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Short research paper

Within-occupation sources of variance in Incumbent Perception of Job Complexity

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This study shows that, when occupational complexity is controlled for, intelligence has a significant positive effect on Incumbent Perception of Job Complexity (IPJC), in contrast to the negative effect it has on job satisfaction. This result is interpreted to imply that a significant portion of the within-occupation variance in IPJC reflects true variance in job complexity. Implications for the measurement of job complexity and for the processes that determine job complexity are discussed.

Are people's perceptions of their work conditions accurate? This issue is important with regard to two types of questions: (1) with regard to basic questions concerning the extent to which people are accurate in perceiving their social environment; and (2) with regard to methodological questions concerning the validity of self-report questionnaires in the behavioural sciences. In particular, the job design literature has relied heavily on incumbents' perception of their work to assess work characteristics, using questionnaires such as the Job Characteristics Index (Sims, Szilagyi, & Keller, 1976) and the Job Diagnostic Survey (Hackman & Oldham, 1975). This methodology has been strongly criticized on the grounds that ratings of work conditions are influenced by inaccurate subjective factors. First, it has been argued that the rating of job characteristics is influenced by job attitudes: people who like their work describe its characteristics more favourably than people who do not like it (e.g. Salancik & Pfeffer, 1977). Secondly, it has been argued that the rating of job characteristics is influenced by the rater's frame of reference; that past experiences, such as previous work, or social comparison processes, such as comparison with referent's work, influence the ratings (e.g. Oldham *et al.*, 1982).

Numerous studies have emphasized people's inaccurancy in assessing the characteristics of their work. For example, Brief and Aldag (1978) and Jenkins, Nadler, Lawler, and Cammann (1975) found little convergence between incumbents' assessments of their work and assessments made by external observers. O'Reilly and Caldwell (1979) and Orpen (1979) found that experimental

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manipulation of job characteristics has very little effect on the rating of these characteristics; and White and Mitchell (1979) found that irrelevant social cues have a significant influence on the ratings of job characteristics.

In contrast, some studies emphasize the accuracy with which people assess the characteristics of their work. For example, a number of studies has shown that manipulation of actual job characteristics produced the expected changes in self-reports of these characteristics, both in the laboratory (e.g. Farh & Scott, 1983) and in the field (e.g. Griffin, 1983). Other studies have reported significant correlations between self-reports of job characteristics and objective measures of these characteristics (e.g. Alegra, 1983; Gerhart, 1988; Hackman & Oldham, 1975).

Of these studies, Gerhart's (1988) is especially relevant to the study considered here. Using an index of job complexity derived from the Job Diagnostic Index, Gerhart examined both the convergent validity and the discriminant validity of this measure, labelled Incumbent Perception of Job Complexity (IPJC), as an indicator of true, or objective, job complexity. The convergent validity was examined by correlating changes in IPJC with changes in DOT complexity—an objective measure of occupational complexity derived from the Dictionary of Occupational Titles (Roos & Treiman, 1980)—for 437 people who changed jobs between 1979 and 1982. The discriminant validity was examined by correlating IPJC with a number of individual difference variables which were likely to influence incumbents' attitudes or frame of reference, but should not have influenced—if IPJC is indeed a valid measure of job complexity—their perception of job complexity. The findings of the study indicated both convergent and discriminant validity. The relationship between DOT complexity and IPJC was highly significant, even when individual differences such as unemployment experience, tenure, education, wages and benefits were controlled for. However, the relationships between most of these individual differences and IPJC were non-significant.

In order to consolidate further the validity of IPJC as a measure of job complexity, two reservations to Gerhart's arguments need to be raised and examined. First, it may be important to distinguish between *occupational complexity* and *job complexity*. Jobs refer to specific posts entailing particular duties and responsibilities and involving the performance of particular tasks in particular settings, whereas occupations indicate an aggregation of jobs, grouped on the basis of their similarity in content (Cain & Treiman, 1981, p. 254). Thus, the convergence between DOT complexity (a measure of occupational complexity) and IPJC (a measure of job complexity) should depend on the specificity of the occupational categorization which is used. Since the commonly used DOT categories are quite large (e.g. the 3654 jobs analysed in the current study are categorized into 272 DOT occupations), the convergence between DOT complexity and IPJC should be moderate, and it is an open question whether the variance in IPJC which is not explained by DOT complexity does indeed reflect true job complexity.

