For better or for worse: The congruence of personal and group outcomes on targets’ responses to discrimination

KATHERINE STROEBE1*, NAOMI ELLEMERS1, MANUELA BARRETO1 AND AMÉLIE MUMMENDEY2
1 Department of Social and Organizational Psychology, Leiden University, The Netherlands
2 Department of Social Psychology, University of Jena, Germany

Abstract

This paper reports two studies examining how (in-) congruence between personal and group outcomes affects emotional well-being, outcome attributions and procedural justice perceptions of individuals who are exposed to subtle discrimination. In Study 1 (N = 82) participants are either accepted or rejected in a (bogus) job application procedure, and either do or do not receive additional information indicating group-level disadvantage. In Study 2 (N = 79), participants were either accepted or rejected, and received information indicating either advantage or disadvantage for members of their group. Results of both studies reveal that not only emotional well-being and outcome attributions, but also procedural justice perceptions are primarily guided by personal outcomes. That is, being informed of group-level disadvantage does not intensify but can instead alleviate negative affect resulting from personal rejection. Furthermore, group disadvantage is only seen as an indicator of an unjust procedure by individual group members who have personally suffered rejection. Results are discussed in relation to current insights on discrimination, tokenism and social justice. Copyright © 2008 John Wiley & Sons, Ltd.

When Bill Cosby became a star on American television there were not many African Americans in similar positions. In fact, he probably knew that in those times it would not be easy for African Americans to gain acceptance and make a career as he had done. How does it feel to reach the top, knowing that many fellow group members will not attain a similar position within society? Are successful individuals happy to have escaped their group’s plight, or does their personal success make the disadvantage of other group members seem even more unjust? Although insights on social justice suggest that people’s evaluations of their personal outcomes are guided by information about the legitimacy of procedures (e.g., Folger, 1977; Greenberg, 1987), previous research on tokenism, discrimination and relative deprivation suggests that people only suffer from illegitimate group-level disadvantage when this affects their personal outcomes (e.g., Crocker, Voelkl, Testa, & Major, 1991; Smith, Spears, & Owen, 1994; Wright & Taylor, 1999). This raises the more general question of how information about individual and group outcomes both separately and in combination affect the way people perceive and respond to their situation.

In the present research we consider how information about group-level treatment influences responses to personal outcomes in situations in which the relevance of individual characteristics seems primary (i.e., in evaluation settings in which positive/negative feedback is given). In line with prior research we argue that in this type of setting, that provides a focus on personal outcomes, knowledge of negative group-level treatment can provide a relatively positive interpretation of one’s personal outcomes as it allows people to attribute negative personal outcomes such as personal failure to the prejudice of another rather than to lack of personal ability. By looking at situations in which personal outcomes are

*Correspondence to: Katherine Stroebe, Department of Social and Organizational Psychology, Leiden University, P.O. Box 9555, 2300 RB Leiden, The Netherlands. E-mail: kestroebefsw.leidenuniv.nl

Received 7 September 2007
Accepted 23 June 2008
assessed in the presence versus absence of information about group-level disadvantage (Study 1), as well as situations in which personal outcomes are congruent or incongruent with group-level treatment (Study 2), we extend prior research to consider three questions we view as central to the area of discrimination: First, is knowledge of group-level disadvantage self-protective in that it has more positive consequences for well-being than not having any information about group-level treatment (Study 1)? Second, do these effects simply stem from the congruence (vs. incongruence) of information about individual level and group-level treatment, or is group-level information attributed in a way that it reflects positively on the self (Study 2)? Third, do perceptions of procedural justice depend on information about group-level treatment, or will personal outcomes determine the extent to which individuals perceive procedures as fair (Study 1 and 2)?

In the following we first review literature that considers how (negative) group-level information influences responses to personal outcomes, in situations in which personal outcomes are either congruent or incongruent with group-level treatment. We raise the question to what extent this concern with personal outcomes inhibits perceptions of illegitimate procedures that disadvantage one’s group.

THE EFFECTS OF GROUP DISADVANTAGE ON RESPONSES TO PERSONAL OUTCOMES

Prior research has considered situations in which the individual self is either, as is the case in tokenism and relative deprivation research, successful or, as is the case in discrimination research (with the exception of Crocker et al., 1991) unsuccessful in the face of group disadvantage. The studies we report in this paper are not only aimed at providing a connection between these lines of research but also at enabling us to consider to what extent responses to individual outcomes depend on group-level outcomes and whether these processes generalize beyond situations of group disadvantage. Below we first consider evidence from research on the effects of tokenism.

Research on the effects of tokenism studies how members of minority groups respond to individual success (i.e., gaining access to advantaged positions in a higher status group) while knowing that the majority of their group remains in a disadvantaged position (Boen & Vanbeselaere, 2001; Wright & Taylor, 1998, 1999). Research in this area provides evidence that responses to ingroup disadvantage can depend on individual outcomes (see Wright (2001) for an overview). For instance research by Wright and Taylor (1999) revealed that group members only responded negatively to ingroup disadvantage (i.e., less personal satisfaction, need to engage in collective action) when this ingroup disadvantage also affected the nature of their personal outcomes. Thus even though the awareness of ingroup disadvantage in itself indicates that the current situation is unjust, people may have difficulty identifying the injustice of procedures when they have been personally successful (see also Ellemers, 2001). Additionally, studies in the area of relative deprivation reveal that when intergroup contexts are salient this can even augment the psychological benefits of positive personal outcomes in the face of group disadvantage (Smith et al., 1994). Overall this research indicates that when personal and group outcomes diverge, individual level outcomes may be more determinant of well-being and perceptions of procedural legitimacy than the disadvantage of the own group—even when group disadvantage is highly salient.

Research in the area of subtle discrimination also provides some evidence implying that the individual self often remains primary in the face of ingroup disadvantage. Note that we are now considering a different type of evaluative situation compared to the research reviewed above, one in which individual and group-level outcomes are congruent rather than incongruent. This allows us to consider how people respond to personal outcomes in the face of group disadvantage both when ingroup level outcomes are congruent with and can therefore inform targets about their own outcomes (see below) as well as situations in which ingroup outcomes are incongruent with and therefore provide a contrast with individual level outcomes (i.e., tokenism/relative deprivation research).

