

Keeping Up With the Joneses:
A Field Study of the Relationships Between Upward, Lateral, and Downward
Comparisons and Pay Level Satisfaction

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Abstract

We examined the relationship between the direction of pay comparisons and pay level satisfaction. We hypothesized that upward pay comparisons would significantly predict pay level satisfaction even when other comparisons were controlled for. Results supported this hypothesis. Analyses showed that individuals who were paid much less than their upward pay comparison were dissatisfied with their pay level. The highest levels of pay level satisfaction were observed when actual pay was congruent with the upward comparison pay level. There was also evidence that individuals who were paid much more than their upward pay comparison were dissatisfied with their pay level. However, the negative effects of overreward on pay satisfaction were considerably smaller than those of underreward.

Key words: Pay level satisfaction; Social comparisons; polynomial regression analysis.

Keeping Up With the Joneses: A Field Study of the Relationships Between Upward, Lateral, and Downward Comparisons and Pay Level Satisfaction

Pay is obviously a factor of great importance in the workplace (Rynes, Gerhart, & Minette, 2004) and has been studied as a determinant and correlate of many different workplace variables. One of the major outcomes of pay is pay level satisfaction, which has also been the focus of much research. In turn, pay level satisfaction has been linked to other outcomes of interest. For example, in their recent meta-analysis, Williams, McDaniel, and Nguyen (2006) found that pay level satisfaction was significantly correlated with several important organizational outcomes, including turnover intentions ($\rho = -.31$), voluntary turnover ($\rho = -.17$), and objective performance measures ($\rho = .25$).

Several studies have also reported that even controlling for other factors, pay level satisfaction is related to various criteria of interest (e.g., Currall, Towler, Judge, & Kohn, 2005; Lum, Kervin, Clark, Reid, & Sirola, 1998; Motowidlo, 1983). As summarized by Heneman and Judge (2000) in their review of this literature, "pay dissatisfaction can have important and undesirable impacts on numerous employee outcomes" (p. 85).

Despite the importance of pay level satisfaction, it is still unclear exactly what factors determine pay level satisfaction, and how they operate. In their meta-analysis of pay level satisfaction, Williams et al. (2006) found that actual pay was only moderately correlated with pay level satisfaction, with a corrected correlation of .29. Given this fairly modest relationship between pay and pay level satisfaction, one approach that has been taken is to consider relevant pay comparisons. Using social comparison theory, researchers have suggested that the pay level received by referent others is likely to determine pay level satisfaction.

Social comparison theory assumes that in evaluating oneself on a particular attribute, one compares his or her level to relevant others' level on that attribute (Collins, 1996). While much of this vast literature focused on psychological attributes other than pay (e.g., perceived well-being and assessments of one's physique), it is clear that this theory is applicable to compensation research (e.g., Oldham, Kulik, Stepina, & Ambrose, 1986).

The initial assumption was that people would most likely compare themselves to the average (Alicke, 2000). In other words, it was assumed that a lateral comparison would be most significant in judging one's level on a particular attribute. Social comparison theory has found that, contrary to this assumption, people often make vertical comparisons, focusing on either upward or downward comparisons and generally neglecting the lateral component of social comparison. Subsequently, a downward comparison was assumed to be the dominant mechanism used (Wills, 1981). The underlying explanation was that by making a downward comparison, people would have a more favorable perception about their own level of the attribute. For example, individuals with a minor illness were more likely to compare themselves to people who have life-threatening illnesses. In turn, this would enhance their perceptions of well-being (e.g., Wood, Taylor, & Lichtman, 1985). It was therefore expected that generally, individuals would make downward comparisons in evaluating their level on any particular attribute, in an attempt to enhance their positive feelings.

In recent years, however, several studies have called the *exclusiveness* of downward comparisons into question (Gibbons et al., 2002; Suls & Wheeler, 2000; Wheeler & Miyake, 1992). These studies revealed that individuals often also engage in upward comparisons. The tendency to compare with others who are doing better appears to be motivated by both self-improvement and self-enhancement strivings (Collins, 1996; Helgeson & Mickelson, 1995; Taylor, Neter, & Wayment, 1995). Research on cancer patients, for example, shows that they often make upward comparisons when choosing interaction partners among other cancer patients (e.g., Molleman, Pruyn, & van Knippenberg, 1986). Thus, despite the fact that making an upward comparison may actually lead one to feel less satisfied with the amount of the attribute one has, people do make upward comparisons on a regular basis.

