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IS JOB SATISFACTION U-SHAPED IN AGE?

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It is generally believed that job satisfaction increases linearly with age. However, there are persuasive arguments and some empirical evidence that the relationship is U-shaped, declining from a moderate level in the early years of employment and then increasing steadily up to retirement. This paper investigates the relationship between age and satisfaction, using survey responses from a large sample of British employees. For overall job satisfaction, satisfaction with pay, and satisfaction with the work itself, a strongly significant U-shape is observed. Possible contributors to this age pattern are investigated through ordered probit analyses of each form of satisfaction. Despite the inclusion of 80 control variables for personal characteristics, job features and work values, significant coefficients are retained for age and age-squared (representing the non-linear component). It is shown that a similar age pattern occurs also for employees' context-free mental health, suggesting that both job satisfaction and context-free mental health are affected by non-job factors of life-stage and personal circumstances. The importance of changes in expectations with increasing age is emphasized.

Est-ce que la satisfaction dans le travail a la forme d'un U en fonction de l'âge de l'individu?

Il existe une opinion très repandue selon laquelle le niveau de satisfaction dans le travail augmente avec l'âge de l'individu. Cependant, plusieurs théories, corroborées par quelques preuves empiriques, suggèrent que la relation a plutôt la forme d'un U, où on observe une baisse à partir d'un niveau modéré dans les premières années de travail, puis une hausse régulière jusqu'à la retraite. Le présent article utilise la technique d'analyse "Ordered Probit" et fait apparaître une fonction en forme de U entre l'âge et les mesures de satisfaction: satisfaction globale, satisfaction par rapport au salaire où satisfaction par rapport à l'activité professionelle elle-même. En outre, une relation de forme similaire se trouve entre l'âge et la santé psychique d'un individu, ce qui pourrait être expliqué par l'existence d'éléments extérieurs qui influeraient aussi bien sur la satisfaction dans le travail que sur la santé psychologique. Nous accordons une importance particulière au fait que les attentes d'un individu, notamment concernant son travail, sont sujettes à diverses fluctuations au cours de sa vie.

Mots clefs: Satisfaction dans le travail, âge, attentes du travail.

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Is job satisfaction U-shaped in age?

There have been many investigations into the relationship between age and different forms of job satisfaction. Significant variations across age are commonly found, with older employees tending to report higher satisfaction than younger ones (e.g., Doering, Rhodes & Schuster, 1983; Glenn, Taylor & Weaver, 1977; Warr, 1992). Observed age differences in overall job satisfaction are greater than those associated with gender, education, ethnic background or income (Clark, 1993; Weaver, 1980).

However, two questions remain unanswered. First, given that there is a positive relationship between age and job satisfaction, is it simply linear or does it contain a non-linear component? And, second, what underlying variables can account for the pattern of differences between age-groups?

In the first respect, there is a discrepancy between early and more recent findings. Herzberg, Mausner, Peterson and Capwell (1957) suggested that "in general, morale is high among young workers. It tends to go down during the first few years of employment. The low point is reached when workers are in their middle and late twenties, or early thirties. After this period, job morale climbs steadily with age" (pp. 5-6). This U-shaped pattern was interpreted in terms of new entrants to the labour market feeling positively about their novel situation and their transition to adulthood; however, increasing boredom and a perception of decreasing opportunities was thought to lead to some reduction in job satisfaction during subsequent years. In due course, it was suggested, a person comes to terms with his or her occupational role (perhaps having moved out of relatively unrewarding positions), and a subsequent increase in job satisfaction is observed.

This general pattern was also reported by Handyside (1961) in respect of the overall job satisfaction of 1,000 British men and women, but it has more recently received limited support. Weaver (1980) presented mean overall job satisfaction scores (men and women combined) from seven General Social Surveys in the United States of America between 1972 and 1978. In all years except one (1974), respondents

aged below 20 reported the lowest satisfaction. The same result was obtained in an Australian study by O'Brien and Dowling (1981), and in Hunt and Saul's (1975) data from male Australian white-collar employees, age-squared (representing non-linearity) made no significant contribution to the prediction of overall job satisfaction.

Although overall job satisfaction scores obtained during 1977 in the US Quality of Employment Survey were found to be U-shaped with respect to age, earlier investigations using the same series (data gathered in 1969 and 1973) found particularly low satisfaction among the youngest group (Quinn & Staines, 1979). Janson and Martin (1982), Kalleberg and Loscocco (1983) and Wright and Hamilton (1978) have reported detailed multivariate analyses of the 1973 data (which exhibited no U-shape), and the presence of particularly low job satisfaction among young employees appears to be generally accepted (e.g., Doering et al., 1983).

Yet the account provided by Herzberg and colleagues is a persuasive one, and it would be inappropriate to rule it out completely. Indeed, in a study of two axes of job-related well-being (not satisfaction itself) Warr (1992) reported a statistically significant U-shaped pattern, with elevated well-being at the youngest ages. It would therefore be valuable to investigate whether non-linearity is present in respect of job satisfaction in an up-to-date inquiry. This is one aim of the present paper.

The second question in need of examination concerns the explanation of the positive age-gradient that is found. Why do older employees report greater job satisfaction than younger ones? Six arguments have been presented to account for this association.

First, it is certain that many older people move into jobs which have more desirable characteristics (e.g., Janson & Martin, 1982; Kalleberg & Loscocco, 1983; Wright & Hamilton, 1978). Nevertheless, after statistically controlling for differences in key job attributes, a significant age difference in job-related well-being is typically retained (Glenn et al., 1977; Kalleberg & Loscocco, 1983; Warr, 1992). Movement into more attractive jobs cannot completely account for the positive age-gradient.

Second, there is evidence that older employees have specific work values which make more acceptable or attractive job characteristics that are less desirable to younger people. Wright and Hamilton (1978) and Kalleberg and Loscocco (1983) (in secondary analyses of the same data; see above) found that the rated importance of many job features is stable across ages, but that income and promotion opportunities were of greater concern to younger employees.

Several investigators have examined whether differences in measured work values can account for the increase in job satisfaction with age. As with job characteristics, above, differences in values can account for some of the age-pattern. However, the independent effect of age is retained after the introduction into multivariate analyses of controls for measured values (e.g., Clark, 1993; Kalleberg & Loscocco, 1983; Warr, 1992).

Third, it seems probable that older workers will come to lower their expectations in some respects, after experiencing a wider range of job situations and seeing that jobs in general have many unattractive features. Such reduced comparison standards are likely to generate more positive work attitudes, as the perceived gap between actual and ideal work becomes smaller, so that aspirations are reduced. If older people come to seek less from any possible job, then comparative assessments of their own position relative to other possibilities will give rise to more positive feelings about their own job. Clark and Oswald (1993) and Clark (1994) have provided evidence that this comparative process operates in relation to perceptions of income.

A fourth possible explanation of the positive age gradient is in terms of cohort differences; perhaps the members of older generations in a study have always been more satisfied with their jobs. In order to examine this possibility directly, it is desirable to compare individuals or surveys over a period of years. Such research is not widely available, but in general the evidence for cohort differences in job satisfaction is not strong (Glenn & Weaver, 1985; Janson & Martin, 1982). A general cohort explanation is also inconsistent with the fact that employment commitment is

lower among older employees (e.g., Warr, 1992), despite their generally more positive attitudes of other kinds.