Crocker and colleagues argue and provide evidence that attributing one’s own negative outcomes to prejudice against one’s group allows targets of discrimination to avoid self-blame by discounting lack of personal ability as a cause of their failure (Crocker & Major, 1989; Crocker et al., 1991). This is in line with insights from the social justice literature (Folger, 1977; Greenberg, 1987), indicating that the way people respond to their personal outcomes depends on the perceived legitimacy of the procedures that led to these outcomes. Thus the conviction that group-based disadvantage underlies negative personal outcomes (by making attributions to discrimination) can have relatively positive consequences for individual well-being (e.g., Crocker et al., 1991; Major, Kaiser, & McCoy, 2003a; McCoy & Major, 2003).
Taken together, the research reviewed above shows a paradoxical effect when considering responses to group disadvantage in evaluative settings: Information about group-based disadvantage always improves how people respond to personal outcomes, regardless of whether their personal outcomes are positive or negative. When personal outcomes are positive (e.g., tokenism), information about ingroup disadvantage helps individuals stand out from their group. When personal outcomes are negative (as in the case of discrimination), individuals can find comfort in the fate of their group, as this helps them to explain personal failure by referring to unjust procedures. Hence the studies discussed above provide evidence that in settings in which personal outcomes are highly salient individual group members may focus on the positive interpretation of their personal outcomes even in the face of ingroup disadvantage. As will become clear in the present research, this focus on individual outcomes may even guide perceptions of illegitimacy of procedures affecting the group.

THE PRESENT RESEARCH

Although this reasoning is based on, and appears to be supported by, what we know from previous studies, the present research goes further than prior work in a number of ways: Whereas discrimination in principle implies that negative personal outcomes are related to ingroup disadvantage, considering situations in which personal and group outcomes differ allows us to gain more insight into the separate and interactive effects of these two types of outcomes. This allows us to examine three central processes associated with subtle discrimination.

Firstly, separating personal and group-level outcomes allows us to consider to what extent people suffer or profit from the fate of their group in the face of actual discrimination and stigmatized group membership. That is, by contrasting situations in which people do or do not have information about group disadvantage (Study 1), we can consider to what extent responses to personal outcomes are augmented or dampened by knowledge about group disadvantage. 1

Secondly, the present research (Study 2) can provide insights concerning the extent to which discounting in the face of subtle discrimination is a general process or, as previously assumed but not directly tested in this area of research, one that is motivated by the need to self-protect from failure. We look at these alternative processes by giving congruence information (i.e., in which personal and group outcomes match) that does (rejection/group disadvantage) or does not (acceptance/group advantage) reflect positively on the individual self. In the latter situation congruent information reflects less positively on the individual self because it implies that personal success is due to group membership rather than own ability. Study 2 allows us to reflect on whether people adjust attributions to personal characteristics in view of group-based information (i.e., due to the congruence between them) or also consider the implications thereof for the individual self.

Thirdly, the present research examines to what extent perceptions of group level treatment are also influenced by personal outcomes. Although tokenism research has considered the relation between personal outcomes and justice perceptions, research in the area of subtle discrimination focuses on measures that assess individual coping responses, not on examining broader perceptions of legitimacy. As a result, we do not really know how the experience of personal failure or group-level disadvantage affects perceptions of procedural justice. Research in the area of procedural justice has repeatedly found what is referred to as the ‘fair process effect’, namely that perceived procedural fairness has a strong influence on how people respond to personal outcomes (Folger, 1977; Greenberg, 1987). At the same time we know from research on the person–group–discrimination discrepancy that perceptions of group-level injustice do not always translate into perceptions of personal disadvantage (e.g., Taylor, Wright, Moghaddam, & Lalonde, 1990). The fact that the present studies assess both general perceptions of procedural justice and more specific assessments of perceptions regarding personal outcomes can thus help us to explore the interplay between justice perceptions and responses to personal outcomes that are, in some cases, the result of discrimination. Furthermore, it enables us to consider ways in which the personal experience of discrimination is likely to raise feelings of injustice which can lead to other (group-level) responses.

1 Although research on tokenism focuses on this question with respect to collective action tendencies, it generally considers minimal groups, or relatively short term low status groups (such as college membership) that offer the possibility of achieving individual mobility. In contrast, research on subtle discrimination focuses on groups that are chronically of low status with a history of discrimination. We know from research in the area of discrimination that people with temporary low status respond very differently to discrimination than those who are members of chronically disadvantaged groups (Schmitt, Branscombe, Kobrynnowicz, & Owen, 2002). Furthermore, even though in some of this research (e.g., Smith et al., 1994) real groups were considered, the unequal treatment of participants resulted in differential allocation outcomes of the self versus own group. The present research allows us to consider to what extent personal success in the face of actual prejudice and discrimination of other group members also reflects positively on the self.
for instance to challenge existing procedures, to publicly voice opinions about these procedures, or to raise support for collective action.

**STUDY 1**

In Study 1 we considered how the presence versus absence of information about group disadvantage affects outcome attributions, well-being and perceptions of procedural legitimacy. We manipulated personal outcome (acceptance/rejection) and information about group disadvantage (yes/no).

With regard to the extent to which these outcomes are attributed to personal characteristics versus group-based treatment, we predicted that having information about group disadvantage would enable participants who experience personal rejection to decrease attributions to personal characteristics, while increasing these attributions under personal success. In terms of discounting, information about group disadvantage allows participants to discount personal characteristics as a cause of their failure. Therefore making attributions to discrimination should buffer individuals’ well-being from the effects of personal rejection.

For perceived illegitimacy of the procedure, two possible predictions can be made. If perceptions of illegitimacy are invoked to cope with personal rejection, we expected people who were made aware of group-level disadvantage to seize this information as providing an opportunity to regard the procedure as illegitimate when they were personally rejected, while they should be less likely to engage in such a strategy when they were personally accepted. If, however, perceived illegitimacy of the procedure is driven by the awareness that one’s group is treated unjustly, the provision of information about group-level disadvantage in itself should raise illegitimacy judgments, irrespective of one’s personal outcomes.

**Method**

*Design and Participants*

Eighty-two female students of Leiden University ($M_{\text{age}} = 20.15$) took part in the experiment for payment (1 Euro) or course credits. Participants were randomly assigned to a 2 (personal outcome: rejection/acceptance) $\times$ 2 (information about group disadvantage: yes/no) between participants factorial design.