In contrast with the research in social psychology, where the focus has been on the direction of the comparison, most compensation research has addressed the referent others that employees use in determining their pay satisfaction. This focus has produced a large list of possible referents, including family, friends, neighbors, supervisors, internal (within the company) comparison groups, external (from other firms) comparison groups, and people

with similar versus dissimilar educational backgrounds (Berkowitz, Fraser, Treasure, & Cochran, 1987; Blau, 1994; Dornstein, 1998, 1989; Goodman, 1974; Lee & Martin, 1991; Oldham et al., 1986; Rice, Philips, & McFarlin, 1990; Ronen, 1986; Scholl, Copper, & McKenna, 1987; Singh, 1994; Summers & DeNisi, 1990; Sweeney & McFarlin, 2005; Sweeney, McFarlin, & Interrieden, 1990). The typical pay comparison study, then, has focused on the type of referent being used. There are many actors in employees' social networks, all of whom have the potential to influence them. This has resulted in an ever-expanding list of the type of referents used, demonstrating that people rely on a wide range of significant others in making pay comparisons. One study even made a distinction between 26 characteristics of referent others (Tremblay, St-Onge, & Toulouse, 1997). In their recent meta-analysis, Williams et al. organized this range of possible referents into internal, external, or general comparison categories, concluding that internal and external comparisons related more strongly to pay satisfaction ($\rho=.94$ and $\rho=1.00$) than general comparisons ($\rho=.75$).

Now that most of the potential pay referents have been identified, it is time to consider other issues in the area of pay comparisons. Unlike social psychology, one pressing issue that has received limited attention in compensation research is the direction of the comparison. The issue of direction needs to be explored in greater detail because even within any single category of referents used (e.g., employees performing the same job within one's organization), there will generally be a range of salaries (Rynes & Milkovich, 1986). An employee could therefore potentially choose among various points on the range, such as the average pay (i.e., a lateral comparison), the top end (i.e., an upward comparison), or the bottom end of the range (i.e., a downward comparison) of a group of referents. Regardless of the reference point chosen, however, the assumption going back as far as Lawler (1971) is that the higher one's perception of what the relevant others receive, the less satisfied one will be with his or her salary. Thus, "the more salary a person perceives his referent other as receiving, the more dissatisfied he will be with his own present pay" (Lawler, 1971, p. 217).

The focus of this paper, then, is on the direction of comparison in the pay context. Although there is a dearth of research on this issue in I/O psychology, a few studies have considered this question in the context of compensation. Ordonez, Connolly, and Coughlan (2000) conducted a laboratory study examining the effect of various levels of salary offers to different hypothetical candidates. In accord with social comparison theory, and Lawler (1971), they reported that hypothetical job candidates depicted as having a higher starting salary had a strong, negative effect on satisfaction with one's hypothetical starting pay. Learning that other hypothetical candidates had a much lower starting salary produced a positive, but weaker, effect on satisfaction with one's own starting pay.

Hagerty (2000) performed an indirect study of referent others, by examining the relationship between respondents' subjective well-being and their community's 20th percentile (i.e., lower end), median (i.e., lateral) and 80th percentile (i.e., upper end) income. He found that self-reported happiness was roughly equally predicted by both the lower end and the upper end of the community's income level, suggesting that both downward comparisons and upward comparisons were equally important in determining subjective well-being. However, income levels were not directly estimated by respondents; rather, they were obtained from actual records. Furthermore, income levels were based upon all occupations in the relevant geographic area, not just the respondents' occupational group. Finally, Hagerty only considered subjective well-being, not pay level satisfaction, as an outcome.

Rice et al. (1990) reported a field study in which respondents were directly asked about the compensation of others in their occupation. Specifically, they asked participants what their "minimum acceptable" salary was, which is probably comparable to a downward comparison. They also asked participants what they thought the average pay was for their occupation, which is probably similar to a lateral comparison. They found that the minimum acceptable pay was significantly related to pay satisfaction, highlighting the role of downward comparison in pay satisfaction. Rice et al. did not, however, have any measure comparable to an upward comparison.

Although the compensation research summarized above is inconclusive, there are a number of theoretical reasons to believe that upward comparisons will also emerge as a significant predictor of pay level satisfaction, *even when lateral and downward comparisons are taken into account*. In other words, we believe that when it comes to pay, upward comparisons remain an important factor in determining pay level satisfaction, *even when other comparisons are controlled for*. First, most people believe that they are above average performers (e.g., the Lake Wobegon effect; Alicke, Klotz, Breitenbecher, Yurak, & Vredenburg, 1995; Harris & Schaubroeck, 1988) and therefore should be more likely to compare themselves to the upper end of a pay distribution, which they would deem more relevant (Collins, 1996). According to this approach, then, an upward comparison is generally a very relevant comparison. A second theoretical approach focuses on which type of comparison would provide the most useful information. Specifically, Alicke (2000) observed that determining one has exceeded someone who is presumably doing far better on that particular attribute is far more informative than other comparisons. This argument would suggest that an upward comparison of pay is generally a particularly informative source of information.

Hypothesis 1: Upward comparison will significantly predict pay level satisfaction when controlling for lateral and downward comparison.

