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Engaging in upward and downward comparisons as a determinant of relative deprivation at work: A longitudinal study

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Abstract

A longitudinal study was conducted among 93 nurses to determine the role of comparing one's performance with that of one's colleagues in the increase versus decrease of perceived relative deprivation at work over a period of one year. Relative deprivation at T2 had increased particularly among those high in social comparison orientation (Gibbons & Buunk, 1999) who at T1 (1) more frequently engaged in upward comparisons; (2) more frequently derived positive as well as negative feelings from such comparisons; and (3) more frequently derived negative feelings from downward comparison. Moreover, engaging in downward comparison also led to an increase in perceived relative deprivation at T2. This study is one of the few to find evidence for longitudinal effects of social comparison activity, and the first to find that such effects occur only for those high in social comparison orientation.

Keywords: Relative deprivation; Social comparison orientation; Nurses; Relationships within organization

1. Introduction

People may employ various criteria to evaluate the accomplishments in their career negatively. For example, they may believe that the organization they work for

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has treated them unfairly. They may imagine the possible ways in which things might have worked out better. They may consider their future prospects for career progress as quite grim. When one's career accomplishments are evaluated negatively on the basis of criteria such as perceived unfair treatment, the perception that things might easily have been different, and the assessment that one's situation is unlikely to improve, a state of *relative deprivation* is said to occur (e.g., Buunk & Janssen, 1992; Crosby, 1984; DeCarufel, 1986; Folger, 1986; Olson & Hafer, 1996). How one perceives how one is doing in comparison with others is generally assumed to be a key determinant of relative deprivation. The literature on relative deprivation in organizations has focused particularly on what may be referred to as comparisons of *outcomes*, such as salary, secondary benefits, and opportunities for career advancement, and it is usually assumed that relative deprivation is enhanced by the perception of having less favorable outcomes than relevant comparison targets (e.g., Crosby, 1984; Olson & Hafer, 1996). The present research takes a different angle by highlighting the role of social comparison of one's *performance* with that of others in fostering perceptions of relative deprivation. In the present context, performance refers to how competently and adequately one is doing one's work. In a longitudinal study among nurses, we examined how social comparisons with others who perform better than oneself (upward comparisons), and with others who perform worse than oneself (downward comparisons), may lead over time to an increase in perceived relative deprivation in one's career, and how this depends on the feelings evoked by these comparisons. Moreover, we examined whether social comparisons particularly affect individuals with a dispositional tendency to compare themselves with others.

2. The frequency of upward and downward comparisons

In their daily work life, most individuals will sometimes come across others who are performing better than themselves, and they will sometimes come across others who are performing worse than themselves. Some people may just ignore that they are better or worse off than their co-workers, while others may be rather preoccupied with how they are doing in comparison with their co-workers (e.g., Goodman, 1977). In general, it seems relatively unlikely that individuals who seldom engage in social comparisons with their colleagues will easily perceive themselves as relatively deprived, simply because they will not have an awareness of their situation in comparison to that of others. In contrast, those who are constantly assessing their performance in comparison with those of others may rather easily find a reason to feel deprived, especially when they engage in upward comparisons as this would provide them with a high reference point against which their own situation looks pale. Thus, we reasoned that the higher the *frequency* of engaging in comparisons with others who are performing better than oneself, the more likely an increase in relative deprivation at work will occur because such comparisons may induce a relatively unfavorable evaluation of one's situation. As far as we are aware off, no research thus far has assessed the frequency with which individuals engage in social comparisons at work in relation to perceptions of deprivation. Most research on relative deprivation

in organizations has examined to what *extent* individuals at work feel that they are doing better or worse than others (e.g., Dittrich & Carrell, 1979; Lee & Martin, 1991; McKenna, 1987; Moore, 1991; Steil & Hay, 1997; Sweeney, McFarlin, Dean, & Inderrieden, 1990). As has been noted by Wood (1996), this does in itself not say anything about if, and how often, individuals compare themselves with others. A similar critique applies to measures assessing perceived inequity in organizations (Geurts, Buunk, & Schaufeli, 1994).

