical models of group processes (e.g., Arrow et al., 2000; Kenrick et al., 2003; Messick & Liebrand, 1997), it was predicted that member disloyalty would have an eroding effect on the welfare and cohesion of a group and the morale among the remaining members, especially when the deserting group member is of high status. As a consequence, loyal high status members should be liked most, whereas disloyal high status members should be liked least by the group.

These general predictions were supported in the three experiments. In all experiments we found that disloyal members were rated more negatively (e.g., selfish, greedy) and less positively (e.g., untrustworthy, disagreeable) when they were of high status, and the opposite was found for high status loyal members. In addition, the last experiment revealed that high status defection elicited stronger negative feelings (e.g., angry, annoyed, hostile), whereas high status loyalty elicited stronger positive feelings (e.g., happy, relived, excited) among group

members. Finally, group members were more likely to use their earnings to punish high status defectors.

Antecedents and Consequences of High Status Loyalty or Disloyalty

Why did the behavior of high status group members lead to such polarized views and emotions? This research offered three complimentary explanations, all of them were supported by our data. First, because high status members generally have more, or at least more relevant, group skills and resources, their decision bears a greater impact on group performance. In our experiments, performance was measured in terms of the voluntary contributions to a shared group goal. As predicted by the status importance hypothesis, cooperation rates were indeed more strongly influenced by the loyal or disloyal actions of a high status member rather than a low status member.

Inspired by social impact theory (Latane, 1981), we also believed that high status members would act more often as a source of social influence. Hence, the choices of high status members were more likely to be imitated by others in the group. In support of this status imitation hypothesis, the decisions of high status members were more likely to be followed by the rest. Thus, high status loyalty elicited group loyalty, whereas high status disloyalty led to mass defection.

The third explanation was derived from a social identity perspective on groups (Tajfel & Turner, 1979), which asserts that group membership influences people's identity, how they think about themselves (Tyler, Kramer & John, 1999). The relative standing of group members is determined by the match between their personal characteristics and the group prototype (Turner et al., 1987). By virtue of being closer to the group prototype, individuals attain status and therefore play a more active role in shaping the social identity of members (Hogg, 2001). Thus,

when high status members are loyal or disloyal, this should strengthen or undermine the extent to which others in the group see themselves as group members rather than as unique individuals. This is indeed what we found in two out of three experiments: High status loyalty increased group identification (e.g., feelings of belonging to group, perceptions of similarity with other members), whereas high status disloyalty decreased group identification among group members.

Although these are three distinct consequences of high status defection, these processes are, to some degree, interrelated. For example, the departure of an important member might cause the other members to review their relationship with the group, engage in fewer voluntary group activities as well as look out for alternative groups (De Cremer & Van Vugt, 1999; Moreland & Levine, 1982; Van Vugt & Hart, 2004). These processes may not always operate in tandem though. First, exiting can be impossible or very costly for ordinary members and they might therefore sometimes respond to high status disloyalty by staying put and doubling their efforts to help the group (FIND SOMETHING ON GROUP COMPENSATION). Second, unlike the task groups that were studied here, in opinion groups, such as religious or political organizations, the activities of high status figures, like leaders, may affect how strongly followers identify with their group with perhaps little or no consequence in terms of their group loyalty and motivation (e.g., Roman Catholics are not expected to leave the church in massive numbers, because they disagree with the choice of the new Pope).

Group reactions to group loyalty or disloyalty are expected to be moderated by several other factors than status, which need to be looked at in future research. First, the tenure of the loyal or disloyal member may be important

(Levine & Moreland, 2002). Generally, the longer people have stayed in the group, the more other members will have invested in them. As a consequence, acts of loyalty or disloyalty from long-serving members may lead to more extreme group reactions than when the same acts are performed by members with a shorter tenure. In addition, several group features may determine how groups respond to acts of loyalty or disloyalty. Group reactions are likely to become more polarized when the group is threatened by a string of poor performances (Branscombe et al., 1993), or the presence of a rival group that competes with the ingroup for members (Levine & Moreland, 2002). Finally, group reactions are expected to be more extreme when members highly depend upon the group in terms of rewards, material or symbolic.