*Procedure*

Upon arrival in the lab participants were received by a male or female experimenter$^2$ and seated in front of computers in separate cubicles. Participants read they were (supposedly) taking part in a joint project of Leiden University and F., a bogus company specialized in coaching and recruitment, to study the personal experience of online selection procedures. They were informed that they would be taking part in a selection procedure. It was stressed that, although they would not be offered an actual job at the end of the procedure, it was likely they would experience similar selection procedures when applying for a job in the future. After some information about company F., participants were asked to fill in a selection questionnaire on the basis of which they would allegedly be selected by an interviewer of the company, Hans Brockens.

**Manipulation of Personal Outcome**  Participants in the rejection condition were then told Hans Brockens did not consider them suitable as an employee. Participants in the acceptance condition were told Hans Brockens considered them suitable as an employee.

**Manipulation of Information about Group Disadvantage**  All participants then received some additional information (i.e., number of prior applicants) about the selection procedure, ostensibly to evaluate to what extent job applicants like to

---

$^2$The experimenter’s gender was unrelated to all dependent measures.
have extra information about the procedure they are taking part in. Participants in the information about group disadvantage condition also read how other applicants that were evaluated by Hans Brockens had done: 4% of all women and 60% of all men had been accepted. Participants in the no information about group disadvantage did not receive this information. Following this, participants were asked to complete a number of dependent measures. To ensure anonymity of participants’ responses with respect to the evaluator, it was stressed that responses would not be sent to Hans Brockens.

**Dependent Measures**

**Manipulation Checks**  As a manipulation check of personal outcome participants indicated whether they had been found suitable as an employee (1 = not suitable; 2 = suitable). The manipulation check of group outcome consisted of two items (‘how many men/women were accepted in this selection procedure’: 1 = less than 10% of all men/women; 2 = between 10 and 50% of all men/women; 3 = between 50 and 100% of all men/women).

**Personal and Group-level Threat**  In order to test to what extent participants were affected by both information about their personal and the group outcome, we measured threat at a personal and a group level. Personal level threat was measured by asking participants to indicate the extent to which they experienced the emotions ‘threatened’, ‘worried’ and ‘uneasy’ when thinking about their own outcome ($\alpha = .81$). Group-level threat was measured by asking participants to indicate to what extent they experienced these emotions when thinking about the position of women in this selection procedure ($\alpha = .88$). Scale endpoints were 1 (not at all) and 7 (very much).

**Attributions**  Two items measured the extent to which participants felt their personal outcomes were due to group-based treatment by asking participants whether they thought their outcome in the selection procedure was due to Hans Brocken’s ‘attitude towards men and women’ and ‘due to my gender’ ($r = .86$). Attributions to personal characteristics were measured by asking participants to indicate the extent to which they thought their outcome was due to ‘something in me’ and ‘because of who I am’ ($r = .64$, see Schmitt & Branscombe, 2002; Major et al., 2003a, for similar attribution measures). Scale endpoints were 1 (strongly disagree) and 7 (strongly agree). In accordance with prior research studying discounting in the area of discrimination (i.e., Major et al., 2003a; Major, Quinten, & Schmader, 2003b), we also computed a direct measure of discounting by subtracting (standardized) attributions to personal characteristics from (standardized) attributions to group-based treatment. Higher scores on this measure therefore indicate greater discounting.

**Affective Well-being**  Participants completed a measure of (negative) affect that consisted of a list of 10 emotions taken from the multiple affect adjective check list (MAACL; Zuckerman & Lubin, 1965) (e.g., blue, discouraged, happy, last item reverse-scored; $\alpha = .87$). Scale endpoints were 1 (not at all) and 7 (very much).

**Legitimacy of the Selection Procedure**  We included a three item measure of overall perceived legitimacy of the selection procedure to see to what extent people perceive unfair treatment at a group level (e.g., ‘in general the choice of candidates took place in a legitimate way/the selections were fair’, $\alpha = .76$). Scale endpoints were 1 (not at all) and 7 (very much).

**Results**

Unless otherwise stated, data were analysed using a 2 (personal outcome: rejection/acceptance) $\times$ 2 (information about group disadvantage: yes/no) between participants factorial design.
Dependent Measures

Manipulation Checks  The manipulation check of personal outcome indicated that all participants correctly indicated their personal outcome in the selection procedure. The check of information about group disadvantage indicated that all participants correctly indicated the percentage of women that was accepted. One participant incorrectly indicated the percentage of men accepted. This participant was not excluded from analysis as participants who gave an incorrect response again received information telling them the correct result.

Personal and Group-level Threat  Analyses revealed a main effect of personal outcome on personal level threat, $F(1, 78) = 18.14, p < .001, \eta^2 = .19$. Participants who were rejected experienced more personal threat ($M = 2.56, SD = 1.16$) than accepted participants ($M = 1.64, SD = .77$). No other effects were significant, $Fs < 1.94, p > .17, \eta^2 < .02$.

Participants who received information about group disadvantage felt more group-level threat ($M = 3.85, SD = 1.34$) than those who did not receive this information ($M = 2.09, SD = 1.30$), $F(1, 78) = 35.51, p < .001, \eta^2 = .31$. No other effects were significant, $Fs < .32, p > .57, \eta^2 < .004$. These results indicate that negative personal and negative group outcomes are both experienced as relatively threatening by participants.

Attributions  Attributions to group-based treatment versus personal characteristics were examined with a 2 (personal outcome: rejection/acceptance) by 2 (information about group disadvantage: yes/no), by 2 (type of attribution: group vs. personal), mixed design, with type of attribution as a repeated measure. This yielded two-way interactions of type of attribution with personal outcome, $F(1, 78) = 43.17, p < .001, \eta^2 = .36$, and type of attribution with information about group disadvantage, $F(1, 78) = 28.32, p < .001, \eta^2 = .27$ (see Table 1). To interpret this complex interaction, we computed tests of lower order effects at each level of personal outcome.

In the personal acceptance condition, this only yielded a reliable main effect of type of attribution, $F(1, 41) = 42.47, p < .001, \eta^2 = .51$. The relevant means indicate that when participants were personally accepted they generally attributed this more strongly to their personal characteristics than to group-based treatment. When participants were personally rejected, however, the main effect of type of attribution, $F(1, 37) = 4.31, p < .05, \eta^2 = .10$, was qualified by a reliable two-way interaction, $F(1, 37) = 46.30, p < .001, \eta^2 = .56$. $T$-tests reveal that when no information was available about group-level outcomes, participants attributed their rejection more to their personal characteristics than to group-based treatment, $t(19) = -2.97, p < .001$. However, when the experience of personal rejection was combined with the information that the group was disadvantaged, participants attributed their own outcomes more to group-based treatment than to personal characteristics, $t(18) = 7.48, p < .001$.