3. Feelings evoked by social comparisons

We reasoned that an increase in relative deprivation will not depend only on how often one engages in social comparisons of one's performance as such, but also on the *feelings* that occur as a result of such comparisons. The common assumption in theorizing on social comparison and relative deprivation has been that downward comparisons will predominantly generate positive feelings, for example by boosting self-esteem and by inducing pride (e.g., Gibbons, 1986; Gilbert, Giesler, & Morris, 1995; Klein, 1997; Kulik & Gump, 1997; Morse & Gergen, 1970; Wills, 1981), and that upward comparisons will primarily inducing negative feelings, for example by reminding one that one is inferior and by evoking envy (e.g., Diener & Fujita, 1997; Smith & Insko, 1987; Strack, Schwarz, Chassein, Kern, & Wagner, 1990; Thornton & Moore, 1993). But recent research has demonstrated that when individuals are asked how they felt in response to social comparisons that they have experienced, they also mention positive feelings in response to upward comparison and negative feelings in response to downward comparisons (e.g., Buunk, Collins, Taylor, VanYperen, & Dakof, 1990; Hemphill & Lehman, 1991). For example, individuals who are exposed to a colleague who is performing in an excellent manner may experience positive feelings because they become optimistic that their own situation might improve. Similarly, individuals who are exposed to a colleague who is performing in a poor manner may experience negative feelings, because they become annoyed that they are working so much harder (cf. Blanton, 2000; Buunk, Ybema, Van der Zee, Schaufeli, & Gibbons, 2001c; Pelham & Wachsmuth, 1995; Smith, 2000). In the present research we assessed the global positive and negative feelings evoked by upward and downward comparisons, and we predicted that an increase in relative deprivation is fostered in particular by negative feelings in response to both upward and downward social comparisons. That is, relative deprivation will most likely increase among individuals who feel bad by seeing that others are performing better, for example because they feel envy and frustration, and among individuals who feel bad by seeing that others are performing worse, for example because they feel annoyed and irritated that they themselves are working so much harder.

4. Individual differences in social comparison

While individuals will differ in the frequency with which they compare themselves with their colleagues, and in the frequency with which they derive positive and

negative feelings from such comparisons, the effects of these comparisons upon relative deprivation will be more pronounced for some individuals than for others. That is, for some individuals, social comparisons with their colleagues may occur without consequences for the extent to which they feel deprived in their career. In contrast, for other individuals such comparisons will influence to an important extent their sense of relative deprivation because social comparisons are in general an important basis for evaluating their situation. Social comparison researchers have noted repeatedly that many people claim that they are in general hardly affected by social comparisons (Brickman & Bulman, 1977; Helgeson & Taylor, 1993; Hemphill & Lehman, 1991; cf. Wood, 1996). While some people may not be aware of the fact that they base the way they feel about themselves and their situation upon comparisons with others, many people may be accurate in indicating that social comparisons are for them relatively unimportant. Such differences are captured by the concept of *social comparison orientation* proposed by Gibbons and Buunk (1999). Social comparison orientation refers to the personality disposition of individuals who are particularly interested in how their situation is in comparison to that of others and who base the evaluation of their characteristics primarily on how others are doing. Individuals high in social comparison orientation are characterized by an interest in what others think, and by a sensitivity to how others behave as reflected in the substantial correlations of social comparison orientation with interpersonal orientation (Swap & Rubin, 1983) and with measures assessing self-monitoring (Lennox & Wolfe, 1984). Furthermore, individuals high in social comparison orientation seem to have a strong concern with their own motives and feelings, as well as a sense of uncertainty about themselves, as is apparent from substantial correlations of social comparison orientation with neuroticism and with public and private self-consciousness (i.e., Fenigstein, Scheier, & Buss, 1975). Social comparison orientation is supposed to be a global individual characteristic that is relevant to motivation and behavior in a wide variety of contexts and situations (Gibbons & Buunk, 1999). There is increasing evidence that those high in social comparison orientation are indeed affected more by social comparison information. For example, with increasing levels of social comparison orientation cancer patients respond with stronger feelings to information about other patients (Van der Zee, Oldersma, Buunk, & Bos, 1998), when facing relationship distress, engaging in downward comparisons leads to a higher relationship satisfaction among those high in social comparison orientation (Buunk, Oldersma, & De Dreu, 2001a), and burned out nurses respond more negatively to social comparison information about others who are worse off when they are high in social comparison orientation (Buunk, Ybema, Gibbons, & Ipenburg, 2001b).

We assumed that individuals high in social comparison orientation need, and employ, others relatively more often as a basis to evaluate whether they should feel deprived in their career. Such individuals seem preoccupied with, and uncertain about, their own situation and, at the same time, quite sensitive to how others are doing. Therefore, they will relatively easily show an increase in relative deprivation when often engaging in social comparisons and when interpreting social comparisons in a negative way. Individuals low in such an orientation will, even *if* they engage in social comparisons, not use such comparisons as a major basis to evaluate their

situation. Thus, we predicted that engaging in upward social comparisons, and deriving negative feelings from upward and downward comparisons, will increase the perception of relative deprivation in individuals high in social comparison orientation more than in individuals low in social comparison orientation.