In addition to neglecting the direction of pay comparisons, past research on the relationship between referents' pay and pay level satisfaction also suffered from two methodological problems. First, traditional studies involving multiple standards of comparison have generally used respondents' perceptions of discrepancy to operationalize the discrepancy concept (e.g., Ronen, 1986; Scholl et al., 1987), but there were no measures of the standards themselves. For example, participants in Scholl et al.'s study reported whether their salary was more than, less than, or equal to each of several standards of comparison (e.g., the salary received by others doing the same job). There was no effort to measure the salary that respondents actually believed others were receiving. As noted by Rice, Phillips, and McFarlin (1990, p. 388): "By relying solely on reported discrepancies between actual

salary and selected standards of comparison, researchers may force respondents to make comparisons that they might not normally make.” Therefore, following recent calls for better measurement of standards of pay comparison (Williams et al., 2006), our study methodology contributes to previous studies by collecting separate measures of actual salary and estimates of referent pay levels consistent with the two directions of social comparisons.

Second, the comparison between referent others’ pay and one’s own pay level is a congruence issue; in the past, most research studies examining congruence issues have used a difference score model or a variant of this approach. The use of difference scores has been criticized, however, on various grounds, including low reliability, ambiguous interpretation, confounded results, and unrealistically restrictive constraints (e.g., Edwards, 1994, 2001, 2002). Thus, previous pay comparison studies examining pay congruence have deficiencies that prevent them from adequately analyzing and interpreting the results. These problems can be avoided by using polynomial regression analysis, which uses components of difference scores supplemented by higher-order terms to represent relationships of interest (Edwards, 1994). One of the benefits of polynomial regression is that the effect of congruence on an outcome is treated not as a two-dimensional function, but instead as a three-dimensional function surface relating the two components (referent’s pay and own pay level) to the outcome (pay level satisfaction). More specifically, the unstandardized regression coefficients from a polynomial regression equation can be used to generate three-dimensional surface graphs of the relationship between two paired entities (i.e., referent’s pay and own pay level) and an outcome (pay level satisfaction). These graphs allow researchers to examine the precise nature of congruence relationships (Atwater, Ostroff, Yammarino, & Fleenor, 1998; Edwards & Rothbard, 1999), which is important given that one of the aims of this paper is to examine complex congruence relationships for referent’s pay and one’s own pay level.

To our knowledge, no other studies in the compensation area have used this more sophisticated approach (for an excellent introduction to polynomial regression, see Edwards, 2002) to examine the effects of pay comparisons. By using the polynomial regression

approach, then, we can make and test predictions as to how pay level satisfaction may change at specific levels of congruence between actual pay and a specific comparison group. In keeping with Lawler (1971) and research on upward comparisons, we expect that individuals will be less satisfied when their pay level falls below the pay level of the upward comparison. As their pay comes closer to the pay of the upward comparison, we expect that their pay level satisfaction level will increase.

However, when individuals perceive that their pay outpaces the pay of even top paid referent others, they may feel dissatisfied with their pay as they believe that their higher status will make others feel envious, discouraged or embarrassed. This expectation is based on a growing body of social psychological literature that indicates that individuals experience ambivalence or discomfort when they outperform others (Exline et al., 2004; Exline & Lobel, 1999; Exline & Lobel, 2001). By the same token, then, individuals who believe that they are paid more highly than an upward comparison may feel guilty or concerned that they will be negatively viewed by others in their organization. As a result, their pay level satisfaction may be somewhat diminished.

Although this reasoning is conceptually in line with the original tenets of equity theory (Adams, 1965), there is currently little evidence for possible negative effects of overreward on employee attitudes and behavior. For instance, in their summary of the current state of the art in compensation research Gerhart and Rynes (2003, p.137): "There is little evidence that people react in any practically significant way to overreward, particularly in field settings." However, it should be noted that empirical research on the relation between overreward and pay satisfaction does not enable us to draw definite conclusions. For instance, a recent meta-analysis on pay satisfaction scrutinized 11 relevant studies but concluded that "these samples did not provide an adequate test of the impact of overreward on pay level satisfaction" (Williams et al., 2006, p. 404). One recent study hints at the possible unanticipated negative effects of overreward. In a laboratory scenario study, students reported less pay fairness when they earned more than an internal and external pay comparison (Shore, Tashchian, & Jourdan, 2006).

Hypothesis 2a: When people perceive that they are paid less than the upward comparison, they will be dissatisfied with their pay level.

Hypothesis 2b: As pay level comes closer to the upward comparison, individuals will become more satisfied with their pay level, leading to the highest pay satisfaction when pay level is congruent with the upward comparison.

Hypothesis 2c: As pay exceeds the upward comparison, pay level satisfaction will decline.

Method

Sample and Procedure

US Sample. We collected data using a panel from the Study Response Project. The Study Response Project is based on individuals who have registered to participate in surveys administered over the Internet. Participants, who work for a large variety of organizations, are invited to complete a particular survey when they meet the requirements of the study. To further ensure their motivation, they are eligible to win small cash prizes, which are randomly distributed. Several published studies have used data collected from this source (e.g., Piccolo & Colquitt, 2006; for additional information, see www.studyresponse.com).