A second reservation relates to the logic behind Gerhart's conclusion that IPJC measures actual job complexity and not job attitudes, a conclusion derived from the observed lack of relationship between IPJC and a number of individual characteristics which are theoretically related to job attitudes, but not to job complexity. This conclusion is problematic because of two reasons: (1) it is based

on acceptance of a null hypothesis (i.e. the lack of relationship between IPJC and the individual characteristics studied by Gerhart may be the result of low power); (2) job attitudes—which should be included in a study aimed at showing a difference between job complexity and job attitudes—were not actually included in Gerhart's study. A more convincing demonstration of the discriminant validity of IPJC could be drawn from a design that includes both IPJC and job attitudes, and shows that the observed relationships between individual characteristics and IPJC are markedly different from the observed relationships between these characteristics and job attitudes.

The present paper addresses the above two issues. It focuses on mental ability (intelligence) as a relevant individual characteristic which affects both job characteristics and job attitudes. While controlling DOT complexity, we compare the relationship of intelligence and IPJC with the relationships of intelligence and job satisfaction. Such a comparison enables us to distinguish between occupational complexity and job complexity, and to address the issue of the discriminant validity of IPJC—whether it measures actual job complexity, or it is merely a reflection of job attitudes.

Sources of variance in IPJC: within- and between-occupation, objective and subjective

The variance in IPJC may be divided into between-occupation variance and within-occupation variance. The between-occupation variance is the variance due to differences in occupational complexity. The within-occupation variance is the variance in IPJC after occupational complexity is controlled for.

Most of the between-occupation variance in IPJC is likely to be due to variability in objective job complexity—variability which is due to true differences in job complexity. But the within-occupation variance in IPJC may be partly subjective, because the same job may be perceived by different people to have different degrees of complexity, and partly objective, because within each occupation (actual) jobs do vary in complexity. Note that as used here, subjective variance is associated with erroneous perception of work environment, whereas objective variance reflects accurate perception of this environment.[1]

With the cautions mentioned above, Gerhart's (1988) study suggests that a significant part of the variance in IPJC is objective (between-occupation) variance. But what about the within-occupation variance in IPJC? Does it contain a significant objective component, or is it all subjective? Results indicating that a significant portion of the within-occupation variance in IPJC is objective variance should strengthen our belief that people are capable of accurately perceiving the conditions of their work, and therefore should strengthen our trust in self-report measures of job characteristics. Contrary results should weaken our beliefs in these contentions.

[1]It is important to emphasize that the term 'objective variance' is used here to denote true variance in a subjective measure of job complexity. It should not be confused with the term 'objective measure of job complexity', which refers to measures based on sources other than incumbents' perceptions of their job characteristics.

So far, all the studies that have examined within-occupation variance in IPJC have concluded that it represents subjective variance. O'Reilly, Parlette, and Bloom (1980) gathered ratings of complexity from 76 public health nurses who performed the same job, and found that their perceptions of job characteristics were correlated with job attitudes and frame of reference variables. Similar findings were described by Caldwell and O'Reilly (1982), and O'Reilly and Caldwell (1985). These results clearly indicate that a significant part of the within-occupation variance in IPJC is subjective. However, they do not prove that there is no significant objective component in this variance.

Intelligence, job satisfaction and job complexity

Using *both* IPJC and DOT complexity as measures of job complexity, Ganzach (1998) showed that intelligence has two opposite effects on job satisfaction. One effect is the tendency of intelligent people to find more complex jobs and consequently—since complexity is positively related to satisfaction (Hackman & Oldham, 1976)—derive more satisfaction from their work. The other effect is the tendency of intelligent people to desire more complex jobs and consequently—since many occupations lack complexity (Hackman & Oldham, 1980)—to be more dissatisfied with their work. The latter is a direct negative effect of intelligence on job satisfaction, revealed only when job complexity is held constant; the former is an indirect positive effect, mediated by job complexity, and revealed when job complexity is varied. These two effects of intelligence on job satisfaction are shown in Fig. 1.