5. The present study

The present research is unique in a number of respects, and is important for a number of reasons. In the first place, while various studies have examined relative deprivation in organizations, in particular with respect to pay satisfaction (e.g., Agarwal, 1993; Beaton & Tougas, 1997; Buunk & Janssen, 1992; Crosby, 1984; Jackson, 1989; Moore, 1993; Sweeney et al., 1990), no studies have addressed the question whether individuals who often compare their performance with that of their colleagues, and who experience negative rather than positive feelings as a result of such comparisons are more likely to become feeling deprived in their career. More knowledge about this issue is not only theoretically important, but may also contribute to preventing perceptions of relative deprivation in organizations. In the second place, although social comparisons seem widespread inside and outside organizations, and although such comparisons have often been identified as important determinants of the way in which individuals evaluate their situation, there have been very few longitudinal studies examining the consequences of social comparison activity. Beginning with the classic study by Morse and Gergen (1970), virtually all evidence for effects of social comparison upon the evaluation of one's situation comes from laboratory experiments and concerns the immediate effects of social comparison. Indeed, evidence for effects over a longer time period of social comparison is scarce. In one longitudinal study among disabled individuals, Buunk and Ybema (1995) found no evidence that those who more frequently engaged in downward comparisons evaluated their situation more positively a year later. The major evidence for long-term effects of social comparisons comes from two independent studies among high school students showed that those students who compared their test results with better performing others, showed an improvement in their test scores at a later point in time (Blanton, Buunk, Gibbons, & Kuyper, 1999; Huguet, Dumas, Monteil, & Genestoux, 2001). Finally, while an increasing number of studies has demonstrated that social comparison orientation may moderate the immediate effects of engaging in social comparisons (e.g., Buunk & Brenninkmeijer, 2001; Buunk et al., 2001a, 2001b, 2001c; Van der Zee et al., 1998), no longitudinal research thus far has examined if social comparison orientation may also moderate less transient effects of engaging in social comparison. To summarize then, we examined how the frequency of engaging in upward and downward comparisons, and the feelings evoked by these comparisons, predicted a change in relative deprivation in a sample of nurses over a period of nine or 10 months. It was hypothesized that frequently engaging in upward comparisons, and deriving negative feelings from both upward and downward comparisons, would lead to an increase in perceived relative deprivation, in particular among individuals high in social comparison orientation.

6. Method

6.1. Sample and procedure

The sample was drawn from a larger study on social climate among health care professionals (such as physicians), and consisted of 93 nurses (26.9% males and 73.1% females) from primary health care centers in the Communidad Valenciana, one of the autonomous regions in Spain. The purpose of these centers, which were first set up in 1984, was to improve the quality of the service by devoting more time to patients and by offering a broad range of services, including family planning and disease prevention. Since the entrance in the European Union, the health care industry in Spain has become more and more similar to that of other European countries. Even more so, in the European context, these health care centers can be considered a relative progressive form of medical care in which various types of medical services are integrated. The majority of the participants were regular nurses (84.9%); the others were assistant nurses (15.1%). They were questioned twice, with nine or 10 months between T1 and T2. The average age of the participants was 38.80 years, and they had been employed as nurses for an average of 15.16 years. They were involved in their current team for an average of 4.26 years. All respondents met daily with patients.

6.2. Measures

The questionnaire contained a number of other scales and questions that are not relevant to the present paper. The social comparison questions used here were posed amidst questions on leadership, social climate and work stress. The correlations between all measures are presented in Table 1.

6.2.1. Frequency of social comparison

To assess the frequency of upward and downward social comparisons, two new questions were formulated that were administered to the respondents at T1: "How often do you compare yourself with others who are performing worse than you are?," and "How often do you compare yourself with others who are performing better than you are?"A 5-point scale was used, with points labeled 1 (*never*), 2 (*seldom*), 3 (*sometimes*), 4 (*regularly*), and 5 (*often*). For the frequency of upward comparison, $M = 2.57, SD = 1.32$; for the frequency of downward comparison, $M = 1.75$, $SD = 0.87$.

6.2.2. Affective consequences of social comparison

To assess the affect evoked by social comparisons, the respondents were presented with Spanish translations of the four questions that were employed in Buunk et al. (2001c). The possible answers were the same as for the frequency of social comparisons. Specifically, to assess the frequency of positive affect evoked by downward comparison, the subjects were asked at T1: "How often does it give you a *pleasant* feeling when you see that colleagues perform *worse* in their work than you do your-

Table 1
Correlations between the study variables

	1	2	3	4	5	6	7	8
Downward comparison								
1. Frequency								
2. Negative affect	.19							
3. Positive affect	.20	−.03						
Upward comparison								
4. Frequency	.43**	.46**	−.02					
5. Negative affect	.11	.20	.35**	.39**				
6. Positive affect	.13	.39**	−.25*	.29**	−.04			
7. Social comparison orientation	.42**	.22*	.20	.40**	.43*	.18		
Relative deprivation								
8. T1	.13	.08	−.00	.23*	.07	.01	.11	
T2	.36**	.12	.08	.25*	.05	−.04	−.09	.47**

* $p < .05$.
** $p < .01$.

self?'' ($M = 1.68, SD = 0.78$). To assess the negative affect evoked by downward comparisons, respondents were asked: ''How often does it give you a *unpleasant* feeling when you see that colleagues perform *worse* in their work than you do yourself?'' ($M = 3.10, SD = 1.10$), Similar questions were asked for negative and positive affect evoked by others performing better than oneself ($M = 2.27, SD = 1.08$ and $M = 2.96, SD = 1.15$, respectively).