Theoretical Issues, Future Directions, and Implications

We started our research from an evolutionary dynamical perspective on groups (Arrow et al., 2000; Kenrick et al., 2003; Messick & Liebrand, 1997). This relatively new theory assumes that groups are self-organizing, open, complex systems in which complex interactions between local group dynamics and global environmental factors determine group structures, processes and outcomes. According to this theory, all group processes eventually settle into an equilibrium state, yet even small changes in local or contextual variables can force a group into a new equilibrium. This transition was evident in our research. Once an important, high status group member (local factor) was presented with an attractive exit option (environmental factor), their decision led to remarkable, rapid changes in group perceptions, interactions, and collective outcomes. As predicted by evolutionary models of cooperation (Axelrod, 1984; Van Vugt & Van Lange, in press), high status disloyalty led immediately to new group

equilibrium, characterized by mass defection and a collapse in group structure, cohesion, and performance.

One implication from a dynamical evolutionary perspective on groups is that they have self-corrective mechanisms in place, operating via negative feedback loops, aimed at preserving the integrity of the group. Otherwise, group life would simply be too unstable to be viable. In previous research, we addressed one such mechanism, which we referred to in terms of "weak" group loyalty, the willingness to foregoing exit options (Van Vugt & Hart, 2004). In this research, we looked at expressions of "strong" group loyalty, the reactions to members acting loyally or disloyally. Although strong loyalty can be a powerful force in preserving group cooperation and stability (cf. Fehr & Fischbacher, 2003), it was apparently not strong enough in our studies. Despite the negative reactions to acts of disloyalty, many group members still opted to leave the group themselves when given a chance. Perhaps it is important for these expressions to be done publicly rather than privately in order to be influential. Condemning a high profile deserter in public -- or at least threatening to do so -- might ensure that people remain locked in their group. The public – private distinction is an issue that deserves further attention in loyalty research.

So too does the search for other possible moderators of the strong loyalty phenomenon. As noted previously, future research could address the importance of (a) the tenure of the group member, (b) the reason why they are loyal or disloyal, (c) different types of group threats (poor performance, between group competition), (d) the size of group rewards, and (e) the cohesion of the group, in determining group reactions to acts of loyalty or disloyalty. As to the latter, more cohesive groups would be expected to react more strongly than less cohesive

groups in terms of condemning disloyal members. Furthermore, because of the high interdependence between members (Hogg, 1992; Mullen & Copper, 1994), cohesive groups would also be likely to suffer most from acts of disloyalty. This leads to the paradoxical implication that a lack of group cohesion could act as a buffer against the collapse of a group.

Before closing, we should note some limitations of our research. First, our loyalty manipulation involved a randomly selected member having to choose between playing a public good game in their group and playing a private investment game. In the real-world, members sometimes also have the option to join another group (Levine & Moreland, 2002). How would this affect group reactions to loyalty or disloyalty? Social identity theory (Tajfel & Turner, 1986) predicts that group reactions would become more polarized in an "outgroup" condition compared to a "work alone" condition, because of the need for a positive social identity. The resource conflict theory (Campbell, 1965) would argue that it depends upon the relationship between the two groups. Only if the groups are in direct competition with each other, for example in winning a bonus, then group reactions towards disloyalty would become more extreme -- this could be tested in future research, for example, by using the Intergroup Prisoner's Dilemma Game (Bornstein, 1992).

Second, except for a brief introduction at the beginning of the experiment, there was no face-to-face interaction between group members during the game. Furthermore, participants were led to believe that their responses were made anonymously. Although this is standard procedure in such experiments (Komorita & Parks, 1994), the experiment may have suffer somewhat from external validity, because in the real-world people often know who has betrayed them and what the

consequences could be if they betray others. On the one hand, we felt that by making this knowledge public, participants would be inhibited to show the behavior we were most interested in, for example, would they behave disloyally if others before them were disloyal? On the other hand, despite the anonymity, participants reacted moderately strongly in both their emotional expressions and evaluations to the loyalty or disloyalty feedback – middle on the scales. This suggests that the participants were quite clearly involved in the experiment. Yet, we might consider looking at reactions to disloyalty in face-to-face groups in the lab and the real world in a future study.