We restricted our survey to employed people with prior work experience. This produced a sample of 321 respondents (56% females and 44% males), representing about a 33% response rate. The mean age of the respondents was 36.3 years and their mean work experience was 15.2 years. The three largest job categories were technical work (30%), clerical jobs (17%), and executive positions (16%). The remaining job categories included production, service, and sales employees. Eighteen percent of the sample indicated "other." In terms of ethnicity, our sample consisted of 86% Whites, 5% Blacks, 3% Hispanics, and 3% Asians. Three percent listed "other" as their ethnic background.

Belgian sample. Participants were employees of a Belgian division of a multinational company in the chemical industry. Eighty employees were sent a survey packet through internal mail containing a cover letter, a stamped return envelope, and the questionnaire. Of the 80 employees who received surveys, 67 provided usable data, representing a response

rate of 84%. The mean age of the respondents was 40.2 years and their mean work experience was 15.3 years. In addition, 53% held at least an undergraduate degree.

Measures

The same measures were used in the US and the Belgian sample with the exception that in the Belgian sample all salary-related items concerned Euros instead of dollars.

Actual pay level. In the US sample, respondents indicated the range of their actual salary level on a scale from 1 (< \$10,000) to 8 (>\$70,000). In the Belgian sample, the actual salary level scale ranged from 1 (< 1375 €) to 14 (> 5750 €).

Pay comparisons. To assess pay comparisons, we focused on internal comparisons (i.e., workers in the same company with similar experience and jobs) and external comparisons (i.e., workers in different companies with similar experience and jobs). Our rationale was that recent research has increasingly focused on these two comparisons (e.g., Sweeney & McFarlin, 2005) and Williams et al. (2006) found that most past research has focused on these two comparison groups. Furthermore, Williams et al. asserted that internal and external comparisons are likely to be the most salient to employees.

As noted above, we adopted the approach of Rice et al. (1991) for inferring upward and downward comparisons without artificially prompting participants to make comparisons that they would not normally make. Respondents were instructed to rank people with similar experience and jobs in *different* companies into five groups, ranging from the highest paid to the lowest paid. Next, to assess upward comparisons they were asked to indicate how much they thought those in the *highest* paid group earned on average (in dollars/Euros). To assess downward comparisons, they were instructed to indicate how much they believed those in the *lowest* paid group earned on average (in dollars/Euros). They were asked to also indicate how much they thought those in the middle group (i.e., lateral comparisons) earned on average (in dollars/Euros). They were then asked to do the same for people with similar experience and jobs in the *same* company.

Given the high correlation between salaries for people working in different and same companies in the US and Belgian sample, we combined our items to form a two-item

composite highest paid group salary ($\alpha = .88$ and $.97$, respectively), a two-item composite average paid group salary ($\alpha = .69$ and $.97$, respectively) and a two-item composite lowest paid group salary ($\alpha = .87$ and $.95$, respectively).

Pay level satisfaction. We used the pay level satisfaction scale from the Pay Satisfaction Questionnaire (Heneman & Schwab, 1985). Respondents indicated their degree of satisfaction with pay on a five point scale, ranging from 1 (“*very dissatisfied*”) to 5 (“*very satisfied*”). There were four items. An example item was “My current salary”. The internal consistency of this scale was $.94$ ($.89$ in the Belgian sample).

Results

On the basis of an outlier analysis, three cases were dropped from the US sample as they contributed most to departures of multivariate kurtosis (DeCarlo, 1997). Table 1 presents the means, standard deviations, and correlations among the variables in both samples. Hypothesis 1 asserted that upward comparison will remain a significant predictor of pay level satisfaction even when controlling for lateral and downward comparison. In order to test this hypothesis we conducted a hierarchical regression analysis with pay level satisfaction as the dependent variable. Given the high correlations between lateral and upward comparisons, we first tested for possible multicollinearity problems. Three well-known multicollinearity indices (VIF index, the Tolerance index, and the Condition number) indicated that multicollinearity was probably not a major concern in these analyses. In addition, results remained the same when we dropped the lateral comparison from our model, supporting the robustness of our findings.

As reported in Table 2 (US sample), in the first step demographic variables (age, gender, educational level, and job experience) were entered as control variables. Next, consistent with recommendations of Rice et al. (1990), actual salary was entered. As found in previous research, this variable explained an additional significant amount of variance in pay level satisfaction ($\Delta R^2 = .11$, $F(1,288) = 40.56$, $p < .01$). In the third step, we added the downward, lateral and upward standards of comparison. These predictors explained an additional 3% of the variance ($F(3,285) = 3.01$, $p < .01$) in pay level satisfaction beyond the

control variables and actual pay level. In terms of predictors of pay level satisfaction, only the upward standard of comparison was statistically significant ($\beta = -.23, p < .05$), supporting hypothesis 1. The regression weight was negative, indicating that the more money one thought the upward comparison group earned, the lower one's pay level satisfaction was.

As can be seen in Table 2, the regression results were replicated in the Belgian sample. The downward, lateral and upward standards of comparison explained an additional 13% of variance ($F(3,58) = 3.41, p < .05$) in pay level satisfaction beyond the control variables and actual pay level. In terms of predictors of pay level satisfaction, only the upward standard of comparison was statistically significant ($\beta = -.77, p < .01$), again supporting hypothesis 1.