6.2.3. Relative deprivation

To assess this variable, a slightly adapted Spanish translation of the scale developed by Buunk and Janssen (1992) was used and administered at both T1 and T2. This scale includes eight items that were based upon the preconditions of relative deprivation formulated by Crosby (1984, 1976) and Folger (1987). The same 5-point scale that was used for the Social Comparison Orientation scale was used to measure the extent to which people agreed with the various statements (see below). The items were: 'I intend to attain more in my career than what I have attained at this moment,' 'At this moment, I have attained less than what I expected in my career,' 'At this moment, I have attained less in my career than I think I deserve,' 'Others with whom I compare myself, have, in general, obtained more in their career than I have,' 'I can easily imagine having attained more in my career if things had developed differently,' 'I do not expect to attain my career goals in the future, 'in so far as I have unfulfilled career needs, these are due to unfair circumstances' and, 'in so far as I have unfulfilled career needs, these are due to unfavorable circumstances and events beyond my control.' The α reliability of the scale was .78, $M = 3.23, SD = 1.33$. As Table 1 shows, relative deprivation at T1 was virtually uncorrelated with the social comparison activity items: all correlations $< .13$, *ns*, except for the frequency of upward comparison, $r = .23, p < .05$.

6.2.4. Social comparison orientation

This construct was measured at T1 by a Spanish 9-item version of the Iowa-Netherlands Comparison Orientation Measure (INCOM; Gibbons & Buunk, 1999). Previous research has provided evidence of the construct, discriminant and concurrent validity of the Dutch and English versions of the scale. The scale does not correlate with social desirability. Sample items are: "I often compare myself with others with respect to what I have accomplished in life," "If I want to find out how well I have done something, I compare what I have done with how others have done," and "I always pay a lot of attention to how I do things compared with how others do things". The items are measured using 5-point scales, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Scale scores were divided by the number of items. In the current sample, $\alpha = .80, M = 3.09, SD = 0.60$, which is comparable to results found with the INCOM in Dutch and American adult samples. As Table 1 shows, social comparison orientation was correlated $r = .40, p < .001$ with the frequency of upward comparisons, $r = .42, p < .001$ with the frequency of downward comparisons, $r = .43, p < .001$ with deriving negative feelings from upward comparison, and $r = .22, p < .05$ with deriving negative feelings from downward comparison. The other correlations with social comparison activity were all $< .20, ns$. Social comparison orientation was not significantly correlated with relative deprivation, $r = .11, ns$.

7. Results

7.1. Data analysis and control variables

To determine whether social comparison activity was longitudinally related to a change in relative deprivation, and whether these effects occurred in particular for individuals high in social comparison orientation, regression analyses were performed. As Table 1 shows, about half of the correlations among the measures for the frequency of social comparison and the affective consequences of social comparison are not significant, suggesting that the six social comparison activity measures reflect in part different processes. Therefore, for each of these measures a separate regression analysis was performed. In each analysis, relative deprivation at T2 was the dependent variable. First, to be able to predict a change in relative deprivation, relative deprivation at T1 was entered as a predictor. In the second step, one of the social comparison activity measures and social comparison orientation were entered as predictors. If a comparison activity measure predicts relative deprivation at T2 above and beyond relative deprivation at T1, it can be concluded that a change in relative deprivation is related to the comparison activity assessed with that measure at T1. A positive β would indicate an increase in relative deprivation; a negative β a decrease in relative deprivation. If social comparison activity predicts a change in relative deprivation independent of individual differences in social comparison orientation, it can be concluded that it is comparing with one's colleagues at work, rather than a general tendency to engage in social comparison, that is responsible for the change.

In the final step, the interaction between the particular social comparison activity and social comparison orientation was entered. Following Aiken and West (1991), before the interaction terms were calculated, both predictor variables (i.e., social comparison activity and comparison orientation) were standardized to reduce possible multicollinearity among the independent and interaction terms as well as to facilitate interpretation of the interaction effects. (There were significant correlations between social comparison orientation and four of the six social comparison activity measures, see Table 1.) If an interaction turned out to be significant, that would imply that the effects of the given social comparison activity upon a change in relative deprivation differs between individuals, depending on their social comparison orientation. To interpret the interactions, the residual scores for relative deprivation were calculated, that is, the scores for relative deprivation at T2 outpartialing the scores of relative deprivation at T1. Next, with the residual scores as dependent variables, the final regression equation was used to calculate the regression lines for the interaction (see Aiken & West, 1991; Cohen & Cohen, 1983). By doing so, we could examine whether the effect of the specific social comparison activity upon a change in relative deprivation is more pronounced among those high in social comparison orientation.

While we deal with the findings for each of the six social comparison activities separately (see Table 2), we also report analyses in which the effect of the frequency of comparison is controlled for when examining the effects of the affect evoked by the comparisons. In this way, it can be ascertained that it is indeed the affect evoked by the comparison, and not engaging in the comparison as such, that is responsible for the observed effects. It may be noted, however, that, as Table 1 shows, while the frequency of upward comparisons was correlated with the feelings evoked by such comparisons, that was not the case for the frequency of downward comparisons.