In this research, we have established that group members react more negatively to disloyalty and more positively to loyalty, in particular, when it is displayed by high status members. This conclusion is supported by both evaluative, affective, and behavioral data. Given that defection from high profile group members, such as business managers, scientists, politicians, military officers, and religious leaders, is by no means uncommon in the real world, a legitimate question is how groups can cope with such threats. To prevent high status defection, one possibility is to impose a hefty punishment upon this type of behavior, for example, via public condemnation or social exclusion (e.g., jail, death penalty). Yet, this may not always be enough to totally eradicate the behavior. To lessen the impact of high status disloyalty, one solution would be to shorten the tenure of group leaders and experts, for example by working with fixed contracts, to avoid groups becoming very dependent upon the skills and resources of these people. Another possibility is to increase the size of the organization, and empower low status members, such that the group relevant skills and resources are more evenly distributed among group members. Either way, our

research program delineates the importance of studying group disloyalty, because it can have a devastating impact on group welfare and cohesion.

References (to be added)

Tomasevic, G. (2005). The Vanunu Story. The US Campaign to Free Mordechai Vanunu.http://www.nonviolence.org/vanunu/index.html
Accessed: 13 May 2005.

Author Notes

This research was supported by a grant from the Economic and Social Research Council (RES-000-22-0147) to the first author.

Correspondence about this article should be sent to Mark Van Vugt, Centre for the Study of Group Processes, Department of Psychology, University of Kent, Canterbury CT2 7NP, United Kingdom; +44 1227 827468; mvv@kent.ac.uk

Footnotes

[1] This is revealed in experimental group research and computer simulation studies on the Prisoner's Dilemma Game (PDG). The PDG is frequently used by researchers to study and model the evolution of cooperation in groups (Axelrod, 1984; Dawes, 1980; De Cremer & Van Vugt, 1999; Komorita & Parks, 1994). Cooperation in the PDG is extremely unstable, because the game has only one equilibrium, which is mutual defection. Thus, once one group member makes a non-cooperative choice, there is no incentive for others to cooperate anymore, leading to a state of mutual defection that could last forever.

[2] In this experiment and in the others reported in this paper, the unit of our analyses is the individual rather than the group. Each group consisted of one genuine participant and the rest were bogus members, whose responses were preprogrammed in the computer with which the participant (supposedly) communicated with the rest of the group.

Tables

Table 1. Factor Pattern for Emotions: Varimax Rotation

Item	1	2	3	4
Happy	**.73**	-.48	.11	-.07
Angry	-.47	**.70**	.12	.16
Determined	.09	-.03	**.87**	.03
Relieved	**.74**	-.39	-.09	.05
Rejected	-.36	**.75**	-.05	.14
Optimistic	**.70**	-.34	.15	-.10
Betrayed	-.48	**.70**	.17	.02
Good	.70	-.54	.09	-.16
Upset	-.38	**.76**	-.11	.15
Elated	**.82**	-.11	.06	.07
Annoyed	-.46	**.82**	.00	.10
Proud	**.75**	-.10	.18	.27
Nervous	.14	.38	-.09	.61
Enthusiastic	.68	-.34	.36	-.10
Distressed	-.01	.66	-.51	-.08
Joyful	**.84**	-.16	.09	-.12
Hostile	-.23	**.78**	-.15	-.05
Kind-hearted	.40	-.17	.69	-.10
Envious	-.33	.59	-.11	.12
Excited	**.74**	-.25	.20	.08
Ashamed	.07	.65	-.35	.36
Sympathetic	.03	.10	.05	**.85**
In contempt	-.22	**.73**	-.13	.18
Grateful	**.76**	-.24	-.01	.28

Notes. Boldface type indicates factor loadings above .7; Only items with loadings of .7 on one factor yet below .5 on the other factors, were used in further analyses.

Figure Captions

Figure 1. Evaluations of Loyal and Disloyal Member as a Function of their Status (Experiment 2)

Figure 2. Group Identification as a Function of Status and Choice (Experiment 2)

Figure 3a. Positive Emotions as a Function of Status and Choice (Experiment 3)

Figure 3b. Negative Emotions as a Function of Status and Choice (Experiment 3)

Figure 4. Evaluations of Loyal and Disloyal Member as a Function of their Status (Experiment 3)

Figure 5. Punishment of Loyal and Disloyal Member as a Function of their Status (Experiment 2)