Fifth, some of the observed differences between age groups might be accounted for by varying rates of participation in the labour force. Whereas more than 90% of British men aged between 25 and 55 are economically active at present, only about two-thirds of those between 55 and 65 are in the labour market. (For women, the values are about 70% and 35%.) Older employees are therefore less representative of their age-group in comparison with younger ones; it is possible that, through greater self-selection into the sample, they have more positive work attitudes than do those who are no longer employed.

Nevertheless, that effect may not be large; many older people outside the labour force have in practice been excluded against their will. Furthermore, this explanation is less relevant to early investigations into age and job satisfaction, since older people's participation rates declined substantially only in the 1970s and 1980s. Differential sample composition was of less concern prior to that period, but a positive age-gradient has been found at all times.

A sixth possible explanation of the greater job satisfaction of older employees is in terms of non-job variations. Age differences have been reported, for example, in respect of general life satisfaction (e.g., Campbell, Converse & Rodgers, 1976) and depression (e.g., Ryff, 1989), and it is possible that job satisfaction scores in part reflect those context-free variations in mental health at different ages.

Such differences are presumably associated with variations in family composition (for instance, in respect of dependent children) and in differences in financial position, self-concept, personal and normative expectations, and social roles at different ages. The importance of non-job variables of this kind might be examined by statistically controlling for them in satisfaction regressions. In practice, it is difficult to measure the less public aspects of self-concept and personal aspirations at different ages, and attention has so far been focussed on marital status and number of dependent children. Controls for those factors do not remove the significant influence

of age (Kalleberg & Loscocco, 1983; Warr, 1992); the age-gradient in job satisfaction cannot be explained through the limited life-stage variables that have been included in analyses to date.

In overview, it seems likely that each of those six sets of features can contribute to the positive association between age and overall job satisfaction. The fourth and fifth (a cohort difference and reduced labour market participation by older people) are not readily open to investigation in a cross-sectional study, but reasons one, two and six (role transitions, shifts in values, and non-job changes across the working years) have been examined through multivariate investigations. The variables incorporated to date have often themselves been statistically significant, but they have failed to render non-significant the effect of age; some other variables, not yet identified, appear also to underlie the observed age pattern. Reason three is in terms of changes in aspiration level, suggesting that, as individuals learn more about the costs and rewards of paid work, so they come to expect less and therefore feel more positive about what they have. This issue is difficult to address empirically, and research evidence tends to be indirect.

The present investigation includes a large variety of potential explanatory factors, and it differs from previous research in two main ways. First, there is a particular need at the present time to examine personal characteristics, such as self-reported health and work values, asking whether those personal features can account for the overall age pattern in respect of job satisfaction. The set of potential moderators in the present study gives emphasis to those features. Second, we will focus particularly on the fifth issue introduced above; are non-job issues important in the association between age and satisfaction with one's job?

One way to examine this question is through a measure of more wide-ranging affect. If, for the same sample of employees, the age pattern for general mental health (without specific reference to job issues) is the same as that for job satisfaction, it is likely that non-job factors (contributing strongly to the context-free measure) are also important for job satisfaction. Conversely, if the job-specific and context-free variables

(job satisfaction and mental health respectively) are not associated with employees' age in the same manner, we may suggest that non-job features have little impact on job-related affect. This study will examine that question.

In overview, the investigation aims to provide information in respect of the two unanswered questions introduced above. First, is a U-shaped relationship between age and job satisfaction observed in an up-to-date investigation? Second, in the expectation of an overall positive age-gradient, can that be accounted for in terms of a substantial range of potential moderators, with special reference to demographic and job-related characteristics and a range of work values? And does the age-pattern of context-free mental health parallel that for job satisfaction, such that non-job factors are likely to contribute to both?

Method

The data used in this paper are drawn from the British Household Panel Study funded by the Economic and Social Research Council. The paper uses the first (1991) wave of this survey, which provides information on a random sample of 10,000 individuals, including 5,140 employees; the latter are investigated here.

Information was obtained through interviews in a respondent's home, covering household composition, finances, personal and family backgrounds, employment characteristics, history and attitudes, and feelings of happiness and general mental health. Further details of the BHPS survey are available in Rose et al. (1991); see also Clark (1993) and Clark and Oswald (1993).

Variables and analyses

The dependent variables in the analyses to be reported here concern job satisfaction and general mental health. For the former, a respondent was asked how satisfied or dissatisfied he or she was with specific aspects of his or her job and "how satisfied you are with your present job overall". Responses ranged from 1 to 7, where 1 was identified as "not satisfied at all", 4 was "neither satisfied nor dissatisfied", and 7 was "completely satisfied". Findings are examined here in respect of overall job satisfaction (above), satisfaction "with the total pay, including any overtime or bonuses" (an aspect

of extrinsic satisfaction), and satisfaction "with the actual work itself" (an example of intrinsic satisfaction).

It is formally invalid to treat ordinal satisfaction data of this kind as though they were cardinal (e.g., Bryman and Cramer, 1990, pp. 65 ff.), and analyses have therefore been carried out using ordered probit techniques (McElvey & Zavoina, 1975). This approach treats data in an ordinal (rather than cardinal) manner, and also resolves the well-known difficulty that satisfaction scores are non-normally distributed, being bunched at the top end of a questionnaire scale. Associated with this general approach to measurement, we describe age patterns not in terms of mean values (which assume cardinality) but as the proportion of high scorers (6 or 7 on the scale described above). The paper appears to be the first one in the occupational psychology literature to use ordered probit techniques. It also suggests a method, using simple calculus, to allow minima of a U-shape in age (or any other continuous variable) to be calculated from estimated satisfaction equations.

The second dependent variable in this investigation is a person's score on the 12-item General Health Questionnaire (GHQ) (Goldberg, 1972). The GHQ is a self-administered screening test for detecting non-psychotic psychiatric disorder, covering feelings of strain, depression and inability to cope, anxiety-based insomnia, and lack of confidence. Responses are made on a four-point scale of frequency of a feeling in relation to a person's usual state, with the two highest values indicating potential ill-health. The number of such "unusual" feelings is conventionally taken as indicating the probability that a person is a potential non-psychotic medical "case". In relation to the 12-item GHQ, a person with two or more responses at the "unusual" level is conventionally viewed as above the "case" threshold.

On this basis, for the initial cross-tabulations respondents were defined as either a potential case or as a non-case. The latter individuals may in these terms be described as "mentally healthy". In order to maintain consistency of scoring direction between the General Health Questionnaire and the measures of job satisfaction

(where high scores are positive), the proportion of "mentally healthy" employees at different ages (rather than the proportion of "cases") will be examined.

The later regression analyses also used recoded GHQ responses, such that higher scores represent higher levels of well-being. This recoded score is produced by taking people's answers to the 12 GHQ questions and summing the number of times a person responds at the "usual" level. With this method, the lowest possible well-being score corresponds to no responses in the "usual" category; the highest well-being arises if an individual always describes his or her feelings in the "usual" category.