Table 2
Results of the regression analyses with relative deprivation at T2 as dependent variable[a]

	Downward comparison			Upward comparison		
	Frequency	Positive affect	Negative affect	Frequency	Positive affect	Negative affect
Step 2						
βSCO[b]	−.10	.02	.01	−.05	.03	.04
βSCA[c]	.31**	.06	.09	.20*	−.02	−.03
R^2ch	.08	.00	.01	.03	.00	.00
Step 3						
βSCO × SCA	.06	−.13	.30**	.20*	.28**	.20*
R^2ch	.00	.01	.09	.04	.07	.04
R^2	.28	.21	.29	.26	.26	.23

[a] Deprivation at T1 was entered in step 1 in all regression analyses resulting in a $\beta = .44$, $p < 001$. $R^2\text{ch} = .19$.

[b] Social comparison orientation.

[c] The social comparison activity mentioned in the upper row.

Before the final analyses were conducted, we examined the potential role of a number of control variables, i.e. age, sex, time employed by the organization, and time employed as a nurse. These variables were correlated with the residual scores for relative deprivation. None of the correlations were significant, r's $< .08, p'$s $> .44$. Thus, changes in relative deprivation were not affected by these variables. Therefore, it was not necessary to control for the influence of these variables in the regression analyses.

7.2. Downward comparisons

The frequency of downward comparison appeared to be a predictor of an increase in relative deprivation, $\beta = .31, p < .01$. Those who relatively frequently compared themselves with colleagues who were performing worse than they were, subsequently felt more relatively deprived in their career. There was no main effect of social comparison orientation, nor was there an interaction between such an orientation and engaging in downward comparison (β's of $-.10$ and .06, *ns*).

7.2.1. Negative affect

The frequency with which downward comparison evoked negative affect was not a predictor of a change in relative deprivation ($\beta = .09, ns$), and the same was true of social comparison orientation ($\beta = .01, ns$). There was, however, a significant interaction between both variables, $\beta = .30, p < .01$. Fig. 1 depicts this interaction. Those who relatively frequently derived negative affect from comparing themselves with colleagues who were performing worse than they were, subsequently felt more rela-

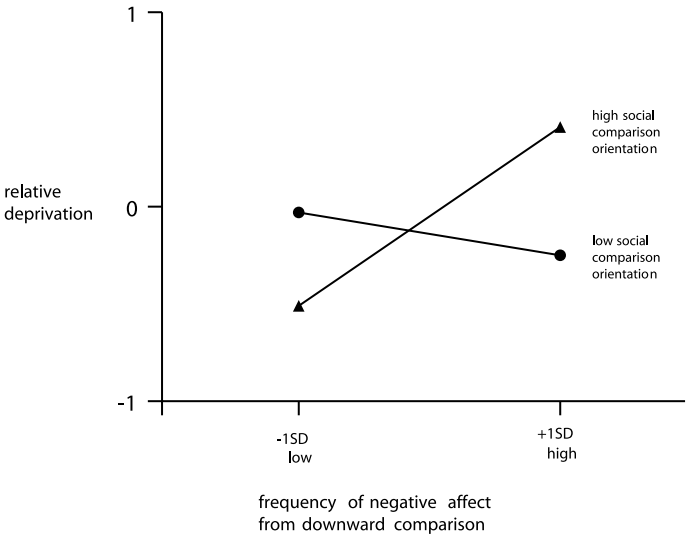

Fig. 1. Effect of negative affect from downward comparison and social comparison orientation at T1 on change in relative deprivation of T2.

tively deprived in their career, but only when they were high in social comparison orientation. The interaction effect remained the same, $\beta = .30, p < .01$, when the regression was repeated with first entering, in addition to relative deprivation at T1, the frequency of downward comparison ($\beta = .27, p < .01$).

7.2.2. Positive affect

The frequency with which downward comparison evoked positive affect was not a predictor of a change in relative deprivation ($\beta = .06$, *ns*), and the same was true of social comparison orientation ($\beta = .02, ns$). There was also no significant interaction between the two variables, $\beta = -.13, ns$. The interaction effect remained virtually the same, $\beta = -.12, ns$, when the regression was repeated with first entering, in addition to relative deprivation at T1, the frequency of downward comparison ($\beta = .27$, $p < .01$).

7.3. Upward comparisons

The frequency of upward comparison appeared to predict an increase in relative deprivation, $\beta = .20, p < .05$. Those who relatively frequently compared themselves with colleagues who were performing better than they were subsequently felt more relatively deprived. While there was no main effect of social comparison orientation, $\beta = -.05, ns$, the interaction between the two variables was significant, $\beta = .20$, $p < .05$. Fig. 2 depicts this interaction. Those who relatively frequently compared themselves with colleagues who were performing better than they were, subsequently felt more relatively deprived, but only when they were high in social comparison orientation.