In order to consider to what extent participants engaged in actual discounting (i.e., by making more attributions to group based instead of to individual based treatment), we also considered differences in the extent to which participants engaged

<table>
<thead>
<tr>
<th>Information about group disadvantage</th>
<th>Rejection</th>
<th>Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Attribution to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group-based treatment</td>
<td>1.88 (.127)</td>
<td>5.84 (.130)</td>
</tr>
<tr>
<td>Personal characteristics</td>
<td>3.50 (.172)</td>
<td>2.79 (.111)</td>
</tr>
<tr>
<td>Discounting</td>
<td>-62 (.149)</td>
<td>1.95 (.104)</td>
</tr>
</tbody>
</table>

Cells in the same row that do not share the same superscript reliably differ from each other at $p < .01$.

*p < .10.

Copyright © 2008 John Wiley & Sons, Ltd.

DOI: 10.1002/ ejsp
in discounting (see Table 1). Conform our hypotheses, simple effect analyses revealed that rejected participants engaged in more discounting when receiving versus not receiving information about group disadvantage, $F(1, 78) = 55.52, p < .001$. Participants who were accepted did not differ in levels of discounting, $F(1, 78) = .16, p = .69$.

In line with our hypotheses, we also considered whether information about group disadvantage changed levels of attributions to personal characteristics and conducted simple effect analyses at this level. As predicted, simple effect analyses (see Table 1) indicated that accepted participants made more attributions to personal characteristics when receiving versus not receiving information about group disadvantage, $F(1, 78) = 6.42, p < .01$. Importantly (although marginal) rejected participants tended to make less attributions to personal characteristics when receiving versus not receiving information about group disadvantage, $F(1, 78) = 2.70, p = .10$.

Affective Well-being Analyses of the measure of negative affect revealed reliable main effects of personal outcome, $F(1, 78) = 11.30, p < .001, \eta^2 = .13$, and of information about group disadvantage, $F(1, 78) = 3.89, p < .05, \eta^2 = .06$ only. Participants who were rejected ($M = 2.89, SD = .89$) experienced more negative affect than accepted participants ($M = 2.33, SD = .59$). Also participants who received information about group disadvantage ($M = 2.41, SD = .67$) experienced less negative affect than participants who did not receive this information ($M = 2.79, SD = 1.88$). The interaction effect was not reliable, $F(1, 78) = 1.22, ns$. These results indicate that personal and group outcomes work in opposite directions: Experiencing negative personal outcomes induces lower levels of individual well-being whereas in contrast the experience of negative group outcomes induces more well-being.

In order to consider the relation between attributions and well-being, specifically whether information about group disadvantage buffers targets from the negative effects of failure, we looked at within cell correlations between attributions to personal characteristics and negative affect. Importantly, we found that within the rejection/group disadvantage condition, lower levels of attributions to personal characteristics were related to lower levels of negative affect ($r = .51, p < .05$). This was not the case within the other conditions ($r$ ranged from -.20 to -.22, ns). These results support our hypothesis that having information about group disadvantage can reduce negative affect after personal rejection by reducing the extent to which participants attribute failure to their personal characteristics.

Legitimacy of the Selection Procedure Analyses revealed a reliable main effect of information about group disadvantage on legitimacy of the selection procedure, $F(1, 78) = 10.16, p < .01, \eta^2 = .12$, as well as a reliable interaction effect, $F(1, 78) = 8.14, p < .01, \eta^2 = .10$ (see Table 2). The main effect revealed that participants who received information about group disadvantage experienced the selection procedure as less legitimate than participants who did not receive this information. Simple effect analyses of the interaction revealed that the main effect was qualified by this reliable interaction: Participants who were personally rejected only experienced the selection procedure as less legitimate when they had information about group disadvantage, $F(1, 78) = 17.44, p < .001$. Information about group disadvantage did not influence perceptions of legitimacy within the acceptance condition, $F(1, 78) = .06, ns$. Therefore, reports of illegitimacy of group-level treatment are not merely determined by the disadvantage of the group, but increase when group members also receive negative personal outcomes.

Table 2. The effects of personal outcome and information about group disadvantage on perceived legitimacy of the selection procedure (Study 1)

<table>
<thead>
<tr>
<th>Personal outcome:</th>
<th>Information about group disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rejection</td>
<td>No: 3.98 (1.09)$^{b}$</td>
</tr>
<tr>
<td></td>
<td>Yes: 2.60 (0.89)$^{c}$</td>
</tr>
<tr>
<td>Acceptance</td>
<td>No: 3.37 (0.98)$^{b}$</td>
</tr>
<tr>
<td></td>
<td>Yes: 3.29 (1.14)$^{b}$</td>
</tr>
</tbody>
</table>

Means with a different superscript differ reliably from each other at $p < .05$.
In Study 1 we considered the consequences for well-being and justice perceptions of having information about group disadvantage that is more or less congruent with personal outcomes. This study revealed that information about group disadvantage made people feel better about personal acceptance and, importantly, helped people to cope with individual rejection as they discounted attributions to the self and reported higher well-being. Additionally, even though people reported feeling threatened by group disadvantage, they only considered the procedure illegitimate when they also suffered personal rejection. Thus, even looking beyond levels of personal well-being and considering perceptions of procedural justice, we see that participants report most illegitimacy when their personal outcomes are also negatively affected. Study 2 aimed to replicate Study 1 and to consider in more detail the processes underlying responses to group-level treatment. We again manipulated personal outcome (rejection/acceptance), but this time we always provided group-level information that indicates that personal outcomes are congruent with, and can therefore be attributed to, group-level treatment. We again manipulated personal outcome (rejection/acceptance), but this time we always provided group-level information and manipulated the nature of group-level treatment at two levels, by either telling participants the male or female treatment. We again manipulated personal outcome (rejection/acceptance), but this time we always provided group-level information that indicates that personal outcomes are congruent with, and can therefore be attributed to, group-level treatment. Specifically, with a slightly different design, we focus on whether discounting is motivated by the need to self-protect from personal failure (i.e., by making attributions to group-based treatment), or simply the result of processing information about group-level treatment was seen as ‘group advantage’, given that the African American participants in the study of Crocker et al., 1991. It is important to note that in the study of Crocker et al. (1991) it is not entirely clear to what extent information informing about personal treatment can actually serve to negatively reinterpret personal treatment: It indicates that individual success may have been due to one’s group membership rather than individual ability (i.e., one is ‘forced to’ discount personal success in the face of positive discrimination or realizes one is not special because ‘everybody’ can do this). The present design enables us to assess whether congruence between individual and group outcomes drives these effects (information hypothesis) or whether favourability of considering group-level information to interpret personal outcomes plays a role (motivational hypothesis).

