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Pay referents and satisfaction with pay: Does occupational proximity matter?

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We explore whether employees compare their pay to the pay of others in a similarly prestigious occupation, and, if so, whether this comparison has a negative impact on pay satisfaction. Using an experimental vignette methodology, Study 1 found that people are more inclined to compare to others from a similar or identical occupation and that comparison negatively impacts pay satisfaction. This comparison and its negative effect is particularly strong in high prestige occupations. Based on survey data, Study 2 also showed that the average pay of others in occupations of similar prestige is negatively correlated with employees' pay satisfaction. This negative correlation was also stronger in higher prestige occupations. Our analysis highlights the importance of occupational prestige as a main factor influencing pay comparison.

Introduction

Social comparisons are prevalent in both the work and the life domains. As interdependence theorists

posit, it is in our human nature to use others' achievements as a benchmark to evaluate our own (Buunk

and Gibbons, 2007; De Botton, 2005). This desire to keep up with our peers influences many daily and longer-term decisions, including what to consume, where to live, or whom to select to be our partner (Luttmer, 2005; Watson and McLanahan, 2011; Burleigh and Meegan, 2013; Wu, Garcia and Kopelman, 2017). Our innate desire to compare our pay or status to that of our peers also influences our workplace attitudes, performance, and well-being (Duffy et al., 2012; Gartenberg and Wulf, 2017; Obloj and Zenger, 2017). In the present analysis, we explore how social comparison influences pay satisfaction, and, more specifically, how the impact of social comparison on pay satisfaction is stronger among occupations of similar standing than dissimilar ones. By using the occupational code index that is based on social standing in society –the Cambridge Social Interaction and Stratification Scale, or "CAMSIS" (Prandy and Lambert, 2003), we are able to probe for the effects of occupational similarity as well as explore whether the effect of social comparison on pay satisfaction is greater among higher tier occupations than lower tier occupations.

The present analysis also makes interdisciplinary contributions to the management literature at several different levels. First, our analysis contributes to the pay satisfaction literature by showing that occupational proximity influences pay comparison, thus adding a macro-level dimension to pay comparison research. Second, whereas economists perennially debate how to construe the reference group to understand pay satisfaction (e.g. Bordia and Blau, 1998; Luna-Arocas and Tang, 2015), the present analysis contributes to this economic debate by establishing occupational similarity as an important factor. Third, the present analysis offers a strong empirical contribution to the social comparison literature, which is principally based on social psychological research that is typically limited to laboratory settings or artificial contexts. Finally, because pay satisfaction is associated with employee performance, turnover intentions, absenteeism and workplace deviance (Tekleab, Bartol and Liu, 2005; Kish-Gephart, Harrison and Trevino, 2010; Georgellis and Lange, 2012; Bhave, Kramer and Glomb, 2013; Schreurs et al., 2013; Pacheco et al., 2016; Ridge, Hill and Aime, 2017), the present

analysis offers important implications for human resource management by highlighting specific circumstances under which social comparison has the potential to impact pay satisfaction.

In the course of this analysis, we will discuss whether social comparison has a positive or negative impact on pay satisfaction (Card et al., 2012; Godechot and Senik, 2015), review the literature that suggests that occupational similarity matters (e.g., Festinger, 1954; Kulik and Ambrose, 1992), and extrapolate rankings and social comparison findings (Garcia, Tor, & Schiff, 2013) to understand why we might expect that the level of prestige of an occupation will moderate social comparison's impact on pay satisfaction. To test our hypotheses, Study 1 uses an experimental decision-making methodology to establish the links between social comparison, pay satisfaction, and occupational similarity. Study 2 empirically probes for these linkages in a data set from the British Household Panel Survey (BHPS) to show how the average pay of others in a similar occupation is correlated with pay satisfaction and controlling for one's own pay.

Comparison Effects on Pay Satisfaction: Positive or Negative?

Whether pay comparison has a positive or a negative effect on individual well-being, or pay satisfaction in particular, has been widely debated in the management and organizational behavior literature. Overwhelmingly, the empirical evidence suggests that pay comparison has a negative effect on individual well-being (Caporale, Georgellis and Tsitsianis, 2009). Still, there is some evidence suggesting that comparison pay has a potentially positive impact on well-being because it provides information about an individual's future prospects (Godechot and Senik, 2015). We will next consider when pay comparison has positive versus negative effects on well-being.

Pay comparison can yield positive effects on well-being when the social comparison coincides with a self-enhancement motive, which manifests when people make a downward comparison to those who are less fortunate than themselves so that they can feel better about themselves (Wills, 1981). For example, employees with a self-enhancement motive will make comparisons to those who earn a lower

salary than themselves so that they can feel better about their own salary. On the flip side, positive effects can also occur with a self-improvement motive which manifests when someone makes upward comparisons to those who make higher salaries than oneself (Wood, 1989; Lockwood and Kunda, 1997; Pavlova, Lechner and Silbereisen, 2017). Employees who are making these upward comparisons become potentially pleased with the pay comparison, not because they discover that they make less than the comparison target, but because the comparison target motivates them to earn a potentially higher salary for themselves. These positive effects in the face of an upward comparison can also reflect what Carol Dweck (2007) calls a "growth mindset," the optimistic outlook that one has the potential to grow and excel on any given dimension such as pay.

Despite some positive effects of pay comparison, more often than not, pay comparison can lead to negative effects on well-being. It is generally known, for example, that upward comparisons – when people are exposed to others more fortunate – can induce a negative effect on well-being such as envy (Salovey and Rodin, 1984). Likewise, Dweck (2007) argues that most of us do not possess a "growth mindset" but rather a "fixed mindset" in which people see their own performance in any given domain as being fixed or immutable. As a result, upward comparisons can trigger a host of negative consequences such as desperation, stress, discouragement, and more. Research on pay comparisons in particular has indeed found an effect of others' pay upon an individual's own pay satisfaction (Trevor and Wazeter, 2006; Shaw, 2014), and this effect is broadly negative. For example, although Card et al. (2012) showed that the effect of pay comparisons did not negatively or positively impact those above the pay median in a large public organization, it did in fact lead to less pay satisfaction among those who were below the median. In this organizational context, the effect of comparison was negative, on balance. Large multi-national analyses of happiness in Europe also corroborate this general pattern (e.g. Caporale, Georgellis and Tsitsianis, 2009). Across Europe, comparison to others' income generally leads to lower happiness, although this effect seems to be stronger in Western Europe

than Eastern Europe. Thus, on balance, it seems likely that pay comparison would have a negative effect on pay satisfaction.