Figure 1

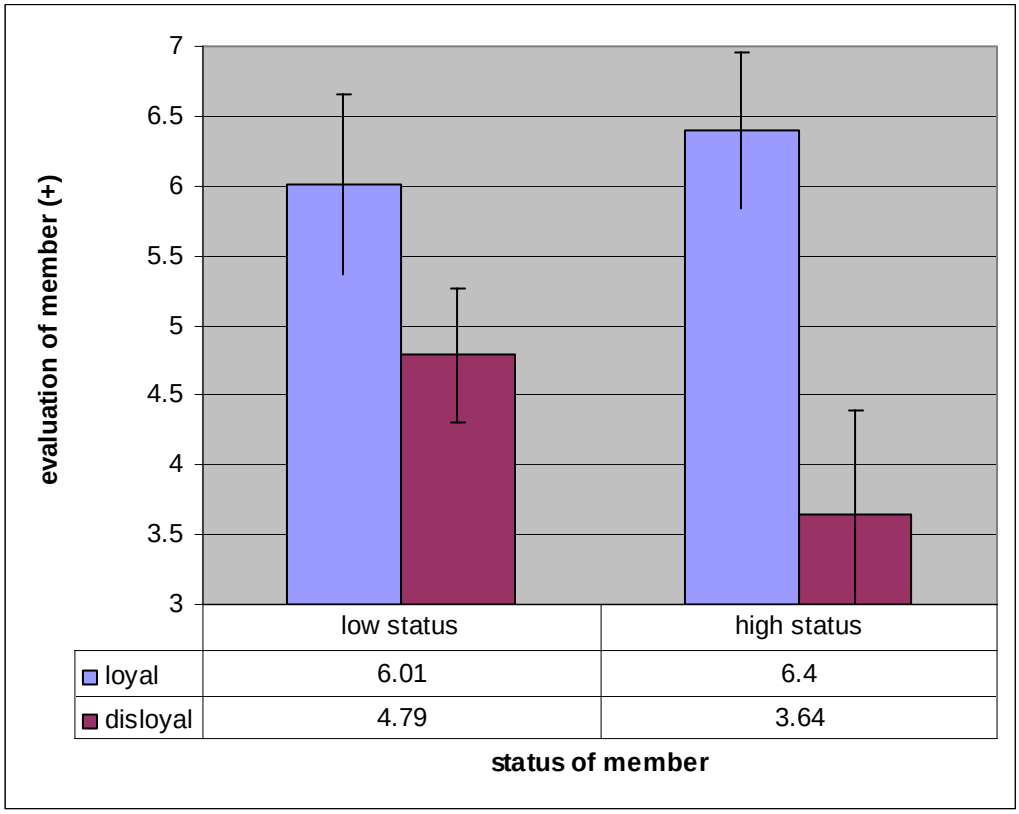

7
6.5
6
5.5
5
4.5
4
3.5
3
evaluation of member (+)
low status
high status
loyal
6.01
6.4
disloyal
4.79
3.64
status of member