Previous work has yielded evidence suggesting that both hypotheses may be valid. In line with a motivational hypothesis, research in the area of subtle discrimination has argued that people’s attributions to discrimination reflect motivational states (Crocker & Major, 1989, Crosby, 1982). Studies that have looked at the self-protective properties of attributions to discrimination have frequently compared situations of personal failure that give no information about possible discrimination with those that can be attributed to prejudice. Although these studies (e.g., Crocker et al., 1991; Major et al., 2003a) have provided strong evidence that perceiving discrimination can be relatively self-protective, the comparison of situations of personal rejection that vary in the extent to which they can be attributed to discrimination does not enable conclusions concerning whether individuals were ‘motivated’ to self-protect or merely accommodating information offering an external attribution for personal failure. Testing whether attributions to discrimination versus the self are motivated requires considering situations in which discrimination or, in other words group-level treatment, is constant but personal motives differ. In the present study we vary individual level outcomes (acceptance/rejection) across group-level treatment (group advantage/group disadvantage). This enables us to consider to what extent the nature of individual outcomes motivates responses to individual and group-level information.

On the other hand, and in line with an informational approach to attributions to discrimination, research has shown that group members are aware of and report discrimination experiences even when these attributions are relatively harmful to well-being (e.g., Branscombe, Schmitt, & Harvey, 1999). In support of an informational approach one of the few studies to consider personal success in the face of (possible) group advantage revealed that even when information reflected negatively on the individual self (i.e., lower levels of well-being) because it offered an external and group-based attribution for individual success, people made less internal attributions and more attributions to group-based treatment (Crocker et al., 1991). It is important to note that in the study of Crocker et al. (1991) it is not entirely clear to what extent information about group-based treatment was seen as ‘group advantage’, given that the African American participants in...
this study were simply told that they were visible to the person evaluating them (thus indicating that positive feedback may be the result of ‘affirmative action’). In the present study the group is explicitly ‘advantaged’.

Considering specific predictions based on the motivational and informational hypotheses, according to the motivational hypothesis people should be more inclined to use information about group-level treatment when this reflects positively on the self. Thus information in which personal and group outcomes are congruent should only attenuate personal attributions when this reflects positively on the self (i.e., rejection/group disadvantage condition). We also explored whether the need to self-protect also translated into greater attributions to group-based treatment when this reflected positively as opposed to negatively on the self. Based on an informational hypothesis we predicted that congruence information (irrespective of whether this concerns rejection/group disadvantage or acceptance/group advantage) should attenuate the extent to which people make personal attributions irrespective of whether this reflects positively or negatively on the self. Also, we expected that levels of group-based attributions might not differ across congruence conditions.

In order to distinguish to what extent people see themselves as more similar to the ingroup when this reflects positively on the self (motivational) or irrespective of how this reflects on the self (informational) across the congruent conditions, we also included a measure of gender differentiation. A motivational hypothesis would predict that people see themselves as more similar to the group in the condition in which group-level treatment reflects positively on the self (rejection/group disadvantage) than when this is not the case (acceptance/group advantage). According to an informational hypothesis, there should be no differences in gender differentiation across the congruence conditions—although greater gender differentiation should be observed when personal and group-level outcome are incongruent. As in Study 1 we also measured perceptions of procedural justice. Based on our results of Study 1, we predicted that participants’ perceptions of legitimacy would not only be determined by the nature of group-level treatment, but also by the nature of individual level outcomes. Thus we expected perceptions of legitimacy to be lowest when participants received information about group-level disadvantage, and also received a negative personal outcome.

Method

Design and Participants

Seventy-nine female students of Leiden University took part in the scenario study for course credits or payment (1 Euro). Participants were randomly assigned to a 2 (personal outcome: rejection/acceptance) × 2 (group outcome: advantage/disadvantage) between participants factorial design. Two participants were excluded from the study because they incorrectly remembered the outcome of their group.

Procedure

As in previous research in this area (e.g., Major et al., 2003a; Schmitt & Branscombe, 2002), Study 2 was a scenario study in which participants were asked to imagine a situation worded in the following way:

Imagine you have just completed your studies and are taking part in an application procedure of a company or organization. You very much want the job and meet the requirements described in the recruitment ad. The selection procedure consists of a number of personality questionnaires and an interview with the manager who makes the selections, mister Aalders.

Manipulation of Personal Outcome Participants in the rejection/acceptance condition were then asked to imagine receiving a phone call from Mr. Aalders informing them they were rejected/accepted.

Manipulation of Information about Group Outcome All participants then read they knew someone working at the company. Participants in the group advantage/group disadvantage condition were told by this person that he had heard Mr. Aalders saying that he normally prefers to accept/not to accept women. Participants then completed a number of dependent measures.

Prior studies employing scenario and/or experimental studies in the area of subtle discrimination have shown that results are consistent over scenario and experimental studies (e.g., Crocker et al., 1991; Major et al., 2003a; Schmitt, Branscombe, & Postmes, 2003).
Dependent Measures

Manipulation Checks The manipulation check of personal outcome consisted of one item asking participants to indicate their personal outcome: Rejected or accepted. The manipulation check of group preference consisted of one item asking participants whether Mr. Aalders had a preference to accept or reject women in this selection procedure.

Unless otherwise indicated, dependent measure were measured in the same way as in Study 1. Scale reliabilities were as follows: Personal ($\alpha = .78$) and group ($\alpha = .76$) level threat; attributions to group-based treatment ($\alpha = .88$) and personal characteristics ($\alpha = .83$); affective well-being ($\alpha = .92$); legitimacy of the selection procedure ($\alpha = .82$).