Occupational Similarity

We know from social comparison theory that people compare themselves to others who are similar to them in terms of performance (Festinger, 1954) or related attributes (Goodman, 1974; Kulik and Ambrose, 1992; Clark and Senik, 2010; Bartolini, Bilancini and Sarracino, 2013; Garcia, Tor and Schiff, 2013; Danzer et al., 2014). And while the above literature has operationalized similarity in several ways, as we will next review, it has yet to probe for patterns of pay comparison as a function of occupational prestige similarity. Given the fact that our societies are fundamentally based on status hierarchies (De Botton, 2005), probing for similarity in occupational prestige as a factor that affects social comparison and pay satisfaction is important.

Accordingly, we argue that pay comparisons are more prevalent within the same or closely related occupations in terms of occupational prestige. According to social comparison theory (Festinger, 1954), we should expect that pay comparisons intensify within the same profession or a closely related occupational group, as Festinger notes, "Given a range of possible persons for comparison, someone close to one's own ability or opinion will be chosen for comparison" (p. 121). Although Festinger was not speaking about occupational similarity per se, this notion of similarity was subsequently applied to the management literature by Kulik and Ambrose (1992) who theorized two important aspects of pay referent selection: the availability of information and the relevance of the referent. Factors that influence the availability of information include situational characteristics (i.e., job facet, change in procedures, physical proximity) as well as personal characteristics (i.e., gender, race, age, position), which is also consistent with the related attributes account of similarity (Goethals and Darley, 1977).

Where empirical studies that examine some form of similarity exist, they typically define reference group similarity using a variety of personal (i.e., gender, race, age) or situational characteristics (i.e., physical proximity, change in procedures). For example, McBride's (2001) measure is based on the average pay of individuals of similar age, similar educational attainment and proximal geographical area. Blaul's (1994) study of pay level satisfaction uses five different pay referents (financial, historical, organization, market, social). Using Australian data, Brown (2001) defines the market referent as the earnings of employees doing similar work in other organizations and identifies this to be the strongest predictor of pay satisfaction. Berkowitz et al. (1987) use other people's earnings in a broader sense as one of four potential factors affecting pay satisfaction. Law and Wong (1998) identify colleagues with the same qualifications as the most important referents. In their study of social comparisons and redistributive justice in East Asia, Kim, Edwards and Shapiro (2014) define the "referent other'' to be someone with similar job responsibilities, similar education and similar experience.

However, in the present analysis, we are interested in not just any personal or situational characteristic but rather occupational similarity that takes into account the similarity of the prestige of the occupation. In other words, we are interested in how the occupations at different tiers of society themselves can become the basis of pay comparison and thus have an effect on pay satisfaction. To this end, a commonly used measure of occupational prestige is the Cambridge Social Interaction and Stratification Scale (CAMSIS), which was first introduced in the literature by Stewart, Prandy and Blackburn (1973) and later revised by Prandy and Lambert (2003) to conform with the 1990 Standard Occupational Classification (SOC). Research on CAMSIS suggests that occupations are more than just mere classification codes but rather indicators of relative status within any given country. For example, although doctors and lawyers represent different professions and different industrial classification codes, the CAMSIS scale classifies them as being similar professions in terms of relative prestige. For

this reason, we seek to probe for the first time how similarity in terms of occupational prestige affects pay comparison and pay satisfaction.

Accordingly, and in light of the weight of existing evidence on the negative association between social comparison and well-being, we argue that the negative influence of pay comparison on pay satisfaction is more prevalent within the same or similarly prestigious occupations. Thus, we propose:

H1a: The more similar or identical the prestige of others' occupation, the greater an individual's tendency to compare pay.

H1b: The more similar or identical the prestige of others' occupation, the stronger the negative impact of pay comparison on pay satisfaction.

Moderating Influence of Higher Occupational Prestige

While we hypothesize that employees will be inclined to make comparison with occupational groups of similar prestige, research suggests that this tendency for employees to compare themselves to others of similar rank (Garcia, Tor and Gonzales, 2006) intensifies as occupational prestige increases. Thus, we argue that an employee's relative position in the occupational prestige distribution moderates the effect of pay referents on pay satisfaction. Experimental evidence supports the notion that social comparison intensifies with proximity to the #1 rank and most prestigious rank (Garcia, Tor and Gonzales, 2006; Garcia and Tor, 2007). For example, rivals who are commensurately ranked highly #2 and #3 in the organization are more likely to be concerned about how their outcomes compare with each other, in contrast to rivals who are commensurately but intermediately ranked at #202 and #203 in the organization. Relatedly, Brown et al., (2008) provide evidence that employees' well-being at work depends on the ordinal rank of an individual's earnings within a comparison

group, not simply on relative earnings. The aforementioned negative effect of referent pay on one's attitudes is often stronger amongst high earners and CEOs as pay comparisons and the selection of peer groups to benchmark performance become more salient (Skovoroda and Bruce, 2017). Against this background, we test whether being in a higher prestige occupation moderates the effect of pay referents on pay level satisfaction. Hence, we propose:

> H2: The negative correlation between the pay of others in the same or a similarly prestigious occupation and pay satisfaction is stronger for employees in higher prestige occupations.

Study 1: Experimental Approach

Study 1 uses an experimental decision making methodology to find evidence that (Hypothesis 1a) comparisons are greater as similarity intensifies (i.e., the same versus a different occupation) and that (Hypothesis 1b) the pay of others in similarly prestigious occupations has a negative impact on pay satisfaction. This study additionally probes for evidence of Hypothesis 2 that the negative effect of comparison is stronger in higher prestige occupations than it is for lower prestige occupations.