The potential predictor variables in the study are listed in Tables 4, 6, 7 and 9. Most of those are self-explanatory, but details of others are as follows. In respect of self-reported health, interviewees were asked: "Please think back over the last 12 months about how your health has been. Compared to people of your own age, would you say that your health has been Excellent, Good, Fair, Poor or Very Poor?". Three categories of educational qualifications were employed in the present analyses. These were: High education (a degree, teaching qualification, HND, HNC or other higher qualification); Medium education (Advanced or Ordinary level GCE or GCSE equivalent, or a nursing qualification); and Low education (lesser qualifications or no qualifications).

The number of hours worked was defined in terms of a person's usual weekly level (excluding overtime), and income was recorded in terms of usual monthly gross income from a person's main job. Details of establishment size were obtained in relation to to "the place where you work", rather than in respect of a person's employing organisation as a whole.

An individual's work values are of particular concern in the present study. Measures were taken through the question: "Here are some aspects of a job that people say are important. I would like you to look at this card and say which is the most important to you about a job. And which would be second most important?" The aspects under consideration were: Promotion prospects; The total pay; Good relations with your supervisor or manager; Your job security; Being able to use own

initiative; The actual work itself; The hours you work; and Something else (give details). Dummy variables for both the "most important" feature and the "second most important feature" are included in ordered probit analyses below.

Table 1 about here

Results

Job satisfaction

Table 1 describes the distribution of overall job satisfaction for different age-groups of employees, in terms of the percentage of respondents who are "highly satisfied" (yielding the two highest satisfaction scores of 6 or 7). The first column shows the findings for the full sample. It can be seen that 59.06 per cent of the youngest age-group are highly satisfied; this percentage first declines with age before increasing to its maximum of 75.52 at 60 years or above. The same curvilinear pattern is weakly present in data for women alone, but is particularly strong in the results from male respondents; the proportion of men highly satisfied with their job drops substantially after 16-19 years, before increasing in later decades.

The final three columns of Table 1 disaggregate the data into various educational groups. Even within an educational category, overall job satisfaction falls at first, then levels off between 20 and 40, and thereafter increases smoothly with age.

Table 2 about here

Table 2 repeats these analyses in respect of extrinsic job satisfaction, using data about satisfaction with pay. For the sample of employees as a whole and for women only, no U-shape is visible between age and satisfaction with pay, when the latter is indexed in terms of "highly satisfied" responses. However, for men higher pay satisfaction is again common below 20 years, with an overall U-shape with respect to age. The same is true for the first two educational groups in the table, but not for employees with the lowest qualifications; low pay satisfaction in the last group of young people is likely to be associated with pay that is itself low.

Table 3 about here

Table 3 shows the results for a measure of intrinsic job satisfaction, satisfaction with work itself. There is again a U-shape in men's satisfaction, and also for those with either higher or low educational qualifications. However, that pattern is not visible for women, nor for the entire sample, in the percentages of "highly satisfied" responses examined in this analysis.

The stronger presence of a U-shape for men than for women might perhaps arise from the fact that the female sub-sample includes a higher proportion of part-time employees, who may not display that pattern with age. The analyses in Tables 1 to 3 have therefore been repeated for full-time workers only (those working 30 hours or more each week). For overall job satisfaction, the pattern is barely changed: overall satisfaction values follow closely those in Table 1, except that fewer full-time workers aged 60 and above indicate high overall satisfaction than in the total sample (63.33 versus 75.22 per cent). For full-time employed women, there is a stronger U-shape in overall job satisfaction than for the total female sample shown in Table 1; the figures for men (already showing a U-shape for all male employees) are barely changed; and the U-shape persists for each level of education.

Analyses of the Table 2 data (satisfaction with pay) for full-timers alone confirm the presence of a U-shaped relationship with age for men, but (as for the entire sample) that is not seen for all full-time workers nor for full-time women. For full-timers alone, there is again evidence of a U-shape for the two higher levels of education, but not for the lowest level (when actual pay is likely to be at its lowest). In respect of Table 3, for the sample of full-time employees there is now a strong U-shape between age and satisfaction with the work itself, and this is retained for full-time male employees. A U-shape is also present for full-time employees at the lowest educational level, but less so at other levels.

The percentages in Tables 1 to 3 (and outlined above for full-time employees) are helpful in summarizing one, extreme, aspect of the distribution of scores: the percentage who are "highly satisfied". However, proper tests of the relationship between age and satisfaction need to be based on the full distribution of responses

rather than merely on extreme scores. The complete distribution of scores will therefore be used in formal significance tests of the linear and non-linear components of this relationship. These tests will also control for other variables. Since many factors other than age influence job satisfaction, it is possible that any curved relationship with age is an artefact of omitted influences. For example, perhaps income or health has a U-shaped effect and, being correlated with age, misleadingly gives the impression that there is a curved effect attributable to age. For well-known reasons, multivariate analyses are needed.

Table 4 about here

Table 4 thus presents the results of ordered probit regressions in which overall job satisfaction is the dependent variable. The first column confirms the significant positive association with age that is visible in Table 1. Column 2 is an equation which has age and age-squared as its only independent variables. Both of these coefficients are highly significant: where $\underline{a}$ is age and $\underline{s}$ is satisfaction, this equation has the form: $\underline{s}$ = -0.036$\underline{a}$ + 0.00059$\underline{a}$-squared.

Differentiating this: (Partial $\underline{s}$) over (Partial $\underline{a}$) = -0.036 + 0.00118$\underline{a}$; (Partial-squared $\underline{s}$) over (Partial-squared $\underline{a}$) = 0.0012. Hence, $\underline{s}$ is a convex function which has a minimum. By elementary calculus the turning point of the function is found by setting [(Partial $\underline{s}$) over (Partial $\underline{a}$)] to zero. That indicates that satisfaction minimizes where -0.036 + 0.00118$\underline{a}$ = 0, namely at $\underline{a}$ = 31. Column 2 of Table 4 implies, therefore, that there is a significant U-shape in age and the that the minimum occurs at age 31. This states more precisely the point captured in the earlier cross-tabulations: overall job satisfaction drops initially and rises after that.

As noted above, the main issue to be checked is whether this U-shape disappears when a number of other explanatory variables are allowed into the equation. Column 3 of Table 4 incorporates control variables for gender, health, race, education, income, hours of work, whether the employee is a manager or in a trade union, the size of the establishment, and sets of regional, industrial and occupational dummy variables. The U-shape in age is remarkably robust. Both age and its square

remain statistically significant at the 0.1 per cent level, and the size of their estimated coefficients is only marginally affected by the extra variables, despite the fact that many of those are themselves significant. As can be checked, the U-shape in age continues to have its turning point at age 31.

Columns 4 and 5 add more variables. The turning point occurs fractionally higher by the time all 80 variables of column 5 are included. Satisfaction reaches its minimum in column 4 at age 33, and in column 5 at age 36. This increase in the age at which job satisfaction is lowest probably occurs because a number of these controls, such as income, rise with age and are positively correlated with overall job satisfaction. Because of its extra controls, column 5 is probably the most reliable estimate of the U-shape.

It is clear from Table 4 that age has a robust U-shaped effect upon overall job satisfaction, even after the introduction of a large number of control variables. Furthermore, after those controls men are found to be less satisfied than women (as analyzed in Clark 1993); good health is correlated with job satisfaction; highly educated people are less satisfied (Clark and Oswald, 1993, and Clark, 1994, discuss possible "comparison" effects such as this); high income is not associated with overall job satisfaction; long hours reduce satisfaction; managers are more satisfied and union members less satisfied; and overall job satisfaction is higher in smaller establishments.