Gender Differentiation Gender differentiation was measured with 2 items asking participants to indicate to what extent their outcome was due to the fact that they ‘possessed qualities that other women do not possess’ and ‘distinguish themselves from other women’ ($r = .70$). Scale endpoints were 1 (not at all) to 7 (very much).

Results

Dependent Measures

Unless otherwise stated we conducted 2 (personal outcome: rejection/acceptance) $\times$ 2 (group outcome: rejection/acceptance) between participants univariate analyses of variance.

Manipulation Checks The manipulation check of personal outcome indicated that all participants in the rejection/acceptance condition correctly reported being rejected/accepted for the selection procedure. The check of group outcome indicated that two participants incorrectly reported group outcome. As this study consisted of a paper and pencil questionnaire correction of incorrect answers was not possible, so these participants were excluded from analyses.

Individual and Group-level Threat A 2 (personal outcome: rejection/acceptance) $\times$ 2 (group outcome: rejection/acceptance) ANOVA indicated that, as in Study 1, participants who were rejected ($M = 4.18$, SD = 1.27) experienced reliably more personal threat than accepted ($M = 3.40$, SD = 1.09) participants, $F(1, 73) = 8.07$, $p < .01$, $\eta^2 = .10$. No other effects were reliable, $Fs < .19$, $p > .67$, $\eta^2 < .003$.

Participants in the group disadvantage condition ($M = 4.58$, SD = 1.22) experienced more group threat than participants in the group advantage condition ($M = 3.90$, SD = 1.09), $F(1, 73) = 6.43$, $p < .01$, $\eta^2 = .08$. No other effects were reliable, $Fs < .79$, $p > .38$, $\eta^2 < .01$. These results show that participants were aware of and found the nature of group-level treatment threatening.

Attributions Attributions to group-based treatment versus personal characteristics were examined with a 2 (personal outcome: rejection/acceptance) by 2 (group outcome: advantage/disadvantage), by 2 (type of attribution: Group vs. personal), mixed design, with type of attribution as a repeated measure. This yielded a two-way interaction between type of attribution and personal outcome, $F(1, 73) = 13.07$, $p < .001$, $\eta^2 = .15$, which was qualified by a reliable three-way interaction, $F(1, 73) = 31.27$, $p < .001$, $\eta^2 = .30$ (see Table 3). To interpret this complex interaction, we computed tests of lower order effects at each level of personal outcome. In the personal acceptance condition, this yielded a main effect of type of attribution, $F(1, 36) = 8.55$, $p < .01$, $\eta^2 = .19$, which was qualified by an interaction with group outcome, $F(1, 36) = 16.62$, $p < .001$, $\eta^2 = .32$.

$T$-tests indicate that when personal and group-level treatment were congruent (i.e., acceptance/group advantage), participants attributed personal acceptance less strongly to group-based treatment than to personal characteristics, $t(18) = 4.94$, $p < .001$. When personal and group treatment were congruent (i.e., acceptance/group advantage), personal acceptance was equally likely to be attributed to personal characteristics as to group-based treatment, $t(18) = -.82$, ns. In the personal rejection condition, we also observed a main effect of type of attribution, $F(1, 37) = 5.49$, $p < .05$, $\eta^2 = .13$, which was qualified by a reliable two-way interaction, $F(1, 37) = 15.67$, $p < .001$, $\eta^2 = .30$. $T$-tests revealed that when personal and group-level treatment were incongruent (i.e., rejection/group advantage), participants were equally likely to
attribute their own rejection to their personal characteristics as to group-based treatment, \( t(18) = 1.20, \) ns. However, when personal rejection was congruent with group disadvantage, participants attributed their own outcomes more to group-based treatment than to their personal characteristics, \( t(18) = -4.29, p < .001. \)

In addition, within the attribution to personal treatment measure we considered whether information about group advantage/disadvantage changed levels of attributions to personal characteristics. Simple effect analyses indicated that the nature of group-level outcomes only influenced attributions to personal characteristics when participants experienced negative personal outcomes: Participants who were rejected and had information about group disadvantage made fewer attributions to personal characteristics than those who had information about group advantage, \( F(1, 73) = 6.91, p < .01. \) This replicates Study 1. Within the acceptance conditions there were no effects of group outcome, \( F(1, 73) = 1.28, p = .26. \)

In order to further consider whether we replicated Study 1 we performed simple effect analyses of the discounting measure. These analyses revealed that within the group disadvantage condition, participants engaged in more discounting when they were rejected as opposed to accepted, \( F(1, 73) = 42.37, p < .001. \) Within the group advantage condition personal outcomes did not influence levels of discounting, \( F(1, 73) = 1.68, p = .20. \) Conform Study 1 information about group disadvantage enabled participants to discount personal failure, whereas information about group advantage did not influence participants’ levels of discounting.

Because our hypotheses also focused on possible differences between the congruence conditions at the level of personal attributions, we performed \((0, -1, 1, 0)\) contrasts between the congruence conditions for attributions to personal characteristics. These comparisons indicated that individuals who received positive congruence information (i.e., acceptance/group advantage) made more attributions to personal characteristics than those who received negative congruence (i.e., rejection/group disadvantage) information, \( t(73) = 3.61, p < .001. \) In support of a more motivational hypothesis, information that is congruent is only translated into less personal attributions when people experience rejection but not acceptance.

We also explored to what extent people differed in the extent to which they made attributions to group-based treatment. Post hoc Tukey comparisons indicated that attributions to group level treatment did not differ between congruence conditions, \( p = .37. \)

**Affective Well-being** Analyses of the *negative affect* measure revealed a reliable main effect of personal outcome only, \( F(1, 73) = 101.94, p < .001, \eta^2 = .58. \) Rejected participants \((M = 5.14, \ SD = .74)\) experienced more negative affect than accepted participants \((M = 3.19, \ SD = .93)\). No other effects were reliable, \( F$s < .66, \ p$s > .42, \eta^2 < .10. \)