Participants

A total of 200 participants (41% female, average age =32.19, 65% full-time employees) were recruited from Amazon Mechanical Turks in the USA to complete a short online survey.

Procedure

In a between-subjects design, participants read a vignette in which the referent person was always of commensurate prestige but varied whether it was the identical or non-identical profession as themselves. We additionally varied whether prestige was high or low, choosing occupations with comparable CAMSIS USA scores. The high prestige version read:

Imagine that you are a physician who makes about $170,000 a year. To what extent would you be inclined to compare your salary to another [physician / lawyer] across the street?" (0=not at all, 7=very much).

If you learned that the [physician / lawyer] across the street made 15% more money than you, to what extent would that affect your pay satisfaction? (0=not at all, 7=very much)

How satisfied would you be with your pay of $170,000? (0=not at all, 7=very much)

The low prestige version was identical except the participants were asked to imagine being a file clerk with a $30,000 salary and the referent person was either (a) another file clerk or (b) a plaster and stucco mason. We also collected information on their gender, age, employment status, ethnicity, and region in the USA.

Results

Consistent with Hypothesis 1a and 1b, a multivariate analysis of variance reveals a significant main effect of occupational proximity on the following three outcomes[1]. First, the tendency to compare one's salary to the reference person was greater when the professions were identical (M=4.54, SD=1.95) than different (M=2.51, SD=2.07; $F_{(1,198)}$ =50.5, p<.001). Second, participants felt that learning the referent's salary was higher than their own would affect their own pay satisfaction more when the professions were identical (M=4.55, SD=1.96) than different (M=2.47, SD=1.93; $F_{(1,198)}$ =57.0, p<.001). Finally, participants reported they would feel significantly less satisfied with their pay when the referent had the identical profession (M=3.79, SD=2.05) than a different one (M=4.75, SD=1.98; $F_{(1,198)}$ =11.4, p<.01). This pattern of results is consistent with Hypothesis 1a as it provides evidence that comparison is greater as occupational proximity increases. It is also consistent with

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[1] The pattern of results are the same regardless of whether we analyse the entire sample or only the sub-sample of full-time employees. Because the methodology of Study 1 is about psychological decision making, we decided to report the results for the whole sample.

Hypothesis 1b by providing evidence that the negative impact on pay satisfaction is greater as occupational proximity increases.

The pattern of results remains significant, even when we analyse the high prestige and low prestige versions separately. In the high prestige version, the reported tendency to compare (Hypothesis 1a) and the negative impact on pay satisfaction (Hypothesis 1b) was greater when the referent was a fellow physician (compare: M=4.20, SD=2.10; impact: M=3.84, SD=1.99; pay satisfaction: M=5.06, SD=1.59) than a lawyer (compare: M=2.46, SD=1.98; impact: M=2.27, SD=1.81; pay satisfaction: M=5.77, SD=1.40; all p's <.05). The same pattern emerges in the low prestige version when the referent was a fellow file clerk (compare: M=4.86, SD=1.75; impact: M=5.24, SD=1.67; pay satisfaction: M=2.54, SD=1.66) versus a plaster and stucco mason (compare: M=2.57, SD=2.18; impact: M=2.67, SD=2.07; pay satisfaction: M=3.67, SD=1.96; all p's<.01). Thus, together these results suggest that the tendency to compare and its negative impact on pay satisfaction increases as the occupations become identical versus not identical, even when the level of prestige is commensurate. These results are also in accordance with Hypothesis 1a and 1b.

We can also probe this experimental dataset for evidence of Hypothesis 2 – that the tendency to compare is stronger among those in high prestige occupations than among the low prestige occupations. To do this, we conduct simple correlations by the prestige of the occupations. In the high prestige conditions, the tendency to compare and pay satisfaction is negatively correlated (r= -0.381, p<.001, n=101). In the low prestige conditions, however, the correlation is slightly negative yet not significant (r= -0.114, p=.26, n=99). A test between the two correlation coefficients shows that r= -0.381 is a significantly larger negative coefficient than r= -0.114. Thus, consistent with Hypothesis 2, it appears that the relationship between pay satisfaction and the tendency to compare is greater among the high prestige occupations than the low prestige occupations.

Study 2: Empirical Approach

Sample and procedure

The data are from eighteen waves of the British Household Panel Survey (BHPS) covering the period 1991-2008. The BHPS is a longitudinal survey, which started in 1991 surveying 10,300 individuals in about 5,500 households across 250 geographical areas of the UK. In wave nine, the sample includes an additional 1,500 households from Wales and Scotland, while in wave eleven it also includes 2,000 households from Northern Ireland. We restrict our sample to employees between 18 and 65 years of age, who work full time. We define full-time employees to be those who report usual weekly hours of 35 hours per week or more. In order to minimize the influence of outliers, we exclude from the sample those who report usual hours more than 65 per week.

Measures

The dependent variable is satisfaction with pay. Respondents were asked a question on satisfaction with their pay. The responses were reported on an ordinal scale 1 to 7, where a value of 1 corresponds to 'not satisfied at all' whilst a value of 7 corresponds to 'completely satisfied'. Because the response categories in the first wave of the BHPS data are different to those in all later waves (Conti and Pudney, 2011), we exclude the 1991 survey from the analysis. Figure 1 displays the bar chart of these pay satisfaction responses, with the vertical axis showing the percentage of responses in each pay satisfaction category. The distribution of pay satisfaction is skewed with 7.79 percent of respondents being completely satisfied with their pay (reporting a score of seven), while 33.90 percent reporting a score of six. A small proportion, about 4.05 percent, of respondents are completely dissatisfied with their pay.