As is usually the case in examinations of employee well-being, the industry dummies in Table 4 are statistically significant. These are a set of ten dummy variables (coded 1 or 0) to represent the ten one-digit groups of the Standard Industrial Classification (SIC). The omitted group in the analyses is SIC category nine (Other Services). Significantly lower overall job satisfaction relative to Other Services was observed in five industries: Metal Goods (-.31, $p < 0.01$), Transport and Communication (-.26, $p < 0.01$), Other Manufacturing (-.25, $p < 0.02$), Distribution (-.24, $p < 0.01$), and Banking, Finance and Insurance (-.15, $p < 0.02$).

Job tenure is included in Table 4 to examine the proposition that individuals are more satisfied at higher ages because they are more likely to have found a job which matches their needs. An alternative possibility is that longer job tenure leads to boredom and low overall satisfaction, as employees become "locked into" a routine activity. The estimated coefficient for tenure in Table 4 is always insignificant, seemingly rejecting both hypotheses (or suggesting that both are true, for different individuals).

Given that age and job tenure are typically intercorrelated, a sub-sample was drawn of those with long job tenure. A significant U-shape with age remained even for employees with job tenure of six years or more. This suggests that the positive relationship between age and job satisfaction does not entirely result from a better match of individuals with their jobs, as all employees with job tenure of this length should already be relatively well-matched.

The work values included in columns 4 and 5 of Table 4 are of substantial importance in contributing to differences in overall job satisfaction. The omitted categories for comparisons between work values were "Initiative" and "Something else". Significant differences relative to these omitted categories were found for employees who indicated that pay, good relations or job security are important: employees who strongly value high pay tend to be less satisfied, whereas those who particularly value good relations and job security exhibit higher overall job satisfaction.

Column 5 of Table 4 indicates that being married and having three or more children in the household are also significant. Although these variables are open to different interpretations, they are valuable in this analysis because they control for possible stress associated with the years of child-rearing.

Table 5 about here

Table 5 demonstrates that work values change significantly with age. The figures in each row show the percentage of an age-group who indicated that that aspect of a job was either first or second most important to them. For example, 20.2 per cent of 16-19 year-olds reported promotion prospects to be most important. This

percentage falls sharply with age, to only 3.2 per cent for workers in their fifties, before rising to a surprisingly high level for workers in their sixties. A negative relationship also exists between age and the percentage ranking of pay as important. Other work values, such as job security and the use of initiative, become more important with age. However, the nature of the work itself is most likely to be rated as extremely important by employees in their 30s. The Chi-squared statistic in the last column of each row tests the hypothesis that the same percentage of workers in each age-group ranks that aspect as important. This hypothesis is rejected, typically at very high levels of significance, for all aspects of a job except the last, the catch-all category "Something else".

Table 6 about here

Tables 6 and 7 report results analogous to those in Table 4 for satisfaction with pay and satisfaction with the work itself respectively. In Table 6, the coefficient on age alone is significantly positive, as suggested by column 1 of Table 2. When both age and its square are included as explanatory variables in column 2, age-squared is positive and significant, but age itself is insignificantly negative. However, once the additional control variables of columns 3 to 5 are included, the estimate on age becomes negative and significant, while the age-squared term remains significant. This pattern indicates a strong U-shaped relationship between age and satisfaction with pay once other relevant individual and job characteristics have been held constant. The ages at which this U-shaped relationship minimizes are 19, 35, 36 and 39 for the estimates in columns 2 to 5 respectively.

Table 7 about here

The estimate on age alone is also positive in Table 7, and again changes sign when age-squared and other terms are introduced. There is a significant U-shaped relationship between age and satisfaction with the work itself in all of the last four columns, with respective minima at ages 19, 23, 25 and 28. The strong age-squared term reflects the distinct non-linearity in the values reported in the first column of Table 3.

Thus, once other relevant variables have been controlled, there is a strong and significant U-shaped relationship between age and both extrinsic and intrinsic job satisfaction. The age at which job satisfaction is at its minimum appears to be lower for intrinsic satisfaction than for extrinsic satisfaction.

Several results from the overall job satisfaction regressions (Table 4) are replicated in Tables 6 and 7: good reported health is associated with higher job satisfaction; women report higher satisfaction scores than men; more educational qualifications and larger establishment size are negatively correlated with satisfaction with the work itself; and valuing promotion or pay is associated with lower pay satisfaction, whereas valuing pay and the actual work are associated with work satisfaction that is low and high respectively.

Not only is the U-shape found for all these three measures of job satisfaction; the pattern persists when the sample is restricted to full-time employees, thus avoiding any possible anomalies arising from employees with part-time (and often more intermittent) jobs. In overall satisfaction equations for full-time workers, the minima in the equivalent to columns 2 to 5 in Table 4 are 34, 36, 37 and 38 years. For full-time employees' satisfaction with pay, there is no convex relationship with age in the absence of control variables. However, when controls are added, a significant U-shaped relationship emerges, with minima at ages 38, 39 and 40 corresponding to columns 3, 4 and 5 of Table 6. For full-time employees' satisfaction with the work itself, minima are at 24, 27, 28 and 30 years; in almost every case the estimated coefficients on age-squared are significant at the 0.1 per cent level, and those for age are typically significant at the one per cent level or better. There is thus a strong and robust U-shaped relationship between the three measures of job satisfaction and age, for both the complete sample and for full-time employees only.

Table 8 about here

Context-free mental health

How closely do age differences in General Health Questionnaire (GHQ) scores match those for job satisfaction? If the relationship between age and context-free mental

health is similar to that between age and job satisfaction, then non-job factors may be important in explaining the U-shape reported in the previous section. Table 8 presents age distributions in the same form as those for job satisfaction earlier; high percentages in this analysis indicate more people with good mental health. Results are very similar to those considered earlier. For the sample as a whole, there is a U-shaped association in the raw data between age and context-free mental health; this is stronger for male employees than for female employees. The association is present for all levels of educational qualifications, and (not shown in the table) it is robust to the exclusion of part-time workers.

Table 9 about here

Table 9 summarizes the ordered probit analysis of GHQ scores, recoded so that higher values indicate higher levels of mental health. The estimated relationship between age and context-free mental health is similar to those between age and job satisfaction described earlier. Recoded GHQ score is increasing in age when that is the only explanatory variable. When age-squared is added, the coefficient on age is negative and that on age-squared is positive, both strongly significant, implying a U-shaped relationship between age and mental health. This relationship is robust to the inclusion of the same controls as used previously in the analyses of job satisfaction. After including all of these control variables, the relationship is of the following form: $\underline{h} = -0.028\underline{a} + 0.00037\underline{a}$-squared. Hence, employee mental health is a convex function of age which reaches its minimum level at age 38. The turning points in the same analyses as in columns 2, 3 and 4 of Tables 4, 6 and 7 are at ages 34, 37 and 37 respectively.

The findings in Table 9 are thus similar to those for overall job satisfaction in Table 4 (where the minimum after introducing controls was found to be 36 years). However, fewer additional variables have significant independent effects on this context-free measure, with most job-related variables (income, hours, managerial status, union membership, establishment size, and the occupation and industry dummies) being insignificant. Male employees have higher levels of mental health,

which contrasts with the finding on male job satisfaction (e.g., Clark, 1993). Individuals reporting excellent or good general health also have better mental health, as do employees who value job security. Being separated or divorced is associated with poorer mental health. Employees with only one child have significantly lower levels of mental health than those with no children. This may reflect the stress involved with starting a family.