We used polynomial regression procedures to examine hypotheses 2a, 2b, and 2c. Recall that hypothesis 2a predicted that when one's pay level is below the upward comparison's pay level, pay level satisfaction will be low; hypothesis 2b predicted that pay level satisfaction would be highest, if one's pay level was congruent with the upward comparison's pay level, and finally, hypothesis 2c predicted that as one's pay level exceeds the upward comparison's pay level, pay level satisfaction will decline. Preliminary screening of both samples indicated that in the US sample 5% of participants indicated earning more than the upward comparison group allowing testing hypothesis 2c. However, in the Belgian sample no participants indicated earning more than the upward comparison group. Therefore, polynomial regression analyses were conducted only in the US sample¹. The following regression equation was used to examine the hypothesized relationship in the U.S. sample:

$$P = b_0 + b_1X + b_2Y + b_3X^2 + b_4XY + b_5Y^2 + e$$

In this equation, X represents actual pay level, Y represents the pay level of the upward comparison group, and P represents pay level satisfaction. When polynomial regression results are interpreted, less emphasis is typically placed on the significance of specific regression weights than on the variance explained by the set of predictor variables and the response surface pattern yielded by the regression equation (Edwards, 1994). To aid in

interpretation of these response surfaces, we estimated the slope and curvature of the response surface along two critical lines. The first was $X = -Y$, which runs from the far left (A) to the far right corner (B) of the graph. Moving from left to right along this line, actual pay level increases and pay level of the upward comparison group decreases until they are equal at point (0,0); pay level of the upward comparison group exceeds actual pay level for the remainder of the line. The second line of interest was $X = Y$, running from the back (D) to the front corner (C) of the graph, representing the line of perfect congruence (i.e., pay level of the upward comparison group is equal to actual pay level). A necessary condition for conducting polynomial regression analyses and being able to meaningfully interpret the results is that both components are expressed on the same numeric scale (Edwards, 2002). Given that we had exact dollar estimates for the standards of comparison, we recoded these variables in the same scale as the actual salary range scale (i.e., dollar amounts were recoded, using a 1 to 8 scale). Both predictors were also scale centered by subtracting the scale midpoint to reduce multicollinearity among quadratic variables and to facilitate interpretation of the three-dimensional surface plots. Finally, the actual cases used to estimate the surface are plotted in the X,Y plane to indicate the region of the surface on which the interpretation should be focused. Portions of the surface that extend beyond the actual cases are extrapolations that should be disregarded (see Edwards, 2002).

Table 3 shows that upward comparison and actual pay explained a significant amount of variance in pay level satisfaction ($R^2 = .18, p < .01$). Given that the set of predictors explained variance in the outcome variables, we plotted the response surfaces to assess whether the hypothesized relationship was supported. The slope on the $X = -Y$ line did not differ significantly from zero (slope = .12, $p > .05$), whereas the curvature on the $X = -Y$ slope was negative (curvature = -.18, $p < .01$), resulting in a convex shape of the surface. Examining the surface graph in Figure 1 offers additional insight in this relationship. As predicted by hypothesis 2a, pay level satisfaction was relatively low when actual pay fell below the upward comparison's pay level. Also, as predicted by hypothesis 2c, when actual pay level exceeded the upward comparison's pay level, pay level satisfaction was relatively

low. This resulted in the highest pay level satisfaction when actual pay level was congruent with upward comparison's pay level, thus supporting hypothesis 2b, and the lowest pay level satisfaction when actual pay and comparison pay level were discrepant. Table 3 also reports a positive slope (slope = .30, $p < .01$) and negative curvature (curvature = -.05, $p < .01$) along the $X = Y$ line. As can be seen in Figure 1, this indicates that when the actual and upward comparison pay level were congruent, pay level satisfaction increased together with actual pay. However, the increase in pay level satisfaction was not linear and decreased in strength as pay level got higher. As an example², for an employee reporting an actual pay level in the range of \$50,000-60,000 and an upward comparison range of \$70,000 and more, we find a pay satisfaction level of 2.98. An employee with the same actual salary range, but with an upward comparison range of \$50,000-60,000 reports a pay satisfaction level of 3.22, thus an increase of about 8%. Another employee with the same actual salary, but with an upward comparison range of \$40,000-50,000 (minor overreward) reports a pay satisfaction level of 3.16, which corresponds to a pay level satisfaction decline of 2%. Thus, the decline in satisfaction when moving from equitable payment to underreward was four times larger than when moving from equitable payment to overreward. In sum, hypotheses 2a, 2b, and 2c were supported.

Discussion

Pay level satisfaction has been the focus of much empirical and theoretical work in the last three decades (Heneman & Judge, 2000; Williams et al., 2006). Much research has focused on the referents that people use in assessing pay level satisfaction. Although there is consensus that people make comparisons when assessing their pay level satisfaction, this vein of research has produced relatively little further insight into pay level satisfaction. Moreover, pay rates for any given position are likely to vary; in any job, some incumbents inevitably earn more and some less. We therefore addressed the direction of the comparison.