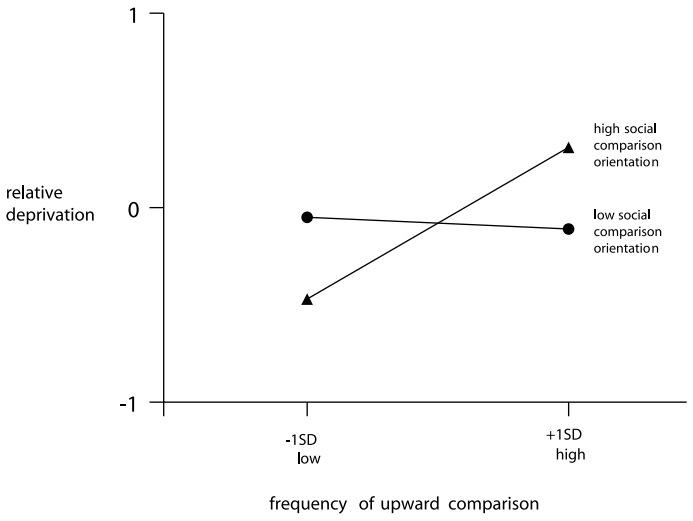

Fig. 2. Effect of upward comparison and social comparison orientation at T1 on change in relative deprivation of T2.

7.3.1. Negative affect

The frequency with which upward comparison evoked negative affect was not a predictor of a change in relative deprivation ($\beta = -.03, ns$), and the same was true of social comparison orientation ($\beta = .04, ns$). However, as was the case with deriving negative affect from downward comparison, there was a significant interaction between the two variables, $\beta = .20, p < .05$. Fig. 3 depicts this interaction. Those who relatively frequently derived negative affect from comparing themselves with colleagues who were performing better than they were, subsequently felt somewhat more relatively deprived when they were high in social comparison orientation, but less deprived when they were low in social comparison orientation. The interaction effect remained virtually the same, $\beta = .21, p < .05$, when the regression was repeated with first entering, in addition to relative deprivation at T1, the frequency of upward comparison ($\beta = .18, p < .05$).

7.3.2. Positive affect

The frequency with which upward comparison evoked positive affect was not a predictor of a change in relative deprivation ($\beta = -.02, ns$), and the same was true for social comparison orientation ($\beta = .03, ns$). There was, however, a significant interaction between the two variables, $\beta = .28, p < .01$. Fig. 4 depicts this interaction. Those who relatively frequently derived positive affect from comparing themselves with colleagues who were performing better than they were, subsequently felt more relatively deprived when they were high in social comparison orientation, but less deprived when they were low in social comparison orientation. The interaction effect remained the same, $\beta = .28, p < .01$, when the regression was repeated with first

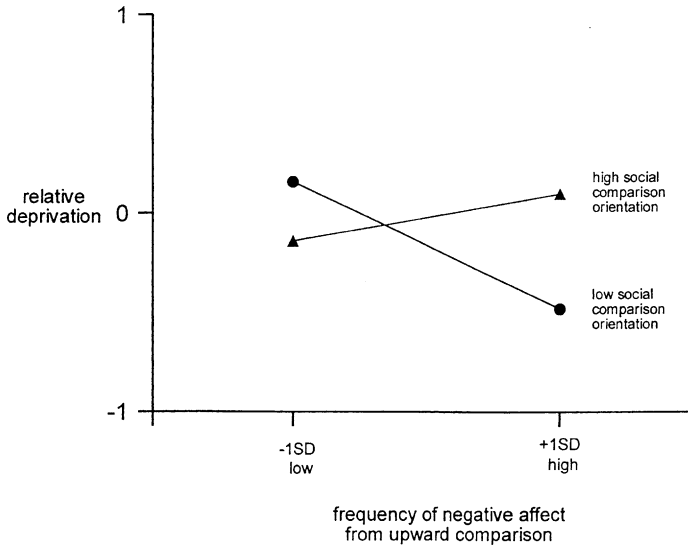

Fig. 3. Effect of negative affect from upward comparison and social comparison orientation at T1 on change in relative deprivation of T2.

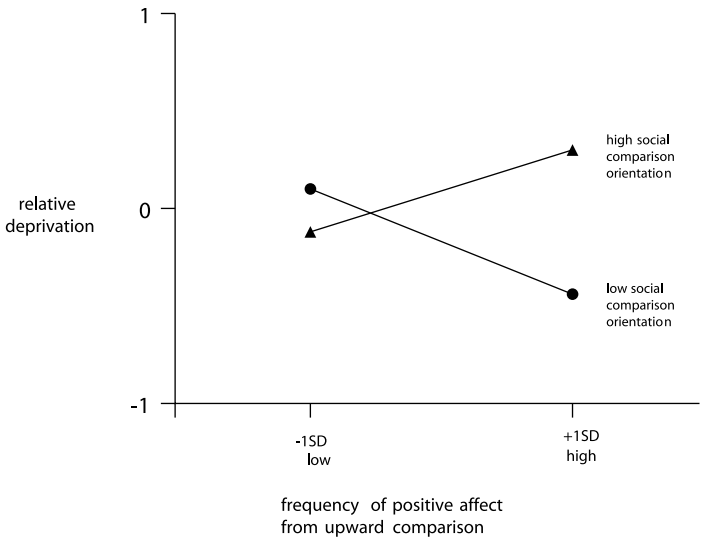

Fig. 4. Effect of positive affect from upward comparison and social comparison orientation at T1 on change in relative deprivation of T2.