Figure 1: The distribution of pay satisfaction
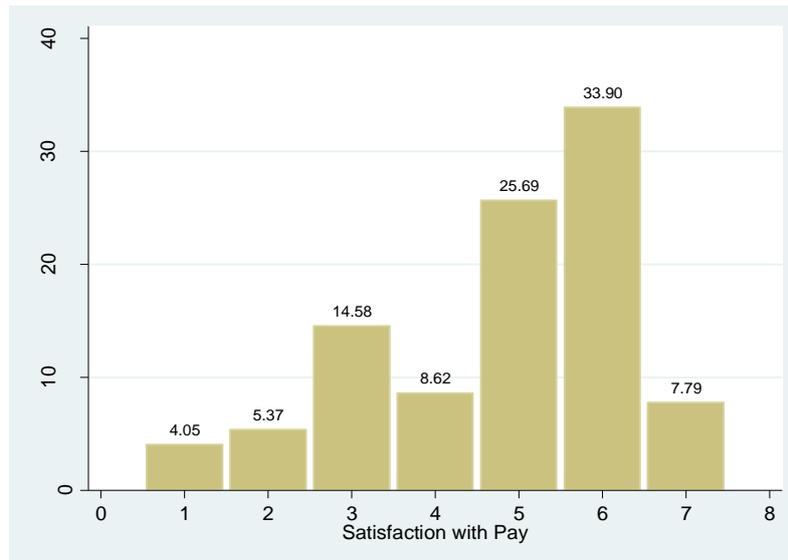
To probe for evidence in support of our hypotheses, we need to construct an operational measure of referent pay. Our approach in constructing such a measure relies on the underpinning assumption that employees compare their pay to the average pay of others in the same occupational prestige sub-category. Hence, we create a measure of referent pay using the average pay of others in the same or in a similarly prestigious occupation. Occupational prestige is captured by the CAMSIS scale, which is based on data from the Office of National Statistics (ONS) longitudinal survey to assign a prestige scale score to all three-digit occupational unit groups. The underpinning principle behind the CAMSIS scale is that the prestige of individuals' occupation is usually similar to that of the occupation of their spouse or cohabiting partner. Occupational assortative mating in marriage is indeed common, as individuals tend to marry others with occupations of similar prestige; a lawyer is likely to marry a doctor but unlikely to marry a manual worker (Prandy and Lambert, 2003). CAMSIS is scaled so that the national distribution of scores has a range from 0 for the lowest prestige to 100 for the highest prestige occupation, with a mean 50 and a standard deviation 15 (see Prandy and Jones, 2001 for a more detailed description of how the scale is constructed). Empirical evidence shows that higher CAMSIS scores are associated with higher income, higher job satisfaction and lower mortality rates (Feinstein and Hammond, 2004).

A difficulty calculating referent pay using the average pay for each CAMSIS score separately is that we run onto a small cell size problem because of the continuous and very refined nature of the CAMSIS scores. While for the majority of CAMSIS scores there is a sufficiently large number of observations, there are scores for which a very small number of observations is available. For example, for an occupation with a CAMSIS score of 83.69 there is only one observation in the sample. Similarly, there is one observation for a score of 83.78 and six observations for a score of 84.73. To mitigate this problem of small cell sizes, we split the CAMSIS scale into 17 sub-categories, as shown in appendix Table A1. Accordingly, we define a proximal, similar-prestige occupation as one within the same sub-category of the recoded CAMSIS scale. At the lower end of the scale, we aggregate occupations with a CAMSIS score of less than 10, while at the upper end, we aggregate those with a score higher than 85. Table A1 displays the distribution of the recoded 17 sub-category CAMSIS scale whereas Figure 2 depicts the average pay and satisfaction with pay for each sub-category. Average pay and satisfaction with pay are positively correlated and they increase monotonically with occupational prestige.

Figure 2: Pay and satisfaction with pay by occupational prestige
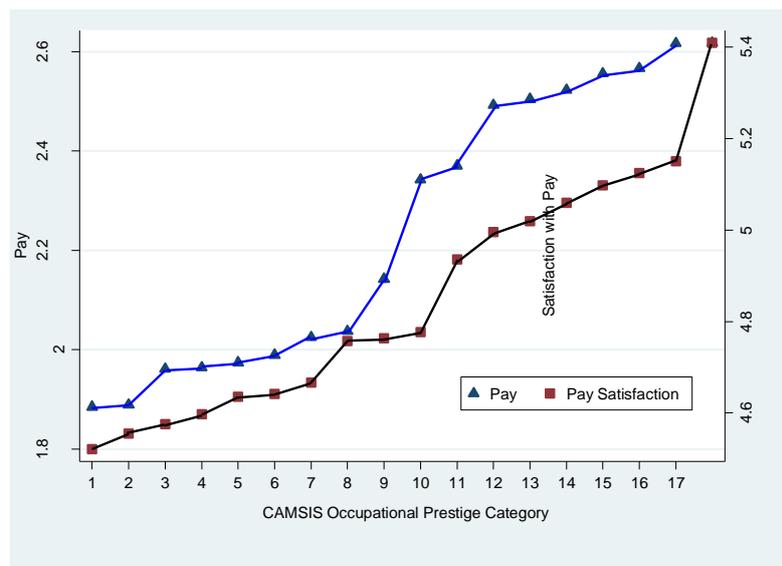
As explained, the above approach to calculate referent pay is based on the assumption that employees compare their pay to the average pay of others in the same occupational prestige sub-category. Nevertheless, it is important to consider also the moderating influence of career stage and location in pay comparisons. While we hypothesize that the reference group is other employees in similar-prestige occupations, we cannot ignore the fact that pay differs considerably by age and geographical location. Young employees compare their pay to starting salaries in similar-prestige occupations. They are unlikely to compare their pay to that of older employees who have accumulated seniority and work experience. By the same token, although the referent group is other employees in similar-prestige occupations, the influence of pay differences across geographical locations needs to be also controlled for. Differences in earnings and living costs, especially housing costs, are salient across UK regions, with particularly stark differences being evident when comparing London and the South East to the North (Cribb et al., 2013). Thus, to account for the moderating role of age and for regional variations in pay, we factor age categories and UK regions in the calculation of referent pay. More specifically, we consider three geographical regions: (i) London and South East; (ii) Midlands, Wales and South West; and (iii) North, Scotland and Northern Ireland and five age categories: (i) 18-25; (ii) 26-35; (iii) 36-45; (iv) 46-55; and (v) 56-65. We assume, for example, that employees in the 18-25 age group, living in the London and South East, compare their pay to that of others in similar-prestige occupations who are also in the 18-25 age group and live in London and the South East. Hence, referent pay ($\overline{Y}_{CAMSIS}$) is equal to the logarithm of average pay of other employees in the same occupational prestige category, within the same age group who live in the same region. When calculating the average pay, we exclude the individual's own earnings from the calculation and we use the cross-sectional respondent sampling weights (XRWGHT), which are available in the BHPS.