Results in two different samples indicated that upward comparison significantly predicted pay level satisfaction, even controlling for lateral and downward comparison as well

as other variables. One possible explanation for this finding was that most people consider themselves above average performers and therefore expect that an upward comparison is *relevant* (Alicke et al., 1995). A second plausible explanation was that an upward comparison provides *useful* information for one's assessment of an attribute. More research is needed to identify which of these explanations is correct.

We also conducted two analyses to better understand our results beyond the specific tests of our hypotheses. First, we conducted a hierarchical regression analysis wherein we entered all predictors of pay level satisfaction listed in Table 2, except for upward comparison. Together, these variables explained 16% of the variance in pay level satisfaction. Adding the upward comparison increased the variance explained to 18%, $F(1,285) = 5.04, p < .05, \Delta R^2 = .02$. Similar results were obtained in the Belgian sample. In the first step 12% of the variance in pay level satisfaction was explained. Adding the upward comparison increased the variance explained to 25%, $F(1,58) = 9.84, p < .01, \Delta R^2 = .13$. Thus, an upward comparison explains additional variance in pay level satisfaction, even when all other variables are included in the regression. Second, we tested whether the regression coefficients of the comparison standards differed significantly from each other. The coefficient for upward comparison was not significantly different from the coefficient for downward comparison ($F(1,285) = .94, p > .05$) nor the coefficient for the lateral comparison ($F(1,285) = 1.52, p > .05$) in the US sample. In the Belgian sample, the coefficient for upward comparison was significantly different from the coefficient for the lateral comparison ($F(1,58) = 5.63, p < .05$), but not from the coefficient for the downward comparison ($F(1,58) = .64, p > .05$). Thus, we cannot conclude that upward comparison is the only important comparison source. This finding is consistent with the literature, indicating that both downward and upward comparison are important (Buunk et al., 1990).

Our results further supported hypotheses 2a, 2b, and 2c. Pay level satisfaction was relatively low when actual pay was much lower than the upward comparison pay level, supporting hypothesis 2a. The highest levels of pay level satisfaction were observed when actual pay was congruent with the upward comparison pay level as predicted by hypothesis

2b. When actual pay exceeded the upward comparison pay level, pay level satisfaction also slightly declined, supportive of hypothesis 2c. This latter finding sheds some light on a previously unresolved issue in pay satisfaction research. In their original form (Lawler, 1971), both equity theory and discrepancy theory predicted that perceptions of overpayment would result in feelings of guilt and thus dissatisfaction. However, some scholars (e.g., Gerhart & Rynes, 2003; Miceli & Lane, 1991; Scarpello, 1988) have argued that overpayment may have little effects or lead to satisfaction instead of dissatisfaction. Recently, Williams et al. (2006) tried to address this issue in their meta-analysis of pay satisfaction research. Due to confounds in the data they could not adequately test this hypothesis, prompting them to call for more research on the impact of overreward on pay level satisfaction. Our results in the US sample seem to support the original assertions of discrepancy and equity theory, suggesting that overreward might lead to modest decreases in pay satisfaction. However, the magnitude of the decline in pay satisfaction seems relatively minor in comparison to the decline associated with underreward which seems consistent with previous research claims. We want to emphasize that caution is warranted when interpreting these findings. Only 5% participants in the US sample indicated they earned more than the upward comparison group and no participants in the Belgian sample reported overreward. Clearly, more research focusing on overreward issues in large samples is needed.

In terms of future research, social psychological research has indicated that a preference for upward, lateral or downward comparisons may be influenced by a range of individual and situational variables (Sedikides & Strube, 1997). Thus, we should investigate factors that moderate whether one chooses upward, lateral or downward comparisons for evaluating one's own pay level satisfaction. One example is self-esteem as it has been hypothesized that individuals with high self-esteem are more likely to use an upward comparison, while individuals with low self-esteem are more likely to use a downward comparison (Wills, 1981).

A second area that might be investigated is the accuracy of judgments of others' pay. Although we did not have the data, one may consider obtaining information regarding the pay

that relevant others actually earn. We are familiar with one study (Lawler, 1965) in which the accuracy of what others were earning was determined. Lawler found that managers overestimated their subordinates' pay and underestimated their supervisors' pay. Thus, the information upon which managers judge their own pay level satisfaction may be flawed.

Our findings also have implications for practitioners. Employees appear to consider upward comparisons as well as other comparisons in determining their pay level satisfaction. In setting pay levels that appear fair to employees, then, organizations should determine what other competitors are paying in the terms of the upper end of the pay scale. At the same time, organizations should be aware that paying employees even more than the upper end of the scale may backfire; that is, employees may be less satisfied at very high levels of pay due to feelings of guilt or discomfort. Thus, neither underpayment nor overpayment relative to appropriate comparisons is likely to benefit the organization.