entering, in addition to relative deprivation at T1, the frequency of upward comparison ($\beta = .18, p < .05$).

8. Discussion

The present findings seem to suggest that engaging in upward and downward social comparisons of one's performance with one's colleagues may have effects on how deprived one feels in one's career, and that such effects are not due to variables such as age, sex, time employed by the organization, and time employed in one's profession. Support was found for the prediction that relatively frequently engaging in upward comparisons would be accompanied by an increase in perceived relative deprivation about a year later, in particular for those high in social comparison orientation. Moreover, support was also found for the prediction that relatively frequently deriving negative affect from both upward and downward comparisons would be accompanied by an increase in relative deprivation, in particular for those high in social comparison orientation. That is, individuals high in social comparison orientation who relatively more often engaged in comparison with colleagues performing better than they did, and who derived relatively more negative feelings from upward and downward comparisons, perceived more relative deprivation about a year later. Moreover, the feelings derived from the comparisons appeared to play an independent role in predicting changes in relative deprivation. That is, the effects of deriving negative feelings from upward and downward comparisons were upheld when controlling for the frequency of, respectively, upward and downward comparisons.

Despite the support for the predictions, there were two unexpected findings. First, also engaging in downward comparisons was accompanied by an increase in relative deprivation. Why would this be the case? It is possible that those who relatively frequently engage in downward comparisons use the information obtained from such comparisons to evaluate their own situation in a relatively unfavorable way, for instance by having thoughts such as 'I am stupid to perform so well while others are doing such a bad job.' The second unexpected finding was that deriving *positive* affect from upward comparisons was accompanied by an increase in relative deprivation among those high in social comparison orientation. One possible explanation for this finding is the following. It is much more socially desirable to admit that one feels positively rather than negatively when seeing others perform better, and social comparisons may seldom evoke only negative or only positive responses. While one may admire someone who is performing better than oneself, such admiration may at the same time imply that one realizes that oneself is the doing worse, which may eventually contribute to a sense of relative deprivation. Indeed, the fact that for all three measures of upward comparison a moderating role of social comparison orientation was established suggests that, in general, the type of affect derived from upward comparison does not seem to matter. That is, those who more frequently were affected by upward comparison in either a negative or a positive way, became more relatively deprived when they had a strong dispositional tendency to compare themselves with others.

It is noteworthy that we found rather different effects for individuals high and low in social comparison orientation: for four of our six measures, the effects of social comparison at work were stronger for those high in social comparison orientation, a individual difference variable that is related to, among others, self-monitoring (Gibbons & Buunk, 1999). Our results seem to suggest that particularly individuals with a strong dispositional tendency to compare themselves with others changed their perception of their situation over time, especially as a result of engaging in upward social comparison with their colleagues and of experiencing various feelings in response to such comparisons. In addition, deriving negative feelings from downward comparisons also led to an increase in relative deprivation only for those high in social comparison orientation. By providing these findings, the present study contributes to the as yet small literature documenting the moderating role of social comparison orientation in a variety of samples and contexts. For example, it has been found that with increasing levels of social comparison orientation, cancer patients respond with more positive and negative mood to brief bogus interviews with other cancer patients (Van der Zee et al., 1998), and that burned out nurses respond with more negative mood to exposure to a worse-off nurse only when they are high in social comparison orientation (Buunk et al., 2001a, 2001b, 2001c). However, while these studies only demonstrated that social comparison orientation may moderate the immediate, probably temporary, effects of social comparisons, the present study is the first study to suggest that social comparison orientation may have also be relevant to understanding less transient effects of engaging in social comparison. Apparently, there are robust individual differences in the inclination to base one's self-evaluation upon social comparisons, and these differences seem to determine in part the effects of engaging in social comparison in a variety of different contexts.