Analysis

Because of the ordinal nature of the dependent variable, the empirical strategy in this study hinges upon the estimation of ordered probit regression equations (see Mckelvey and Zavoina, 1975) for satisfaction with pay (PAYSAT) of the following form:

$$(PAYSAT)_{it} = \beta\, Z_{it} + \gamma Y_{it} + \delta_A \overline{Y}_{CAMSIS} + e_{it}, \qquad\qquad (1)$$

where Y_{it} is individual's i own pay at time t and e_{it} is a normally distributed random error term. The coefficients β, γ, and δ_A are to be estimated. The main coefficient of interest is δ_A, which captures the effect of referent pay $\overline{Y}_{CAMSIS}$ on satisfaction with pay. Z_{it} is a vector of control variables that includes age, education, marital status, number of children, education, health, job sector, firm size and managerial responsibilities (definitions and sample means are shown in the appendix Table A2). Other controls in the vector Z_{it} include time and occupation dummy variables. The inclusion of time (year) dummies controls for inflation in pay, increased inequality and other factors that may have affected pay over the years. The purpose in including occupational dummies is to ensure that the effect of pay and comparison pay on satisfaction is net of the potential influence of permanent occupational-specific attributes. Occupational dummies would pick up, for example, observed as well as unobserved workplace characteristics such as organizational culture, perceived managerial support, inherent occupation related stress and other pecuniary and non-pecuniary occupational characteristics. We estimate model (1) by treating the data as a repeated cross-section, clustering the standard errors to account for within person variation in pay satisfaction.

Results

To shed some initial light on whether referent pay matters for pay satisfaction, a calculation of simple partial correlation coefficients (r) reveals that pay satisfaction is positively correlated with own pay (r= 0.259), whereas it is negatively correlated with referent pay (r = -0.036). Table 1 presents

additional preliminary evidence on the effect of own pay and referent pay on satisfaction. The top

panel of Table 1 shows that individuals enjoy a higher level of pay satisfaction as they move up to

higher pay quintiles. The bottom panel of Table 1 examines the influence of referent pay. More

specifically, it displays how relative pay, i.e. the ratio of own pay (Y_{it}) and referent pay ($\bar{Y}_{CAMSIS}$), is

correlated with pay satisfaction. It emerges that when relative pay increases, average satisfaction with

pay also increases in a monotonic fashion, from 3.930 for the lowest quintile to 5.734 for the highest

quintile. Therefore, for any given level of own pay, an increase in the pay of others in the same or a

similarly prestigious occupation ($\bar{Y}_{CAMSIS}$), has a negative effect on satisfaction with pay.

Table 1. Mean pay satisfaction levels

	Mean	Standard error
Own pay Y_{it}: lowest quintile	4.182**	0.008
Own pay Y_{it}: second quintile	4.506**	0.008
Own pay Y_{it}: third quintile	4.811**	0.009
Own pay Y_{it}: fourth quintile	5.028**	0.009
Own pay Y_{it}: highest quintile	5.444**	0.008
Relative pay ($Y_{it}/\bar{Y}_{CAMSIS}$): lowest quintile	3.930**	0.017
Relative pay ($Y_{it}/\bar{Y}_{CAMSIS}$): second quintile	4.438**	0.017
Relative pay ($Y_{it}/\bar{Y}_{CAMSIS}$): third quintile	4.963**	0.017
Relative pay ($Y_{it}/\bar{Y}_{CAMSIS}$): fourth quintile	5.073**	0.017
Relative pay ($Y_{it}/\bar{Y}_{CAMSIS}$): highest quintile	5.734**	0.017

Notes: $+$ p<0.1; * p<0.05; ** p<0.01; The F-statistic for the equality of means is significant at the 1% level. All figures refer to weighted data.

A more systematic analysis is shown in Table 2. Table 2 reports the results of estimating the ordered

probit regression model of pay satisfaction for the full sample in columns 1-2 and separately by gender

in columns 3-4 and in columns 5-6 for men and women respectively. The pooled sample comprises

67,110 person-year observations for 12,813 individuals. The standard errors are adjusted for clustering

on individuals (i.e. 12,813 clusters). The chi-square p-values imply that the estimated models are

statistically significant compared to the null models with no predictors. The McFadden Pseudo-R^2 values convey a similar message about the full model, with the likelihood ratio in the McFadden Pseudo-R^2 indicating an improvement over the intercept model.