This study is not without limitations. First, we collected the data from the same source at the same time. While most of the variables were perceptual in nature, and may have been affected by such factors as mood, actual salary should be much less susceptible to the threats of common method variance. Second, common method variance is unlikely to create nonlinear and interactive relationships such as those found in our analysis (Evans, 1985). Third, our findings pertain only to the congruence between *subjective perceptions* of other's pay and actual pay. This limitation seems warranted as, in reality, people often can only compare their own salary to what they think that others earn, without necessarily having objective information. Furthermore, to assess the generalizability of our sample, we compared key means (i.e., mean pay level satisfaction) and correlations (e.g., pay level satisfaction and age) with previous meta-analytic work and found much similarity (Further details can be obtained from the senior author). In addition, it bodes well that our results were mostly replicated in a Belgian sample. A final limitation is that participants were restricted to report internal and external pay referents in accordance with upward, lateral and downward comparison. However, employees may use several other standards of comparison that also influence pay satisfaction.

In sum, most compensation research has focused on which pay referents are used to determine pay level satisfaction. We focused on the direction of the comparison. We found that upward comparisons are important in understanding pay level satisfaction. We also found that use of polynomial regression analysis is helpful in understanding the congruence, or lack thereof, between one's actual pay and the pay earned by relevant comparison others. The importance of the upward comparison must be considered in future research on compensation.

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Footnote

¹ Given the small size of the Belgian sample ($N = 67$), we did not report tests of hypotheses 2a and 2b in the Belgian sample. While the overall pattern of the results seemed in line with hypotheses 2a and 2b, the current sample size lacked power to detect meaningful effects when using polynomial regression analyses as indicated by a power analysis.

² These examples reflect actual cases in our data set.

Table 1

Descriptive Statistics and Correlation Coefficients in Study Samples.

	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	<i>M</i>	<i>SD</i>
1. Gender	1.43	.50		.09	-.05	-.16	.31*	.23	.27*	.29*	.15	1.7	.44
2. Age	3.76	1.89	.09		.69**	-.37**	.46**	.35**	.42**	.42**	-.11	4.66	1.93
3. Experience	3.54	1.65	.07	.76**		-.33**	.33**	.20	.33**	.31*	-.22	3.49	1.70
4. Education	2.74	1.05	.08	-.02	-.18**		.18	.28*	.15	-.02	.11	3.80	1.21
5. Actual pay level	4.56	1.75	.26**	.14*	.12*	.36**		.89**	.91**	.69**	.16	6.29	3.06
6. Downward	31561. 95	14470.5 3	.20**	.11*	.05	.29**	.69**		.91**	.58**	.15	29527. 94	11210. 91
7. Lateral	51623. 22	119018. 09	.10	.01	-.03	.36**	.05	.49**		.80**	.10	37453. 68	13425. 02
8. Upward	63363. 04	66105.8 3	.21**	.08	.06	.21**	.30**	.41**	.86**		-.11	47783. 82	20429. 16
9. Pay level satisfaction	2.73	1.03	.09	-.04	-.05	.12*	.35**	.19**	.11	.14*		3.35	.76

Note. Results below the diagonal are from the US sample ($N = 295$ to 318). Results above the diagonal are from the Belgian sample ($N = 67$), * $p < .05$ ** $p < .01$.

Table 2

Results of Hierarchical Regression Analysis of Pay Level Satisfaction on Multiple Standards of Comparison

	<i>US sample(N =295)</i>					<i>Belgian sample(N =67)</i>				
	<i>B</i>	<i>T</i>	<i>P</i>	<i>R</i> ²	ΔR^2	<i>B</i>	<i>T</i>	<i>p</i>	<i>R</i> ²	ΔR^2
Step 1										
Gender	.03	.51	.61			.09	.70	.49		
Age	-.10	-1.12	.26			.04	.20	.85		
Experience	.00	-.04	.97			-.37	-2.16	.04		
Education	.01	.13	.90	.04	.04*	-.04	-.30	.77	.08	.08
Step 2										
Actual salary	.57	6.13	.000	.15	.11**	.47	1.49	.14	.12	.04†
Step 3										
Downward	-.16	-1.84	.07			-.70	-1.73	.09		
Lateral	.09	.68	.50			1.02	1.99	.05		
Upward	-.23	-2.24	.03	.18	.03*	-.77	-3.14	.00	.25	.13†

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

Table 3

Results from Polynomial Regression of Pay Level Satisfaction on Actual Pay Level and Upward Comparison.