Our findings may have an important implication for research on social comparison. That is, our research suggests that it is indeed particularly the *combination* of the tendency to compare oneself with others in general and social comparison specifically directed at one's colleagues at work that predicts changes in relative deprivation. This is a rather relevant finding because, without including the measure for individual differences in social comparison orientation (Gibbons & Buunk, 1999), or without including measures assessing social comparisons at work, there would have remained more ambiguity as to the exact meaning of the findings. It would have been impossible to establish whether effects were due to a general tendency to engage in social comparisons, or to specific social comparisons with one's colleagues. Remarkably, those low in social comparison orientation who relatively frequently derived positive and negative feelings from upward comparison became *less* relatively deprived over time. We had expected that such individuals would show no change in their level of relative deprivation as social comparisons would hardly affect them. There does not seem an easy explanation for these findings. It is as if those low in social comparison orientation interpret particularly upward comparisons, when they engage in them, in a more positive way, even when they at first experience a negative feeling in response to such comparisons. It is obvious that the precise way in which individuals high and low in social comparison orientation process information about others would constitute an important issue for future research. Nevertheless, it seems in general important to consider individual differences in social comparison orientation when assessing effects of engaging in social comparison.

Our findings may also have a number of implications for current theorizing on relative deprivation and social comparison in organizations (see Agarwal, 1993; Beaton & Tougas, 1997; Crosby, 1984; Jackson, 1989; Moore, 1993; Sweeney et al., 1990). To begin with, while the literature on relative deprivation would imply that especially comparisons of one's outcomes provided by the organization (such as salary and secondary benefits) would induce an increase in relative deprivation, the present research seems to indicate that engaging in comparisons of one's performance with that of others may, at least for individuals high in social comparison orientation, lead to an increase in relative deprivation at work. While Buunk and Janssen (1992) documented the role of relative deprivation in fostering depression, the present research provides some indication as to who are more likely to develop feelings of relative deprivation within organizations, i.e., individuals who are in general inclined to base their self-evaluation upon social comparisons, and who (1) frequently tend to monitor how adequately their colleagues are doing their job in comparison to themselves, (2) derive negative feelings from such comparisons. Furthermore, although it has been suggested by various authors that upward comparisons in particular may be beneficial in that they induce positive feelings such as hope, inspiration, and optimism (e.g., Blanton et al., 1999; Buunk & Ybema, 1997; Collins, 1996; Taylor & Lobel, 1989), our findings suggest that upward comparisons, even when they are associated with positive feelings, may enhance the chance of becoming more relatively deprived. Finally, although downward comparisons may improve mood in the short run (e.g., Gibbons, 1986; Wills, 1981), our results seem to indicate

that deriving a positive mood from downward comparison does not necessarily prevent a negative evaluation of one's situation in the long run, and, moreover, that downward comparisons may even enhance the sense of relative deprivation.

The present study has a number of potential limitations. First, the nature of the positive and negative affect in response to social comparisons is not fully clear at present, and clearly needs to be examined in future research (cf. Smith, 2000). Second, the possibility cannot be excluded that a third variable, for instance, a lack of optimism or engaging in counterfactuals in general (Olson, Roese, Meen, & Robertson, 1995), is in part responsible for the effects of social comparison activity. However, even if that were the case, it would still seem theoretically quite likely that in one way or the other, social comparison activity would mediate the effects of such a variable upon changes in relative deprivation. Furthermore, the sample was not large, and the findings may be restricted to this specific group in this cultural setting. Finally, except for social comparison orientation that was measured with an existing scale (Gibbons & Buunk, 1999), our social comparison measures were all one-item scales that may not have an optimal level of reliability. In addition, it has been questioned whether the questions we employed in the present study constitute a valid way of assessing social comparison processes (Wood & Van der Zee, 1997). Although we certainly agree that more elaborate ways of measuring social comparison might be preferable, and although multi-item measures for the processes examined here are now available (Van der Zee, Buunk, Sanderman, Botke, & VandenBerg, 1999) the present research testifies to the validity of the measures that we used by showing that they are associated with changes of relative deprivation in work settings. For practical and theoretical reasons, these are encouraging findings as they suggest that it is possible to assess in real-life settings with relatively simple methods social comparison processes that have noticeable effects over a period of about a year.

Despite its potential limitations, the present research may contribute to the literature in various ways. It is one of the few studies to examine over an extended period of time the potential consequences of social comparisons. While previous research has shown that those who compare their test results with better performing others, show an improvement in their test scores at a later point in time (e.g., Blanton et al., 1999; Huguet et al., 2001), the present study shows that in addition to the frequency of engaging in upward and downward comparisons, also the feelings derived from such comparisons may have long term effects. Of course, future research will have to replicate these findings, and will have to clarify how precisely these effects come about. Moreover, the present research may contribute to the literature on organizational processes by highlighting how employees may develop feelings of relative deprivation by comparing their performance with that of their colleagues. It may be important for human resource management to become more aware of the fact that social comparisons may be quite prevalent within organizations, that such comparisons may influence the mood of employees, and, most of all, that social comparison processes may have negative consequences for how employees evaluate the attainments in their career, especially for those who have a strong tendency to base their self-evaluation on comparisons with others. Widespread feelings of relative deprivation within an organization may be detrimental for motivation and commitment and

may foster absenteeism and turnover. The present research may contribute to the development of counseling interventions in which individuals are taught not to focus too much on how they are performing their duties in comparison with others, but, rather to focus on how they themselves can perform their duties as good as possible.

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