Table 2. Pay satisfaction regression (Ordered Probit Estimation)

	ALL		MALES		FEMALES	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Y_{it}	0.818**	0.824**	0.831**	0.837**	0.874**	0.887**
$\overline{Y}_{CAMSIS}$		-0.143**		-0.139+		-0.236**
Male	-0.241**	-0.241**	—	—	—	—
Age	-0.053**	-0.045**	-0.061**	-0.054**	-0.054**	-0.039**
$(Age)^2/1000$	0.634**	0.546**	0.714**	0.645**	0.676**	0.497**
Number of children	-0.007	-0.007	-0.015	-0.014	0.047**	0.047**
Marital status						
Married	-0.043	-0.043	0.038	0.039	-0.167**	-0.169**
Separated	-0.072**	-0.073**	0.016	0.016	-0.188**	-0.190**
Divorced	0.073	0.073	0.015	0.018	0.036	0.034
Widowed	-0.081**	-0.082**	-0.022	-0.022	-0.164**	-0.165**
Education						
Higher degree	-0.360**	-0.360**	-0.298**	-0.298**	-0.468**	-0.468**
First degree	-0.253**	-0.254**	-0.213**	-0.213**	-0.289**	-0.293**
Teaching qualification	-0.265**	-0.263**	-0.302**	-0.302**	-0.268**	-0.264**
Other higher qualification	-0.162**	-0.162**	-0.165**	-0.164**	-0.136**	-0.136**
Nursing qualification	-0.275**	-0.273**	-0.401*	-0.398*	-0.248**	-0.247**
GCSE A-Level	-0.156**	-0.156**	-0.175**	-0.175**	-0.105*	-0.104*
GCSE O-Level	-0.060*	-0.059*	-0.081*	-0.081*	-0.030	-0.027
Health						
Excellent	0.295**	0.294**	0.341**	0.342**	0.250**	0.248**
Good	0.175**	0.175**	0.230**	0.230**	0.116**	0.116**
Fair	0.045+	0.045+	0.088**	0.088**	0.000	-0.000
Job tenure	-0.005**	-0.005**	-0.005**	-0.005**	-0.005*	-0.005*
Private sector employee	0.021	0.021	0.044	0.044	0.003	0.004
Manager	0.032+	0.037+	0.049*	0.055*	-0.005	-0.000
Firm Size						
100-199 employees	-0.075**	-0.075**	-0.067**	-0.067**	-0.083**	-0.084**
200-499 employees	-0.073**	-0.074**	-0.064**	-0.065**	-0.076*	-0.078*
500-999 employees	-0.060*	-0.061**	-0.050+	-0.051+	-0.075*	-0.077*
> 1000 employees	-0.090**	-0.091**	-0.062*	-0.063*	-0.122**	-0.126**
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Occupational Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.041	0.041	0.047	0.047	0.041	0.042
p-value	0.00	0.00	0.00	0.00	0.00	0.00
Log-likelihood	-108,954	-108,947	-67,404	-67,401	-41,039	-41,030

Restricted Log-likelihood	-113,663	-113,663	-70,751	-70,751	-42,812	-42,812
Number of clusters		12,813		7,258		5,555
Person-year observations		67,110		41,745		25,365

Notes: + p<0.1; * p<0.05; ** p<0.01; Reference categories: Health poor or very poor; Marital status single/never married; Education vocational qualification, no O-level; Firm size less than 100 employees;
McFadden Pseudo R^2 = 1- (Log-likelihood / Restricted Log-likelihood)

Column 1 displays the estimated coefficients of a baseline model of pay satisfaction, which includes individuals' own pay Y_{it}. Most of the socio-demographic controls have the expected effect on pay level satisfaction. Briefly, men are less satisfied with their pay than women are. Consistent with previous findings (Clark, Oswald, & Warr, 1996), there is a U-shaped relationship between age and satisfaction with pay, reflecting individuals' changing personal circumstances and changing expectations over time. Compared to those who are single/never-married (the reference category), separated employees are less satisfied with their pay. Widowhood has a similar, negative effect on satisfaction with pay. In general, education is negatively associated with pay satisfaction. Employees with a higher degree are less satisfied with their pay compared to those with no O-level or vocational qualifications (the reference category). The same is true for employees with a university degree, a teaching qualification, other higher qualification and those with a nursing qualification. Notably, the results suggest that more education is negatively correlated with pay satisfaction almost in a monotonic fashion, with the dissatisfaction of teachers and nurses being particularly strong. Health has a positive influence on pay satisfaction. Employees in excellent health report higher pay satisfaction than those in poor or very poor health (the reference category). Similarly, those in good health or in fair health are more satisfied with their pay. Pay satisfaction decreases with job tenure. It is also generally lower for employees in medium size or large firms. As the estimated coefficients for firm size suggest, pay satisfaction among employees in smaller firms (less than 100 employees) is generally higher than among employees in medium and large firms. Finally, managers are generally more satisfied with their pay than employees with no managerial responsibilities.

Turning attention to the effect of own pay on satisfaction, higher pay exerts a strong positive effect on pay satisfaction (β =0.818, p <0.01), even after controlling for demographic and firm characteristics. In column 2, we augment the baseline model to include referent pay, $\overline{Y}_{CAMSIS}$, which is negatively associated with satisfaction with pay (β = -0.143, p <0.01). Columns 3 and 4 display the results of estimating pay satisfaction ordered probit regressions based on the sample of male employees. Own earnings attract a positive and significant coefficient (β =0.837, p <0.01) whereas referent pay is negatively associated with pay level satisfaction (β = -0.139, p <0.1) at the 10 per cent level of significance. Among the female employees sample, the estimated coefficients in columns 5 and 6 paint a similar picture. Although own earnings is positively associated with pay satisfaction (β =0.887, p <0.01), referent pay is negatively associated with pay satisfaction (β = -0.236, p <0.01).

To gain a greater appreciation of the quantitative importance of these effects, it is necessary to estimate marginal effects. Table 3 shows the estimated marginal effects for the probability that employees are very satisfied with their pay, i.e. reporting pay satisfaction scores of six or seven. The marginal effects indicate that a one-percent increase in own pay (Y_{it}) increases the probability of employees reporting a pay satisfaction score of six by 18.7 percent, while it increases the probability of a pay satisfaction score of seven by 11.1 percent. At the bottom panel of Table 3, a one percent of referent pay reduces the probability of a pay satisfaction score of six by 3.2 percent and the probability of a score of seven by 1.9 percent. The marginal effects for male and female employees in columns 2 and 3 are similar, although the effect of referent pay for females is slightly stronger than that for males. A one percent increase in referent pay reduces pay satisfaction for females by 5.1 percent and 3.5 percent, for satisfaction scores six and seven respectively. In sum, the marginal effects in Table 3 and the estimated coefficients in Table 2 confirm that employees' pay satisfaction is negatively correlated with the earnings of others in occupations of similar prestige, thus lending support for Hypothesis 1b.