Figure 2

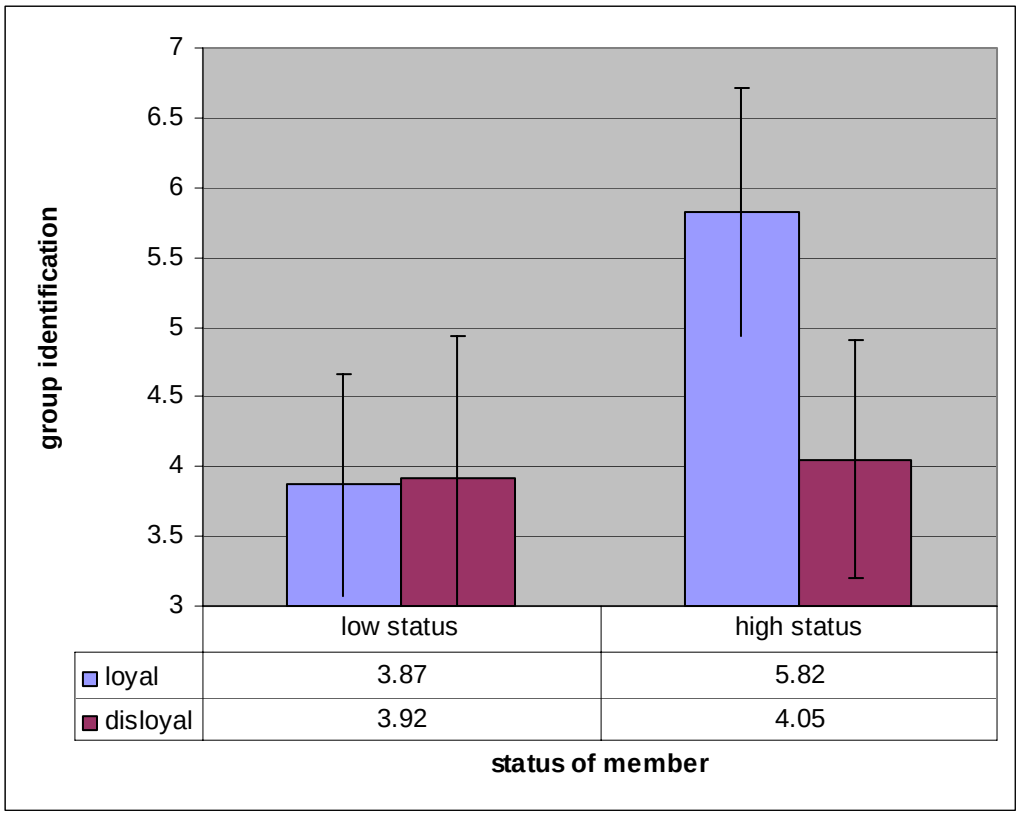

group identification
7
6.5
6
5.5
5
4.5
4
3.5
3
low status
high status
loyal
3.87
5.82
disloyal
3.92
4.05
status of member

Figure 3a

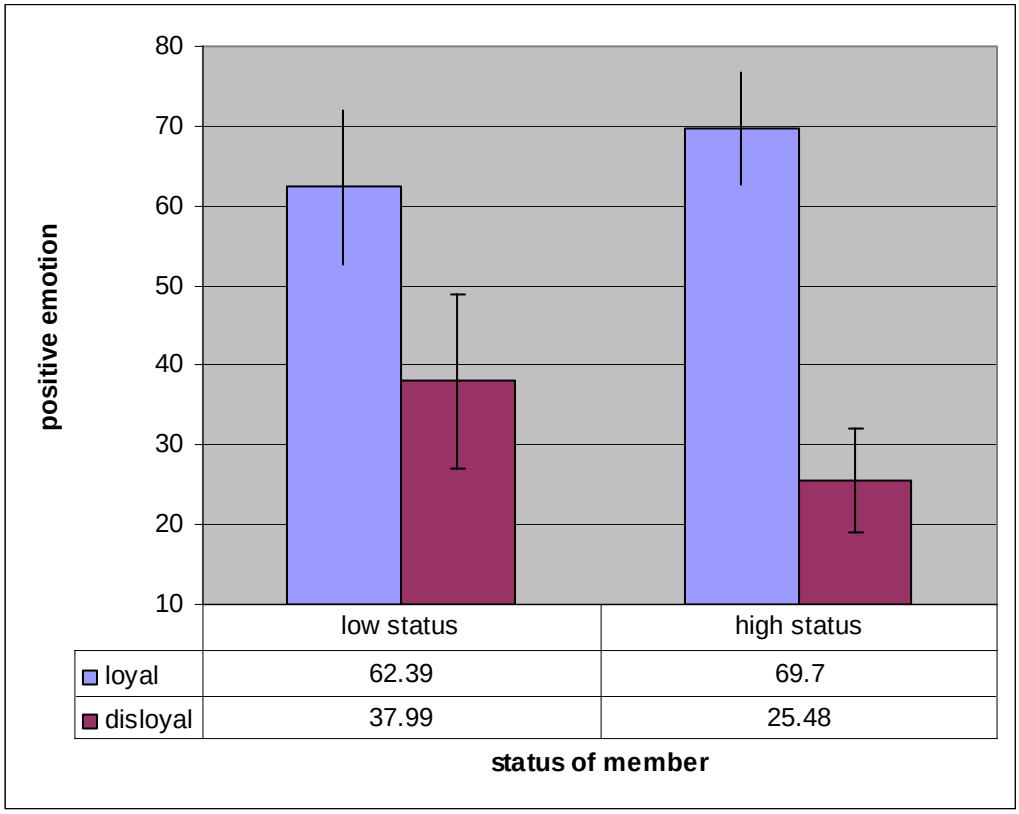

80
70
60
50
40
30
20
10
positive emotion
low status
high status
loyal
62.39
69.7
disloyal
37.99
25.48
status of member