Table 10 about here

Male and female well-being

Tables 1, 2, 3 and 8 provided some initial evidence that the relationship between age and well-being may differ between men and women. However, those tables summarized merely the "highly satisfied" responses, and the complete distribution of scores needs to be examined in each case. This is done in Table 10, which goes beyond previous analyses in presenting separate estimates of the age variables for men and women corresponding to those in Tables 4, 6, 7 and 9. For all specifications, there is a strongly significant relationship between age and well-being when age is the only explanatory variable.

When age-squared is added (in column 2 of Table 10), a significant U-shape emerges for both men and women in overall job satisfaction and context-free mental health, but only for men in satisfaction with pay. For satisfaction with the work itself, the terms in the level of age are insignificant in column 2, although those on age-squared are positive and significant. This implies that, when only age and its square are included as explanatory variables, there is a convex relationship between age and satisfaction with the work itself, but no U-shape as this would require a significant negative coefficient on the level of age.

As more controls are added (shown in the previous tables), the correlation between age and well-being becomes stronger. In column 5 of Table 10 there is a significant U-shaped relationship in all measures of job satisfaction for both men and women, although that for men is rather better defined for satisfaction with pay and satisfaction with the work itself than that for women. There is a U-shaped relationship

between age and women's context-free mental health; but, although the estimates for men are signed correctly, there is (after all the controls listed in Table 9) no significant association between age and the mental health of male employees.

The estimated minima in column 5 of Table 10 turn out to be very similar for men and women. For the four measures of well-being considered, the minima for men are, in turn, 38, 40, 30 and 38; for women these values are 36, 38, 29 and 38.

Discussion

This paper has provided new information about two key issues. First, we have demonstrated in a large-sample study that overall job satisfaction is U-shaped in relation to age; with no other control variables, it declines on average until the age of approximately 31 and rises thereafter. Furthermore, ordered probit equations have been estimated in which a large number of control variables for personal characteristics, aspects of jobs and their work values are included. The existence of a robust and statistically well-determined U-shaped curve in age continues to be visible in the data. In the fullest specification, with approximately 80 control variables, the U-shape between age and overall job satisfaction has a minimum at age 36.

This strong result persists for ordered probit analyses of both extrinsic and intrinsic job satisfaction (satisfaction with pay and satisfaction with work itself). The age at which intrinsic satisfaction minimizes is found to be lower than the minimum for extrinsic satisfaction. It was also shown that a U-shape in all the measures of job satisfaction exists for both men and women separately, and that the minima are at similar ages across the sexes. The findings suggest that the curved relationship proposed by Herzberg et al. (1957) is a deep structural correlation that is not due to the links between age and variables like income, health, family characteristics or job tenure.

Separate analyses have indicated that the U-shape is particularly strong for full-time employees only, in comparison with the sample of full-time and part-time employees together. It is also somewhat stronger for men than for women. Why might these differences occur?

Full-time (rather than part-time) employment is more likely to be viewed in terms of progress in a continuing career, so that a person's assessments of his or her current full-time position are more likely to include judgements relative to previous and future roles. Those comparative judgements might give rise to declines in satisfaction after an initial period in the work-force (as a job becomes seen as repetitive and restrictive) and an increase in later years (as a current position is compared favourably with earlier ones). A stronger positive association with men's (rather than women's) age may also be expected because men are more likely to be promoted as they age to more senior jobs, with attractive characteristics such as autonomy, authority, increased income, and status. In addition, men's withdrawal from unsatisfying jobs is more concentrated in later life, whereas women's may be spread out more evenly over the age distribution.

The U-shape found here was not observed in several studies reported during the 1970s (see the Introduction), although it has recently been found in an investigation of other aspects of occupational well-being (Warr, 1992). How might this inconsistency between findings at the younger ages be explained?

One possibility is in respect of study dates. Before the 1960s and after the late 1980s a curvilinear pattern has been reported. It might be the case that during the cultural conditions in developed countries during the 1960s and 1970s young employees were generally disenchanted with their new jobs, such that their early roles in the labour market were not accompanied by high job satisfaction. Alternatively, a national difference might be important; very low levels of job satisfaction among young employees have typically been observed in USA, whereas recently-observed U-shapes have come from the United Kingdom. Perhaps differences in the the labour market in the two countries affect the job attitudes of young adults in a differentiated manner.

Another possible interpretation is in terms of sampling at low ages. It is likely that some investigations have studied only very few employees below the age of 20, reducing the probability of identifying a statistically significant curvilinear pattern. In

some studies, the youngest age-groups will exclude all those remaining in education, so that the jobs held by the youngest age-groups may lack qualities available at higher ages. More generally, the present results indicate that male full-time employees are especially likely to demonstrate a U-shaped relationship with job satisfaction; hence, differences between studies in the gender composition of samples may have influenced the nature of findings.

Whatever are the explanations for this inconsistency in the literature, the present findings provide additional evidence that the conventional account of age differences in job satisfaction (a continuous increase from very low levels at young ages; e.g., Doering et al., 1983) is not generally valid. There is now a need to focus attention specifically on the factors which are associated with either positive or negative associations between age and job satisfaction among employees below the age of about 30. Under what circumstances is each relationship found? For instance, in cases where young employees progress through career stages into progressively more attractive jobs, a positive rather than negative association with age in the lower band would be expected. But when school-leavers move into jobs which they at first enjoy but later discover provide little intrinsic or extrinsic rewards, it may be envisaged that positive well-being associated with initial novelty would gradually decline, leading to a negative association with age of the kind envisaged by Herzberg and colleagues (1957). The more pronounced U-shapes for male employees and for full-time employees also deserve investigation; what is it about their jobs and careers which tends toward a decline in each form of job satisfaction across the earlier years?

In respect of the second question addressed in this paper (why do older employees report greater job satisfaction than younger ones?), the inclusion of a wide range of potential explanatory variables in the ordered probit analyses has failed to remove the statistically significant impact of age. This is particularly notable since the control variables were themselves often independently important in predicting job satisfaction and they covered a wide range of personal and occupational features. For example, self-reported health was found to make an independent contribution to

overall job satisfaction (Table 4), as did education (negative, after controlling for other factors) and managerial status (positive, as usually found). Attention was particularly directed at the role of key work values; although several of those were found to affect job satisfaction in the ordered probit analyses, the significant contribution of age itself was retained.

The U-shaped relationship between age and job satisfaction is not accounted for by the job attributes which we have measured, nor by individuals' work values or by their level of education. We have not directly addressed the issue of sample selection in this paper, whereby less-satisfied older workers might leave the work-force entirely. However, the estimates suggest that job satisfaction typically rises from the low-thirties, and withdrawal from the labour force (typically at later ages) can only account for part of this increase at best.

By examining the age distribution of context-free mental health (measured by the General Health Questionnaire), it was possible to make inferences about the influence of non-job features on well-being. For this sample of employees, the pattern of reversed-GHQ scores was found to parallel that for job satisfaction, with significant non-linearity revealed in an ordered probit analysis. This suggests that the wider personal and family developments which determine context-free mental health are also among the determinants of specifically job-related affect. In this and other studies, measures have been taken of life-stage variables in terms of readily-specified marital and parental status. There is now a need to examine the association between job satisfaction and less accessible non-job variables.