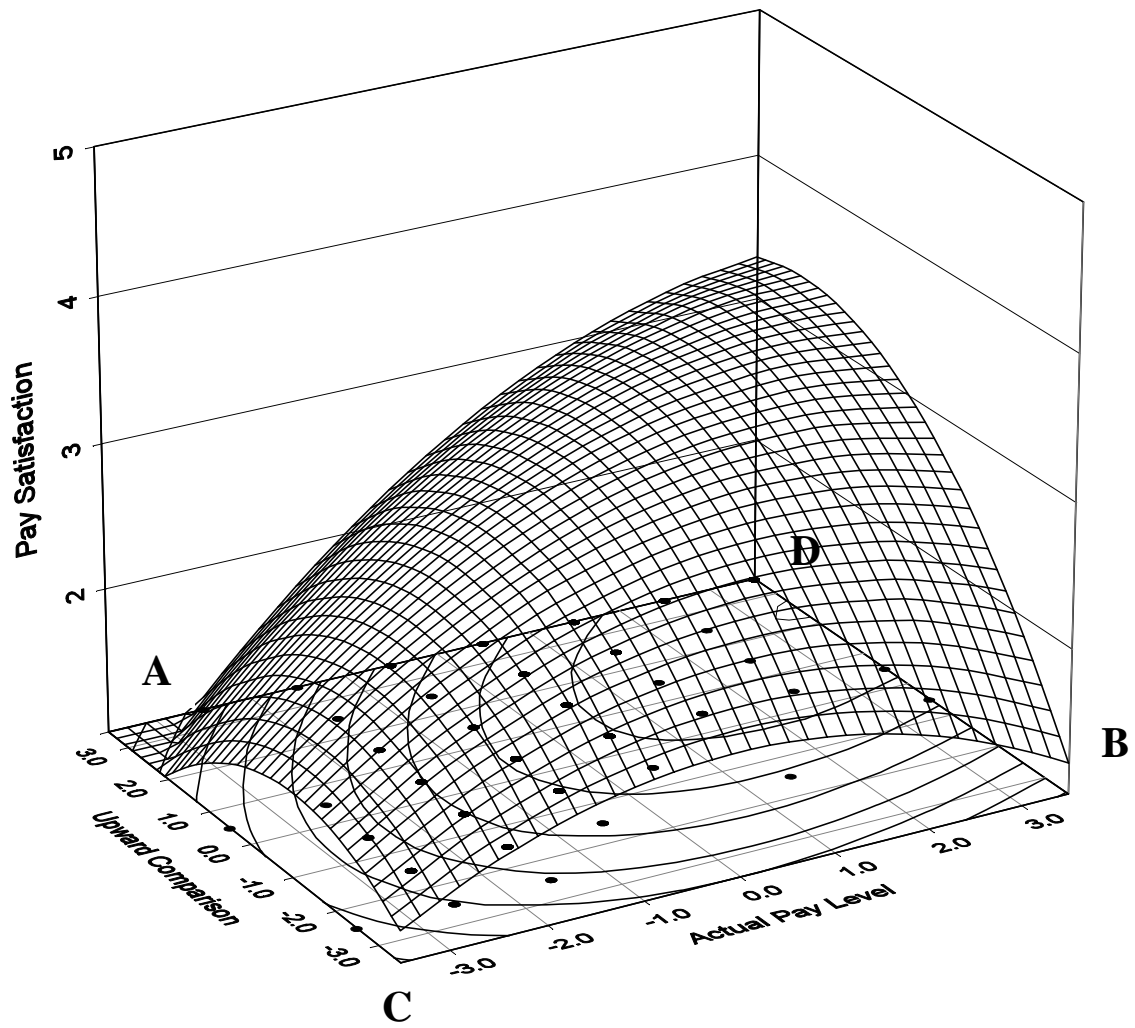
	<i>B</i>						<i>R</i> ²	Along <i>X</i> = - <i>Y</i> line		Along <i>X</i> = <i>Y</i> line	
								Slope	Curvature	Slope	Curvature
	<i>X</i> _{b0}	<i>X</i> _{b1}	<i>Y</i> _{b2}	<i>X</i> ² _{b3}	<i>XY</i> _{b4}	<i>Y</i> ² _{b5}		<i>b</i> ₁ - <i>b</i> ₂	<i>b</i> ₃ - <i>b</i> ₄ + <i>b</i> ₅	<i>b</i> ₁ + <i>b</i> ₂	<i>b</i> ₃ + <i>b</i> ₄ + <i>b</i> ₅
Upward comparison	2.89**	.21**	.09	-.05*	.06	-.06*	.18*** ^a	.12	-.18**	.30**	-.05**

Note. For columns labeled *X*, *Y*, *X*², *XY*, and *Y*², table entries are unstandardized regression coefficients for equations with all predictors entered simultaneously (*X* = actual pay level, *Y* = standard of comparison). The column labeled *R*² indicates the variance explained by the predictors.

^a The set of non-linear terms (*X*², *XY*, and *Y*²) explains additional variance above the linear terms (*X* and *Y*).

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

Figure 1. Surface graph of actual pay and upward comparison with pay level satisfaction.



Note :

-3.5	< \$10,000
-2.5	= \$10,001 - \$20,000
-1.5	= \$20,001 - \$30,000
-.5	= \$30,001 - \$40,000
.5	= \$40,001 - \$50,000
1.5	= \$50,001 - \$60,000
2.5	= \$60,000 - \$70,000
3.5	> \$70,000