Figure 3b

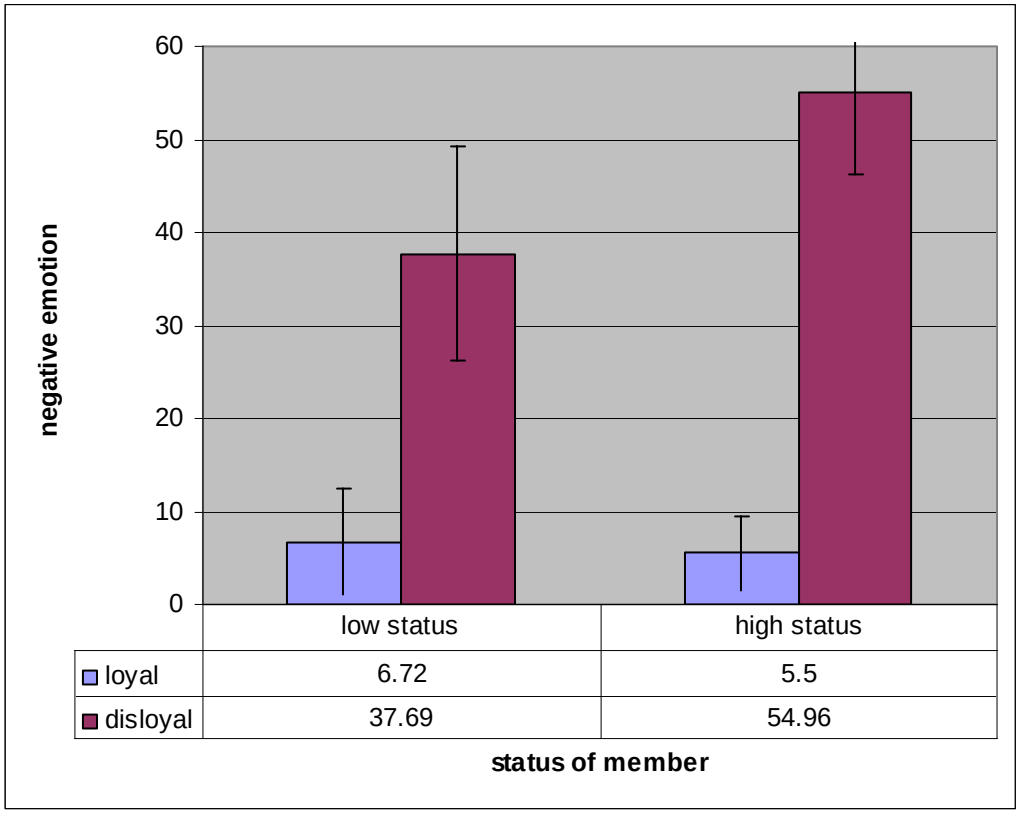

60
50
40
30
20
10
0
negative emotion
low status
high status
loyal
6.72
5.5
disloyal
37.69
54.96
status of member