In order to consider the relation between attributions and well-being we conducted correlations within the personal outcome conditions between attributions to personal characteristics and negative affect. We found a relation between these variables only within the acceptance conditions \((r = -.30, \ n = 39, p = .06)\) indicating that, in the case of individual acceptance, greater attributions to personal characteristics were related to lower levels of negative affect. Within the rejection condition attributions to personal characteristics were not related to affect \((r = .07, \ n = 38, p = .67). \) Therefore we again find that attributions are relevant to affect well-being but in the present study in the case of individual success rather than failure: Complementing Study 1 we observe enhanced well-being when individual success was attributed to personal characteristics.
level treatment is preferably used. Information about group-level advantage/disadvantage to help interpret personal outcomes irrespective of whether it determining responses to group-level treatment and assessed empirical support for each path: Firstly, whether people use which it would reflect negatively on the self (group advantage/acceptance). We reasoned there might be two possible paths situations in which group outcome reflects positively on the self (group disadvantage/rejection) but also a situation in

In the present study we considered the effects of group disadvantage and group advantage on people’s responses to situations of personal success and failure. The inclusion of a group advantage condition allowed us not only to consider situations in which group outcome reflects positively on the self (group disadvantage/rejection) but also a situation in which it would reflect negatively on the self (group advantage/acceptance). We reasoned there might be two possible paths determining responses to group-level treatment and assessed empirical support for each path: Firstly, whether people use information about group-level advantage/disadvantage to help interpret personal outcomes irrespective of whether it reflects positively or negatively on the self (informational hypothesis), and, secondly, whether information about group-level treatment is preferably used when it reflects positively on the self (motivational hypothesis).

Our results provide relatively strong support for a motivational hypothesis. Indeed participants made less attributions to personal characteristics when they received a negative personal outcome that was congruent with group-level treatment but not in the converse condition (i.e., acceptance/group advantage). Similar patterns were found for differentiation from

<table>
<thead>
<tr>
<th>Table 4. The effects of personal outcome and information about group (dis)advantage on perceived legitimacy of the selection procedure (Study 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group advantage</strong></td>
</tr>
<tr>
<td>Personal outcome:</td>
</tr>
<tr>
<td>Rejection</td>
</tr>
<tr>
<td>Acceptance</td>
</tr>
</tbody>
</table>

Means with a different superscript differ reliably from each other at p < .05.

---

the ingroup: Participants saw themselves as more different from the ingroup when congruent information was positive (both individual and group are accepted) rather than negative (both individual and group are rejected). Yet, whereas based on the motivational hypothesis one might expect that if people need to self-protect from failure this should not only decrease attributions to personal characteristics but also increase attributions to discrimination (see Crocker & Major, 1989), this is not what we found: Participants made (equal levels of) attributions to group-based treatment in the congruent conditions irrespective of whether this information reflected positively (i.e., rejection/group disadvantage) or negatively (i.e., acceptance/group advantage) on the self. It is therefore important to realize when considering a motivational approach to these results that the differences we find between the congruence conditions were driven largely by adjustments in attributions at an individual, not at a group level: People were positively biased to attribute success primarily to personal characteristics despite (acknowledging) evidence of a group-based explanation.

In sum, although participants process information about group-level treatment and adjust group-level attributions to accommodate this information, we also have consistent indications of a positivity bias such that attributions to personal treatment are motivated by the desire to maintain a positive image of the personal self. Note that we originally anticipated that motivational processes might also be reflected in the level of group-based attributions made: That individuals might also ‘adjust’ group-based attributions to reflect more positively on the self. The current research makes clear that to the extent that responses to subtle discrimination are motivational, these processes take place at the more individual level, via adjustments in levels of attributions to personal characteristics.

One might argue that these results are very much in line with general predictions from attribution theory, and that people were simply responding as individuals and not as group members. We do not disagree with this interpretation, yet we would like to stress that this provides further evidence for our reasoning: In contexts that focus so much on the individual such as the job selection contexts examined here, group members may only respond to group-level information in ways that reflect favourably on the self: To enhance the implications of success or minimize personal failure. Indeed, in line with research in the area of tokenism and relative deprivation (e.g., Smith et al., 1994; Wright & Taylor, 1999), in this second study the effects we found on negative affect reflect only responses to personal and not to group outcomes. Nevertheless, as indicated by the manipulation checks as well as by the indicators of personal and group threat, participants were clearly aware of how the ingroup was treated so this does not explain the absence of further effects of group-level treatment. Therefore the present results can provide insights into the interplay between personal and group-level attributions as well as informational and motivational accounts of different types of attributions.

In line with this individualistic approach to group-based treatment, and conform Study 1, participants reported least legitimacy of the procedure only when the group was disadvantaged and they themselves experienced a negative personal outcome as well. Again these results suggest that in this type of context people recognize the disadvantage of their group, but only perceive the injustice thereof when it affects them personally.

Overall, the present study indicates that that group members acknowledge and are aware of the nature of group-level treatment, but that further consequences of this knowledge are individually motivated and reflected in the nature of attributions, differentiation from the ingroup and well-being responses to success versus failure.

**GENERAL DISCUSSION**

In the present research we varied the nature of individual and group-level treatment in the face of a prejudiced evaluator to examine three questions. Firstly, is knowledge of negative group-level treatment self-protective to such an extent that it has more positive consequences for well-being than not having this information (Study 1)? Secondly, does information about group-level treatment always affect responses to individual level treatment, even when it may serve to harm rather than help the self (Study 2)? Thirdly, do perceptions of procedural justice depend on information about group-level treatment, or will personal outcomes determine the extent to which individuals perceive procedures as fair (Study 1 and 2)?

Across both studies we found that, at least in the type of context we examined, group members have an individualistic focus by which knowledge of (negative) group-level treatment can augment the attributional consequences of personal success and discount personal failure. As Study 1 revealed, this even leads to increased individual well-being when observing group disadvantage as opposed to ‘merely’ experiencing personal failure without having group-level information. Study 2 indicated that discounting does to some extent reflect an informational process: Individuals also
make attributions to group-based treatment regardless of whether it has the potential to reflect positively or negatively on the self. On the other hand, in support of a more motivational approach this study also indicated that neither attributions to personal characteristics nor the reported similarity with the ingroup are adjusted to accommodate group-level information when people are successful whereas this is the case after individual failure. Across both studies we can conclude that people may adjust interpretations of their personal outcomes in the face of information about group membership and seek this kind of interpretation after individual failure not success.