Of particular importance are comparisons made between jobs which are made by employees of different ages. Both job satisfaction and general mental health are likely to be influenced by an employee's current perception of his or her job relative to expectations of what a job should entail. (Clark and Oswald, 1993, and Clark, 1994, find evidence that comparisons such as these, with respect specifically to income, significantly influence job satisfaction.) If this study has adequately measured all of the

relevant aspects of individuals and their jobs, then the U-shape in age might be largely explained by changing expectations or comparisons across time.

In order to explain the U-shaped relationship between job satisfaction and age, two processes of expectation may be important. First, young employees may feel satisfied with their job not only because of the novelty of their situation but also because the youth unemployment rate is high and they feel pleased to have a job in comparison with their unemployed peers. However, this comparison level may rise toward middle age, as more of their peer group find attractive jobs, with a consequential decline in level of satisfaction. Also, as workers gain labour market experience, they also gain information about the nature of work to compare against their prior expectations regarding their own job, and this later comparison may be dissatisfying.

Very young workers may not have enough information about the world of work to know whether their job is good or bad in relation to others; it is only with labour market experience that they can firmly make such judgements. In this sense it is more satisfying to have hopes at the age of 20 about what one's job will be like at the age of 30, than to realize that these expectations were too optimistic once that age is reached.

The second process concerns the relation of workers and their expectations in their later working years. The rise in job satisfaction at these ages could come from reduced aspirations, due to a recognition that there are few alternative jobs available once a worker's career is established, as outlined in the Introduction. Alternatively, aspirations themselves could remain the same but older workers might put less weight on such comparisons, after realising that their initial expectations have not been met.

Herzberg et al. (1957) suggested that the increase in job satisfaction from the low thirties results from older workers' transition to more rewarding jobs. However, given the robustness of the age-relationship to a number of job characteristics (a U-shape in age is retained despite the inclusion of many controls), it may be that older workers are more satisfied not only because thay are better rewarded but also because they expect less or because they care less about such comparisons. In this context, the

investigation of age differences in expectations and comparisons would seem a fruitful area for further research.

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Table 1. Age and overall job satisfaction: Percentage of employees who are "highly satisfied" (responses of 6 or 7)

	Full sample	Women	Men	Education: High	Education: Medium	Education: Low
All ages	58.55	64.83	52.73	55.85	57.19	62.42
16-19 years	59.06	59.63	58.59	63.24	55.76	67.01
20-29 years	53.88	58.41	49.61	54.81	52.76	55.35
30-39 years	55.94	64.47	48.56	52.67	58.68	56.12
40-49 years	58.59	65.43	51.31	56.81	57.32	61.38
50-59 years	65.94	73.88	58.68	59.44	67.10	68.30
60+ years	75.52	81.99	70.47	72.74	78.17	75.53
N	5192	2499	2693	1412	2075	1694

These numbers refer to weighted data.

Table 2. Age and satisfaction with pay: Percentage of employees who are "highly satisfied" (responses of 6 or 7)

	Full sample	Women	Men	Education: High	Education: Medium	Education: Low
All ages	34.61	38.64	30.88	34.73	31.90	37.68
16-19 years	28.77	25.26	31.62	35.56	28.44	26.65
20-29 years	29.26	30.52	28.06	33.38	26.24	30.60
30-39 years	33.36	40.92	26.80	34.27	32.37	33.58
40-49 years	35.38	39.78	30.69	31.69	35.30	38.48
50-59 years	41.20	47.57	35.38	39.46	44.02	40.65
60+ years	58.28	63.39	54.41	62.98	57.18	57.24
N	5183	2492	2690	1410	2070	1692

These numbers refer to weighted data.

Table 3. Age and satisfaction with the work itself: Percentage of employees who are "highly satisfied" (responses of 6 or 7)

	Full sample	Women	Men	Education: High	Education: Medium	Education: Low
All ages	63.32	66.48	60.38	63.40	60.23	66.98
16-19 years	54.79	54.67	54.88	60.77	51.79	61.16
20-29 years	55.71	59.62	52.02	57.11	54.90	56.03
30-39 years	60.90	65.35	57.06	61.48	60.39	60.84
40-49 years	66.44	67.80	64.98	66.37	66.04	66.85
50-59 years	73.98	79.37	69.03	71.30	74.06	75.13
60+ years	85.05	85.37	84.80	86.48	86.79	84.32
N	5193	2502	2692	1412	2074	1696

These numbers refer to weighted data.

Table 4. Equations for overall job satisfaction: Ordered probits, with standard errors in parentheses

	Column 1	Column 2	Column 3	Column 4	Column 5
Age	0.01(0.001)***	-0.04(0.007)***	-0.03(0.009)***	-0.04(0.009)***	-0.05(0.01)***
Age-squared		5.9E-4(8.9E-5)***	5.4E-4(1.0E-4)***	5.5E-4(1.1E-4)***	7.6E-4(1.3E-4)***
Male			-0.23(0.04)***	-0.20(0.04)***	-0.22(0.04)***
Health excellent			0.38(0.05)***	0.39(0.05)***	0.38(0.05)***
Health good			0.19(0.04)***	0.20(0.04)***	0.19(0.04)***
Race black			-0.05(0.15)	-0.08(0.15)	-0.07(0.15)
Race asian			-0.07(0.14)	-0.10(0.14)	-0.14(0.14)
Education high			-0.37(0.05)***	-0.35(0.05)***	-0.33(0.05)***
Education medium			-0.25(0.04)***	-0.22(0.04)***	-0.22(0.04)***
Log income			0.04(0.04)	0.07(0.04)	0.07(0.04)
Log hours			-0.19(0.05)***	-0.21(0.05)***	-0.19(0.06)***
Manager			0.10(0.04)*	0.10(0.04)*	0.10(0.04)**
Union member			-0.10(0.04)*	-0.08(0.04)*	-0.09(0.04)*
Establishment size 1-24			0.14(0.05)**	0.14(0.05)**	0.13(0.05)**
Establishment size 25-199			0.06(0.04)	0.06(0.04)	0.06(0.04)
Region dummies (18)			Yes*	Yes	Yes
Industry dummies (10)			Yes***	Yes***	Yes***
Occupation dummies (9)			Yes*	Yes*	Yes*
Job tenure				-9.8E-6(8.5E-6)	9.5E-6(8.6E-6)
Work Values: 1st mention					
Promotion prospects				-0.11(0.11)	-0.12(0.11)
Total pay				-0.30(0.07)***	-0.31(0.07)***
Relations at work				0.26(0.08)**	0.26(0.08)**
Job security				0.19(0.06)**	0.18(0.06)**
Actual work itself				0.06(0.06)	0.06(0.06)
Hours				0.20(0.11)	0.17(0.11)
Work Values: 2nd mention					
Promotion prospects				-0.12(0.08)	-0.12(0.08)
Total pay				-0.12(0.05)*	-0.13(0.06)*
Relations at work				0.20(0.06)**	0.20(0.06)**
Job security				0.08(0.06)	0.08(0.06)
Actual work itself				0.06(0.06)	0.07(0.06)
Hours				0.00(0.08)	-0.02(0.08)
Marital status					
Married					0.15(0.06)**
Separated					0.03(0.13)
Divorced					0.11(0.08)
Widowed					0.31(0.15)*
Number of own children in household:					
1					-0.03(0.06)
2					-0.05(0.07)
3+					0.26(0.10)*