Figure 4

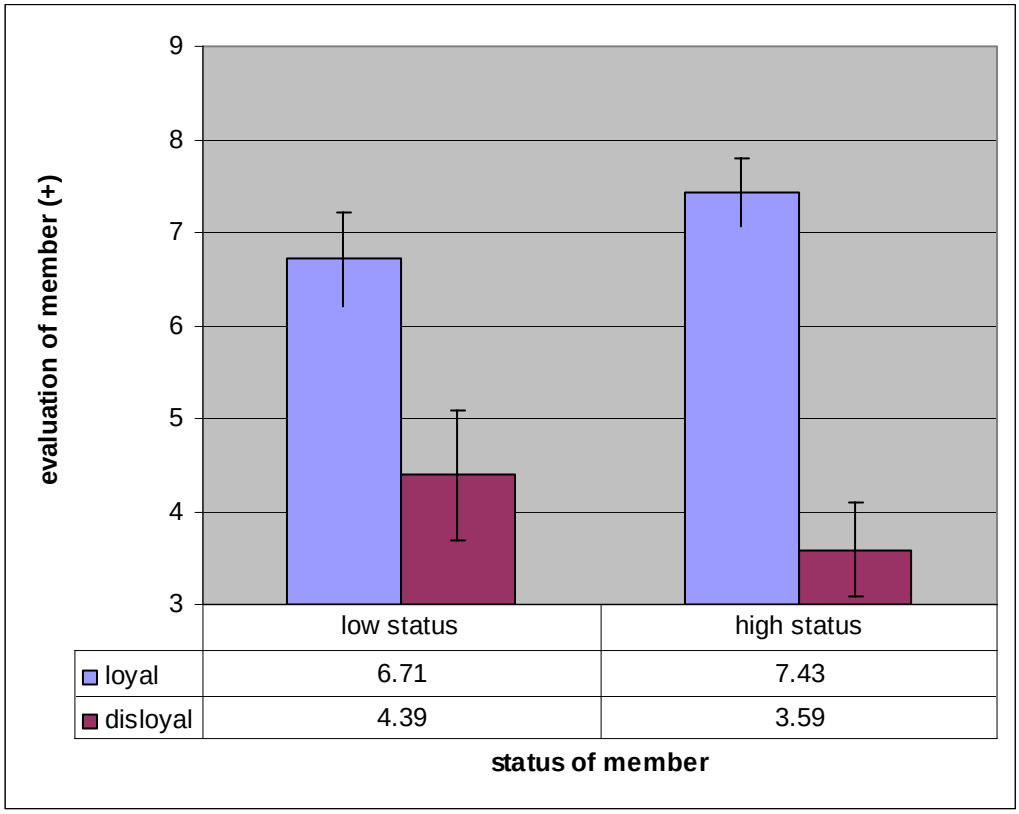
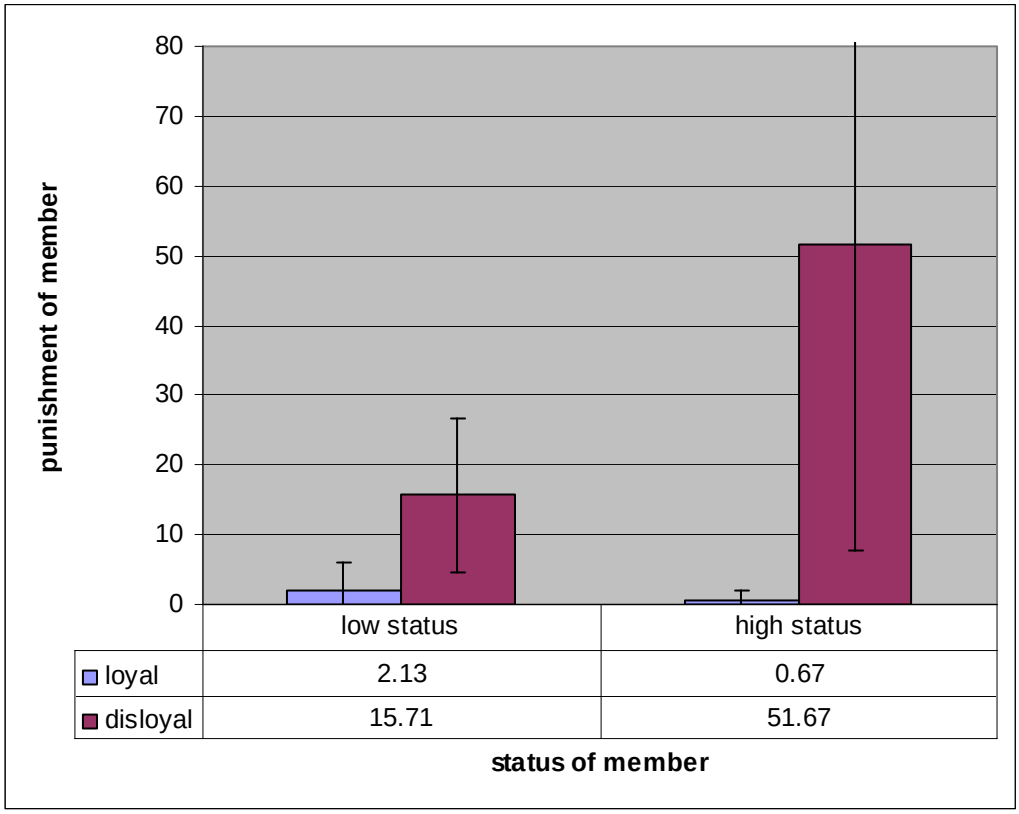

9
8
7
6
5
4
3
evaluation of member (+)
low status
high status
loyal
6.71
7.43
disloyal
4.39
3.59
status of member

Figure 5


80
70
60
50
40
30
20
10
0
punishment of member
low status
high status
loyal
2.13
0.67
disloyal
15.71
51.67
status of member