Table 3. Pay satisfaction regression – Marginal effects

	ALL	MALES	FEMALES
Y_{it}			
Prob(PAYSAT = 6)	0.187**	0.193**	0.191**
Prob(PAYSAT = 7)	0.111**	0.104**	0.133**
$\overline{Y}_{CAMSIS}$			
Prob(PAYSAT = 6)	-0.032**	-0.032*	-0.051**
Prob(PAYSAT = 7)	-0.019**	-0.017*	-0.035**
N	67,110	41,745	25,365

Notes: + p<0.1; * p<0.05; ** p<0.01; other controls as in Table 2.

In Table 4 and 5, we explore whether there is support for Hypothesis 2, namely whether the negative correlation between pay referents and pay satisfaction is stronger in higher prestige occupations. Table 4 reveals that when splitting the sample in low- and high- prestige occupations, referent pay does not affect pay satisfaction for those in occupations with a prestige score of less than eight. The same is true when we repeat the analysis for the sub-group with a prestige score of less or equal than ten. In contrast, referent pay does matter, having a statistically significant negative effect on pay satisfaction, for both male and female employees in occupations with a prestige score higher than ten. Finally, when limiting the sample to those in the most prestigious occupations, with a score greater than 14, the negative effect of comparison pay intensifies for female employees. In Table 5, the estimated marginal effects further support Hypothesis 2. In high-prestige occupations, a one-percent increase in referent pay reduces the probability of female employees reporting a pay satisfaction score of six by about 14 percent and the probability of a score of seven by about 10 percent. For occupations with a prestige score greater than ten, the reduction in the probability of high satisfaction (score six or seven) is about five to six percent. As Table 5 confirms, referent pay has no effect on the pay satisfaction of employees in low prestige occupations.

Table 4. Pay satisfaction regression (Ordered Probit Estimation)

	CAMSIS < 8			CAMSIS <= 10			CAMSIS > 10			CAMSIS >14		
	ALL	FEMALES	MALES	ALL	FEMALES	MALES	ALL	FEMALES	MALES	ALL	FEMALES	MALES
Y_{it}	0.762**	0.839**	0.741**	0.872**	0.857**	0.785**	0.940**	0.824**	0.796**	0.836**	0.865**	0.895**
$\overline{Y}_{CAMSIS}$	-0.052	-0.179	-0.111	-0.165	-0.099	-0.081	-0.272*	-0.306*	-0.263**	-0.041	-0.718*	-0.263

Notes: + p<0.1; * p<0.05; ** p<0.01; other controls as in Table 2.

Table 5. Pay satisfaction regression by occupational prestige – Marginal effects

	CAMSIS < 8			CAMSIS <= 10			CAMSIS > 10			CAMSIS >14		
	ALL	FEMALES	MALES	ALL	FEMALES	MALES	ALL	FEMALES	MALES	ALL	FEMALES	MALES
Y_{it}												
Prob(PAYSAT = 6)	0.171**	0.194**	0.165**	0.183**	0.201**	0.195**	0.161**	0.172**	0.178**	0.177**	0.170**	0.170**
Prob(PAYSAT = 7)	0.091**	0.095**	0.108**	0.099**	0.099**	0.121**	0.133**	0.128**	0.167**	0.144**	0.129**	0.134**
$\overline{Y}_{CAMSIS}$												
Prob(PAYSAT = 6)	-0.026	-0.041	0.011	-0.019	-0.023	-0.037	-0.053**	-0.064*	-0.052*	-0.052	-0.141*	-0.008
Prob(PAYSAT = 7)	-0.014	-0.020	0.007	-0.010	-0.011	-0.023	-0.044**	-0.048*	-0.048*	-0.042	-0.107*	-0.007

Notes: + p<0.1; * p<0.05; ** p<0.01; other controls as in Table 2.

Discussion and Conclusion

Using an experimental decision making methodology, Study 1 found that pay comparison and its negative impact on pay satisfaction are more prevalent among individuals in the same or similar prestigious occupations (Hypothesis 1a and 1b), in support of the view that occupational proximity matters. In addition, the negative correlation between pay comparison and pay satisfaction is stronger among high prestige occupations than low prestige occupations (Hypothesis 2). Probing a data set comprising full time employees, Study 2 empirically found the same pattern of results among survey participants of the British Household Panel Survey.

Such findings add weight to previous studies suggesting that awareness of others' pay in similar occupations spurs a negative emotional response, which is detrimental to employee morale. The study by Card et al. (2012), which explores the effects of pay disclosure on pay satisfaction at three campuses of the University of California, confirms that such disclosure had a negative impact on pay satisfaction among lower-paid workers and prompted them to seek new employment. Such findings have direct implications for the design of compensation structures within organizations, calling for a re-evaluation of the relative merits of compressed vs. dispersed earnings distributions.

Furthermore, the present analysis has potential implications for whether pay secrecy practices are justified in terms of promoting workforce cohesion. There is a renewed interest in exploring the relative merits of pay secrecy in recent years, following President Obama's executive order in April 2014 to strengthen pay openness and disclosure practices. Similar measures were announced in 2015 by UK Prime Minister Cameron to make it compulsory for companies with more than 250 employees to disclose male and female employees' pay. The benefit of pay openness is that it improves informational, procedural and distributive justice, with a positive

effect on organizational citizenship behaviors (Marasi and Bennett, 2016). However, as Marasi and Bennett (2016) also argue, pay openness could have a damaging effect for organizational outcomes by spurring workplace deviance or unethical conduct. In a similar vein, Bamberger and Belogolovsky (2017) find that pay transparency has a negative effect on employees' willingness to help their co-workers. To the extent that employees are affected by the pay of others, pay disclosure could cause lower pay satisfaction, especially in higher prestige occupations. More specifically, while a general knowledge of others' pay in the same or similar occupation is often demoralizing, triggering negative emotions, this effect may be less prevalent in lower prestige occupations.