ıble 5. Percentage of employees ranking each aspect of a job as first or second most important by age

	16-19	20-29	30-39	40-49	50-59	60+	Chi-squared (df = 5)
ɔmotion prospects	20.2	14.0	6.5	3.4	3.2	22.3	288.7***
tal pay	41.5	45.6	43.8	38.2	29.0	27.1	154.9***
lations at work	24.3	20.3	16.5	18.8	24.3	39.5	48.6***
b security	41.0	42.2	41.7	44.8	50.1	39.2	27.8***
ɜe of initiative	16.2	19.9	22.7	27.5	31.4	47.8	135.7***
ɔtual work itself	42.7	45.2	50.1	49.3	44.8	14.2	18.7**
ɔurs	10.9	8.1	13.5	12.7	12.6	3.6	33.2***
ɪmething else	2.9	4.5	4.7	4.8	4.0		5.1

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Number in household:					
2					-0.05(0.07)
3					0.06(0.08)
4					0.09(0.08)
5					0.02(0.09)
6+					-0.08(0.13)
Constant	-0.83(0.05)	-0.05(0.13)	0.41(0.20)*	0.28(0.22)	0.41(0.25)
N	5140	5140	4478	4452	4440
Log-likelihood	-8288.9	-8266.8	-7037.5	-6928.9	-6894.5

* Significant at the 5% level
** Significant at the 1% level
*** Significant at the 0.1% level

Table 6. Equations for satisfaction with pay: Ordered probits, with standard errors in parentheses

	Column 1	Column 2	Column 3	Column 4	Column 5
Age	0.009(0.001)***	-0.009(0.007)	-0.05(0.008)***	-0.05(0.008)***	-0.06(0.01)***
Age-squared		2.3E-4(8.6E-5)**	6.4E-4(1.1E-4)***	6.7E-4(1.1E-4)***	8.0E-4(1.3E-4)***
Male			-0.27(0.04)***	-0.23(0.04)***	-0.25(0.04)***
Health excellent			0.20(0.05)***	0.20(0.05)***	0.20(0.05)***
Health good			0.13(0.04)**	0.13(0.04)**	0.13(0.04)**
Race black			-0.11(0.15)	-0.13(0.15)	-0.13(0.15)
Race asian			0.05(0.14)	0.04(0.14)	0.04(0.14)
Education high			-0.08(0.05)	-0.09(0.05)	-0.08(0.05)
Education medium			-0.09(0.04)*	-0.08(0.04)	-0.08(0.04)
Log income			0.59(0.04)***	0.60(0.04)***	0.60(0.04)***
Log hours			-0.86(0.05)***	-0.86(0.05)***	-0.85(0.05)***
Manager			-0.06(0.04)	-0.06(0.04)	-0.07(0.04)
Union member			-0.06(0.04)	-0.03(0.04)	-0.03(0.04)
Establishment size 1-24			0.06(0.04)	0.04(0.04)	0.04(0.04)
Establishment size 25-199			-0.02(0.04)	-0.01(0.04)	-0.01(0.04)
Region dummies (18)			Yes***	Yes***	Yes**
Industry dummies (10)			Yes*	Yes*	Yes*
Occupation dummies (9)			Yes***	Yes***	Yes***
Job tenure				-1.4E-5(8.3E-6)	-1.5E-5(8.4E-6)
<u>Work Values: 1st mention</u>					
Promotion prospects				-0.27(0.10)*	-0.27(0.10)**
Total pay				-0.21(0.06)**	-0.21(0.06)**
Relations at work				0.10(0.08)	0.10(0.08)
Job security				0.04(0.06)	0.04(0.06)
Actual work itself				-0.01(0.06)	-0.01(0.06)
Hours				0.20(0.10)*	0.18(0.10)
<u>Work Values: 2nd mention</u>					
Promotion prospects				-0.27(0.08)**	-0.28(0.08)***
Total pay				-0.21(0.05)***	-0.21(0.05)***
Relations at work				0.04(0.06)	0.04(0.06)
Job security				-0.14(0.06)*	-0.13(0.06)*
Actual work itself				-0.01(0.06)	-0.01(0.06)
Hours				-0.07(0.08)	-0.07(0.08)

Marital status:					
Married					0.18(0.06)**
Separated					0.05(0.12)
Divorced					0.07.(0.08)
Widowed					0.13(0.15)
Number of own children in household:					
1					-0.06(0.05)
2					-0.08(0.06)
3+					0.01(0.10)
Number in household:					
2					-0.18(0.07)*
3					-0.06(0.07)
4					-0.05(0.08)
5					-0.13(0.09)
6+					-0.23(0.13)
Constant	-1.17(0.05)***	-0.85(0.12)***	-0.90(0.20)***	-0.84(0.28)***	-0.57(0.24)**
N	5131	5131	4471	4445	4433
Log-likelihood	-9559.5	-9555.8	-8132.6	-8045.3	-8013.0

* Significant at the 5% level
** Significant at the 1% level
*** Significant at the 0.1% level

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Table 7. Equations for satisfaction with the work itself: Ordered probits with standard errors in parentheses

	Column 1	Column 2	Column 3	Column 4	Column 5
ge	0.02(0.001)***	-0.02(0.007)*	-0.02(0.009)*	-0.02(0.009)*	-0.03(0.01)**
ge-squared		4.1E-4(9.2E-5)***	4.2E-4(1.1E-4)***	4.1E-4(1.1E-4)***	5.3E-4(1.3E-4)***
[ale			-0.19(0.04)***	-0.16(0.04)***	-0.18(0.04)***
[ealth excellent			0.28(0.05)***	0.28(0.05)***	0.28(0.05)***
[ealth good			0.14(0.04)**	0.14(0.04)**	0.14(0.04)**
.ace black			0.06(0.15)	0.08(0.16)	0.07(0.16)
.ace asian			0.35(0.15)*	0.34(0.15)*	0.27(0.15)
[ducation high			-0.37(0.05)***	-0.37(0.06)***	-0.36(0.06)***
[ducation medium			-0.25(0.04)***	-0.24(0.04)***	-0.24(0.04)***
.og income			0.02(0.04)	0.02(0.04)	0.03(0.04)
.og hours			-0.07(0.06)	-0.07(0.06)	-0.05(0.06)
Manager			0.15(0.04)***	0.15(0.04)***	0.15(0.04)***
Jnion member			-0.12(0.04)**	-0.12(0.04)**	-0.12(0.04)**
[stablishment size 1-24			0.24(0.05)***	0.22(0.05)***	0.22(0.05)***
[stablishment size 25-199			0.08(0.04)	0.08(0.04)	0.07(0.04)
Region dummies (18)			Yes	Yes	Yes
ndustry dummies (10)			Yes***	Yes***	Yes***
Occupation dummies (9)			Yes***	Yes***	Yes***
Job tenure				1.3E-5(8.9E-6)	1.4E-5(9.0E-6)
Work Values: 1st mention					
Promotion prospects				-0.12(0.11)	-0.13(0.12)
Total pay				-0.26(0.07)***	-0.26(0.07)***
Relations at work				0.21(0.08)*	0.20(0.08)*
Job security				0.10(0.06)	0.10(0.06)
Actual work itself				0.16(0.06)*	0.17(0.06)**
Hours				0.12(0.11)	0.10(0.11)
Work Values: 2nd mention					
Promotion prospects				-0.06(0.08)	-0.05(0.08)
Total pay				-0.06(0.06)	-0.06(0.06)
Relations at work				0.16(0.06)*	0.16(0.06)*
Job security				0.10(0.06)	0.08(0.06)