Across both studies attributions were related to affective well-being but there were some differences across the studies that are worthwhile addressing. Whereas in Study 1 discounting failure in favour of discrimination reflected positively on target’s well-being, in Study 2 group level information about disadvantage had less severe consequences for well-being. It is important to note that Studies 1 and 2 complement each other in a way that may explain some of the differences in well-being patterns across studies. For one, the nature of group-level treatment differs between these studies. Study 1 likely provides a stronger contrast at the level of group-based treatment because people either receive or do not receive information about group-level treatment, whereas in Study 2 people always have group-level information, only the nature of group-level treatment is varied. Furthermore, whereas the information about group disadvantage in Study 1 provides a history of negative group-based treatment (percentage of men vs. women accepted in past), in Study 2 the group-based treatment reflects the attitude of one evaluator without giving examples of actual negative treatment of group members. Furthermore, this manipulation is described as part of a scenario (i.e., Study 2) as opposed to being a personal experience (i.e., Study 1).

In sum, we can conclude that although people recognize and report group level treatment, this is not necessarily reflected in the attributions they make for their own outcome or the well-being they experience. Furthermore, we see little evidence that people suffer from the disadvantage of their group: Information about group disadvantage neither enhanced the experience of personal failure, nor dampened the positive effects of personal success—as we have shown, the contrary seems to be the case. Yet it is important to note that in the present studies we have considered a very individualistic evaluative setting (i.e., a job setting) in which people are strongly focused on personal success and failure (see also Crocker et al., 1991; Major et al., 2003a; Sechrist, Swim, & Stangor, 2004). Although many real life situations in which discrimination occurs may be evaluative and—like the one we examined—seemingly focused on the individual, we therefore stress the importance of keeping in mind the context in which discrimination takes place. Indeed we do not propose that people never suffer from group disadvantage, nor do we say that people are only motivated by individual level motives. On the contrary, research in the area of subtle discrimination clearly shows that people generally do suffer from discrimination (e.g., Schmitt et al., 2003; Branscombe et al., 1999). An important factor influencing whether information about the prejudice of another is harmful versus self-protective may lie in the extent to which discrimination is perceived as pervasive, thus having long term negative implications for the future (Schmitt et al., 2003; Stroebbe, Dovidio, Barreto, Ellemers, & John, 2008). We would argue that when the negative implications of one’s group membership override the self-protective capacity thereof, discrimination will have negative consequences for personal well-being. Hence, at a theoretical level, one of the implications of our research may be that it is important to consider the relative salience of individual aspects (e.g., need to self-protect from failure, need for personal control, see Sechrist et al., 2004) as well as group aspects (e.g., pervasiveness of discrimination; group identification) of situations of discrimination when making predictions concerning how people will respond to information about the devaluation of their group. Research so far has mainly focused on ‘group aspects’, while to some extent neglecting the individual aspects that may influence these reactions. We believe that the self-relevance of the personal failure or beliefs about personal ability may also be important determinants of the extent to which perceptions of discrimination are relatively harmful or self protective. It may be a fine balance between individual and group aspects that influences the nature of peoples’ responses to discrimination.

Beyond the level of individual responses to group advantage/disadvantage, an important aim of the present study was to consider whether perceptions of procedural justice of the selection procedures in general were also determined by the nature of personal outcomes. Across both studies we found evidence that perceptions of procedural justice are not only influenced by group level disadvantage but also by the extent to which people are personally affected by this injustice. This has implications for group members’ willingness to address collective disadvantage. We know from prior research that targets who confront those who discriminate against them are seen as complainers, both by in- and by outgroup members—even when there is clear evidence that discrimination has taken place (Czopp & Monteith, 2003; Kaiser & Miller, 2001). Our research indicates that a possible underlying cause for not confronting discrimination may be the fact that people who do not directly suffer from discrimination, even ingroup members, do not perceive the situation as equally
illegitimate and therefore may not see the need to address discrimination. Indeed research by Kappen and Branscombe (2001) also indicates that perceptions of (personal) illegitimacy are vulnerable to cues other than the disadvantage of the group. Hence, unwillingness to report discrimination against others may, in part, be due to differential perceptions of the injustice of the situation. The more far-reaching consequence thereof is that individuals are unlikely to address group disadvantage unless they personally suffer from it. In fact research on the ‘queen bee effect’ has shown that females in academia who reached higher level positions (thus escaping the disadvantage of their group) were more likely to hinder rather than help other members of their group (i.e., young female faculty) achieve similar positions (Ellemers, van den Heuvel, de Gilder, Maass, & Bonvini, 2004). Our research complements these findings by showing that once a positive individual outcome has been achieved, perceptions of injustice and group disadvantage are reduced, and group members may be less likely to support other personally disadvantaged group members.

Limitations

One of the limitations of the present research may be that we cannot exclude the possibility that our results in Study 1 are influenced by social comparison processes. In other words, do people feel better about personal failure because they realize that other group members have done equally badly and better about personal success because they have done better than other group members? Although this is a possibility, a social comparison approach would not necessarily predict the differences we find in attributions to personal characteristics versus group-based treatment. Thus our attributional approach can account for both the differences in attributions and the emotional responses we find.

A further limitation can be that we look at one specific disadvantaged group, namely women. Whereas in the area of subtle discrimination it is generally assumed that responses to discrimination generalize across groups, there are some differential results across groups concerning how ethnic minorities versus women respond to positive feedback. For example, it has been found that African Americans (Crocker et al., 1991, Study 2) experienced positive feedback as negative—because they attributed their success to group membership rather than ability. This is contrary to the results Crocker et al. found for women (1991, Study 1), as well as to the results of our study indicating that information about group advantage did not dampen the experience of personal success. One reason may be that members of minority groups, as opposed to women, are more aware of the fact that people may try to compensate their prejudice by being friendly or supportive (i.e., Gaertner & Dovidio, 1977). In view of affirmative action policies it would be interesting to consider whether the possibility of compensative behaviour does induce similar reactions in women.

CONCLUSIONS

The present research shows that in contexts in which people are focused on individual benefits and ability they do not suffer from the fate of their group. In fact information about group membership can reflect positively on the interpretation of one’s personal outcomes. This focus on the self extends to perceptions of general illegitimacy of the treatment of other group members. Knowledge about the circumstances in which individuals experience group disadvantage as most illegitimate can help to inform us whether—and when—group members are unlikely to address and/or support other group members in their quest to counter discriminatory treatment.

ACKNOWLEDGEMENTS

This research was made possible by grant 016-025-021 awarded by the Dutch National Science Foundation (NWO) to Manuela Barreto. We thank Bernard Nijstad and the Leiden labgroup for their comments on prior versions of this manuscript.
REFERENCES