That said, the findings need to be evaluated in the light of the following limitations. First, there is an implicit assumption that employees have access to pay information about others at the level of occupational code. Although we cannot verify which individuals had access to such information, one can still foster a sense of pay information through a variety of news outlets (i.e., Chronicle of Higher Education), trade magazines, or websites (i.e., payscale.com) that publish average salary information for a variety of industries. Thus, most individuals should have some sense for variation of pay across industries. A second limitation is that we assume that all participants have the same level of equity sensitivity. Clearly, such sensitivity is likely to vary from person to person, although we cannot control for these individuals differences in our analyses in the British Household Panel Survey (BHPS). However, the experimental decision methodology used in Study 1 helps to mitigate this individual difference concern by randomly assigning participants to condition. While this experimental approach additionally helps to uncover the comparison process, we acknowledge that it is based on a hypothetical vignette and lacks the realism of the BHPS. However, we are reminded of the benefits of this experimental decision

making methodology by economics Nobel Prize winner Daniel Kahneman (2000): "Choice . . . is the fruit fly of decision theory. It is a very simple case, which contains many essential elements of much larger problems. As with the fruit fly, we . . . hope that the principles that govern the simple case will extend in recognizable form to complex situations." (p. xi). Thus, the experimental approach in Study 1 and the empirical approach of Study 2 complement each other well.

As for future directions, one path is to explore whether the results replicate in an analysis of household data from other countries or cultures. While we would assume that British household data would closely resemble data from other Western cultures such as the United States or Germany, perhaps the dynamics we observe would differ from those of Eastern cultures such as Korea, China or Japan where the construal of self is based on an interdependent versus independent self (Oshio, Nozaki and Kobayashi, 2011; Kim et al. 2014).

Finally, although our discussion has focused on how pay comparisons affect pay satisfaction, it would be interesting to explore possible solutions and remedies to mitigate the negative effects of pay comparison. Because employees develop affective feelings not only toward their level of pay but also toward the system used to deliver pay (Heneman and Schwab,1985), we believe that such remedies need to include measures to improve the fairness of rewards and pay disclosure systems. As one would expect, any initiatives to mitigate the impact of pay comparison need to be part of a comprehensive human resource strategy to boost employee well-being, beyond measures of pay satisfaction.

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Table A1. The distribution of recoded CAMSIS

Cambridge scale value	Recoded Cambridge scale	Males		Females	
		No.	%	No.	%
0/9.99	1	1229	2.9	95	0.4
10/14.99	2	2193	5.2	296	1.2
15/19.99	3	4708	11.2	881	3.5
20/24.99	4	4761	11.3	1627	6.4
25/29.99	5	4074	9.7	859	3.4
30/34.99	6	2093	5	1316	5.2
35/39.99	7	2611	6.2	2173	8.5
40/44.99	8	4153	9.9	6380	25
45/49.99	9	2747	6.5	2161	8.5
50/54.99	10	3644	8.7	2315	9.1
55/59.99	11	2110	5	1283	5
60/64.99	12	3677	8.8	2251	8.8
65/69.99	13	2119	5	1446	5.7
70/74.99	14	470	1.1	1224	4.8
75/79.99	15	593	1.4	395	1.5
80/84.99	16	443	1.1	554	2.2
>=85	17	351	0.9	239	0.9
	Total	41976	100	25495	100

Table A2. Definition of Variables and Summary Statistics

Variable	Definition	Mean	Std. Dev.
Satisfaction with pay	Integer response on a 1-7 scale to the question "How satisfied are you with your pay?"	4.79	1.55
Male	Dummy variable: 1 for male; 0 otherwise	0.62	0.48
Age	Age in years	37.46	11.48
Marital Status			
Married	Dummy variable: 1 for married; 0 otherwise	0.55	0.43
Separated	Dummy variable: 1 for separated; 0 otherwise	0.03	0.17
Divorced	Dummy variable: 1 for divorced; 0 otherwise	0.10	0.31
Widowed	Dummy variable: 1 for widowed; 0 otherwise	0.01	0.09
Number of children	Number of own children in household	0.53	0.89
Education			
Higher degree	Dummy variable: 1 for higher degree; 0 otherwise	0.04	0.18
First degree	Dummy variable: 1 for first degree; 0 otherwise	0.15	0.36
Teaching qualification	Dummy variable: 1 for teaching qualification; 0 otherwise	0.02	0.13
Other higher qualification	Dummy variable: 1 for other higher qualification; 0 otherwise	0.29	0.45
Nursing qualification	Dummy variable: 1 for nursing; 0 otherwise	0.01	0.10
GCSE A-Level	Dummy variable: 1 for GCSE A-Level ; 0 otherwise	0.14	0.34
GCSE O-Level	Dummy variable: 1 for GCSE O-Level; 0 otherwise	0.18	0.39
Health			
Excellent	Dummy variable: 1 for excellent health; 0 otherwise	0.29	0.45
Good	Dummy variable: 1 for good health; 0 otherwise	0.49	0.50
Fair	Dummy variable: 1 for fair health; 0 otherwise	0.18	0.38
Job tenure	Job tenure in years	4.45	6.08
Private sector	Dummy variable: 1 for private sector employee; 0 otherwise	0.72	0.45
Manager	Dummy variable: 1 for having managerial duties; 0 otherwise	0.25	0.44
Firm size			
100-199 employees	Dummy variable: 1 for firm size between 100 and 199 employees; 0 otherwise	0.11	0.32
200-499 employees	Dummy variable: 1 for firm size between 200 and 499 employees; 0 otherwise	0.14	0.35
500 - 999 employees	Dummy variable: 1 for firm size between 500 and 999 employees; 0 otherwise	0.08	0.27
1000 or more employees	Dummy variable: 1 for firm size larger than 1000 employees; 0 otherwise	0.12	0.32
Y_{it}	Log of hourly wage. Hourly wage = [(usual pay per month x 12) /52]/(usual weekly hours of work)	2.15	0.52
Number of clusters		12,813	
Person-year observations		67,110	