Actual work itself				0.12(0.06)	0.12(0.06)
Hours				-0.07(0.08)	-0.10(0.08)
Marital status:					
Married					0.02(0.06)
Separated					-0.10(0.13)
Divorced					0.06(0.08)
Widowed					0.49(0.17)**
Number of own children in household:					
1					-0.02(0.06)
2					0.05(0.07)
3+					0.22(0.10)*
Number in household:					
2					-0.03(0.07)
3					0.05(0.08)
4					0.06(0.08)
5					0.01(0.10)
6+					0.24(0.14)
Constant	-0.80(0.05)***	-0.26(0.13)*	-0.33(0.21)	-0.40(0.23)	-0.43(0.26)
N	5142	5142	4478	4452	4440
Log-likelihood	-7841.6	-7831.6	-6710.6	-6628.4	-6592.4

* Significant at the 5% level
** Significant at the 1% level
*** Significant at the 0.1% level

Table 8. Age and context-free mental health: Percentage of employees defined as "non-cases" in terms of the General Health Questionnaire

	Full sample	Women	Men	Education: High	Education: Medium	Education: Low
All ages	70.35	66.66	73.79	68.60	70.06	72.36
16-19 years	72.33	66.72	77.07	59.97	72.50	77.69
20-29 years	69.17	65.18	72.97	68.44	70.24	67.46
30-39 years	68.25	65.46	70.69	64.95	67.69	72.89
40-49 years	68.04	64.36	71.96	66.84	78.64	74.90
50-59 years	76.51	74.04	78.69	77.81	66.27	71.01
60+ years	79.63	72.75	84.67	91.72	87.24	74.30
N	5016	2379	2556	1379	1930	1617

These numbers refer to weighted data.

Table 9. Equations for context-free mental health (GHQ): Ordered probits, with standard errors in parentheses

	Column 1	Column 2	Column 3	Column 4	Column 5
Age	0.004(0.001)**	-0.03(0.008)***	-0.03(0.01)***	-0.3(0.01)***	-.03(.01)*
Age-squared		4.1E-4(1.0E-4)***	4.6E-4(1.2E-4)***	4.7E-4(1.2E-4)***	3.8E-4(1.4E-4)**
Male			0.18(0.05)***	0.18(0.05)***	.17(.05)***
Health excellent			0.74(0.05)***	0.73(0.05)***	.73(.05)***
Health good			0.46(0.05)***	0.46(0.05)***	.45(.05)***
Race black			0.05(0.17)	0.14(0.17)	.20(.17)
Race asian			-0.08(0.16)	-0.10(0.16)	-.08(16)
Education high			-0.11(0.06)	-0.09(0.06)	-.09(.06)
Education medium			-0.07(0.05)	-0.05(0.05)	-.04(.05)
Log income			0.06(0.04)	0.07(0.05)	.06(.05)
Log hours			-0.12(0.06)	-0.11(0.06)	-.11(.06)
Manager			-0.05(0.04)	-0.05(0.04)	-.05(.05)
Union member			0.04(0.04)	0.03(0.04)	.04(.04)
Establishment size 1-24			0.003(0.05)	0.009(0.05)	.01(.05)
Establishment size 25-199			0.01(0.04)	0.02(0.04)	.02(.05)
Region dummies (18)			Yes	Yes	Yes
Industry dummies (10)			Yes	Yes	Yes
Occupation dummies (9)			Yes	Yes	Yes
Job tenure				7.2E-6(9.4E-6)	6.1E-6(9.5E-6)
<u>Work Values: 1st mention</u>					
Promotion prospects				-0.04(0.12)	-.04(.12)
Total pay				-0.06(0.07)	-.06(.07)
Relations at work				0.07(0.09)	.06(.09)
Job security				0.14(0.07)*	.15(.07)*
Actual work itself				0.05(0.07)	.04(.07)
Hours				0.05(0.11)	.05(.11)
<u>Work Values: 2nd mention</u>					
Promotion prospects				0.03(0.09)	.05(.09)
Total pay				0.005(0.06)	.02(.06)
Relations at work				0.008(0.07)	.02(.07)

Table 10. Job satisfaction and mental health ordered probit regressions by sex: Estimated coefficients on age

	Column 1	Column 2	Column 3	Column 4	Column 5
Overall job satisfaction					
men					
age	0.007***	-0.05***	-0.07***	-0.07***	-0.08***
age-squared		7.40E-4***	9.50E-4***	9.30E-4***	1.04E-3***
women					
age	0.01***	-0.03**	-0.02	-0.02*	-0.05***
age-squared		5.4E-4***	3.9E-4*	4.3E-4**	7.3E-4***
Satisfaction with pay					
men					
age	0.007***	-0.02*	-0.10***	-0.10***	-0.10***
age-squared		3.5E-4**	1.3E-3***	1.2E-3***	1.3E-3***
women					
age	0.01***	-0.002	-0.02	-0.02*	-0.04**
age-squared		1.8E-4	3.6E-4*	4.0E-4**	5.3E-4**
Satisfaction with work itself					
men					
age	0.02***	-0.02*	-0.03*	-0.03*	-0.04*
age-squared		4.1E-4***	5.6E-4***	5.3E-4**	6.4E-4***
women					
age	0.02***	-0.02	-0.02	-0.03*	-0.04*
age-squared		4.9E-4***	4.9E-4**	4.9E-4**	6.2E-4**
Context-free mental health					
men					
age	0.004***	-0.03*	-0.03	-0.03	-0.03
age-squared		4.1E-4**	3.8E-4*	4.2E-4*	3.8E-4
women					
age	0.004***	-0.02*	-0.04**	-0.04**	-0.03*
age-squared		3.8E-4*	5.2E-4**	4.8E-4**	4.5E-4*

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Job security				0.02(0.07)	.05(.07)
Actual work itself				0.03(0.07)	.05(.07)
Hours				0.06(0.09)	.07(.09)
Marital status:					
Married					.12(.06)
Separated					-.27(.13)*
Divorced					-.21(.09)*
Widowed					-.06(.16)
Number of own children in household:					
1					-.17(.06)**
2					-.10(.07)
3+					.04(.11)
Number in household:					
2					-.01(.08)
3					-.07(.08)
4					-.00(.09)
5					-.07(.10)
6+					-.24(.15)
Constant	0.01(0.05)	0.58(0.15)***	0.07(0.25)	0.05(0.27)	0.05(.29)
N	4892	4892	4264	4238	4227
Log-likelihood	-7623.8	-7615.3	-6489.9	-6440.6	-6401.5

* Significant at the 5% level
** Significant at the 1% level
*** Significant at the 0.1% level

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