Since the results of the model depicted in Fig. 1 were similar both when IPJC and when DOT complexity were used as a measure for job complexity (Ganzach, 1998), these findings are consistent with the notion that IPJC is a valid measure of objective job complexity (similar results for these two measures were also reported by Gerhart, 1988, and Xie & Johns, 1995). However, a finer examination of the relationship between IPJC and DOT complexity requires consideration of more detailed models, such as the one depicted in Fig. 2. The major difference between this model and the model in Fig. 1 is treating DOT complexity and IPJC as representing two different underlying constructs—occupational complexity and job complexity, respectively—and treating job complexity as influenced by occupational complexity (a between-occupation source of variance) as well as on intelligence (a within-occupation source of variance). Note that most of the causal relationships between the variables in this model are unequivocally unidirectional. Intelligence (particularly if measured earlier) cannot be the result of occupational complexity, job complexity, or job satisfaction, and occupational complexity cannot be the result of either job complexity or job satisfaction. The causal relationships between job satisfaction and job complexity may not be as depicted in Fig. 2. However, robustness checks with regard to this part of the model are supplied both here (footnote 5 below), and in Ganzach (1998).

The crucial parameter in the model, directly pertaining to the questions asked in the present paper, is the coefficient representing the effect of intelligence on IPJC.

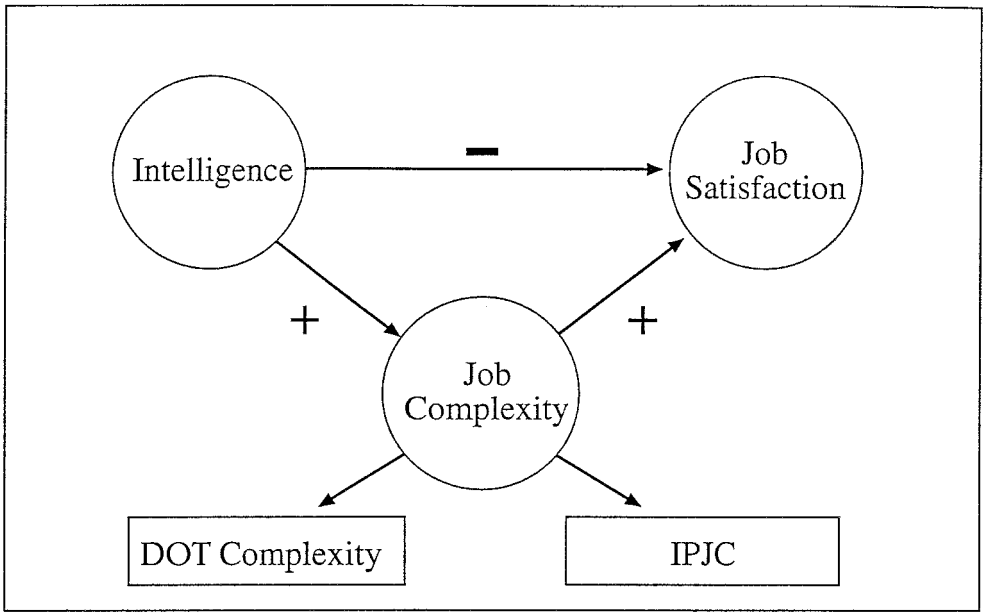

Figure 1. A causal model for the relationship among intelligence, job complexity and job satisfaction.

There are two conflicting hypotheses about the sign of this coefficient. On the one hand, if IPJC is a valid measure of job complexity, this coefficient should be positive. The reason is that, keeping occupation (i.e. DOT complexity) constant, the higher a person's intelligence, the more complex their job will tend to be within the constraints of the complexity of their occupation. Such correlation can be developed through a number of processes. First, it can develop through hiring decisions, in which more intelligent people are hired to fill more complex jobs within an occupation. Secondly, it can develop through a process by which people gravitate within their occupation towards jobs commensurate with their intelligence (see Wilk, Desmarais, & Sackett, 1995). Thirdly, it can develop through a process by which people actively affect the complexity of their jobs in such a way that more intelligent people make their jobs more complex.

On the other hand, if IPJC is influenced by job attitudes, the effect of intelligence on IPJC should be similar to its effect on job satisfaction; that is, the sign of the coefficient representing the effect of intelligence on IPJC should be negative.

In summary, the sign of the coefficient relating intelligence to IPJC provides a critical test of the validity of IPJC as a measure of job complexity. A positive sign would provide a strong support for discriminant validity of IPJC with regard to job attitudes, whereas a negative sign would provide evidence against such discriminant validity.

Finally, for the model of Fig. 2 to be complete, it should also include exogenous variables, other than intelligence, which may have significant effects on occupational complexity, job complexity and job satisfaction. Indeed, in the

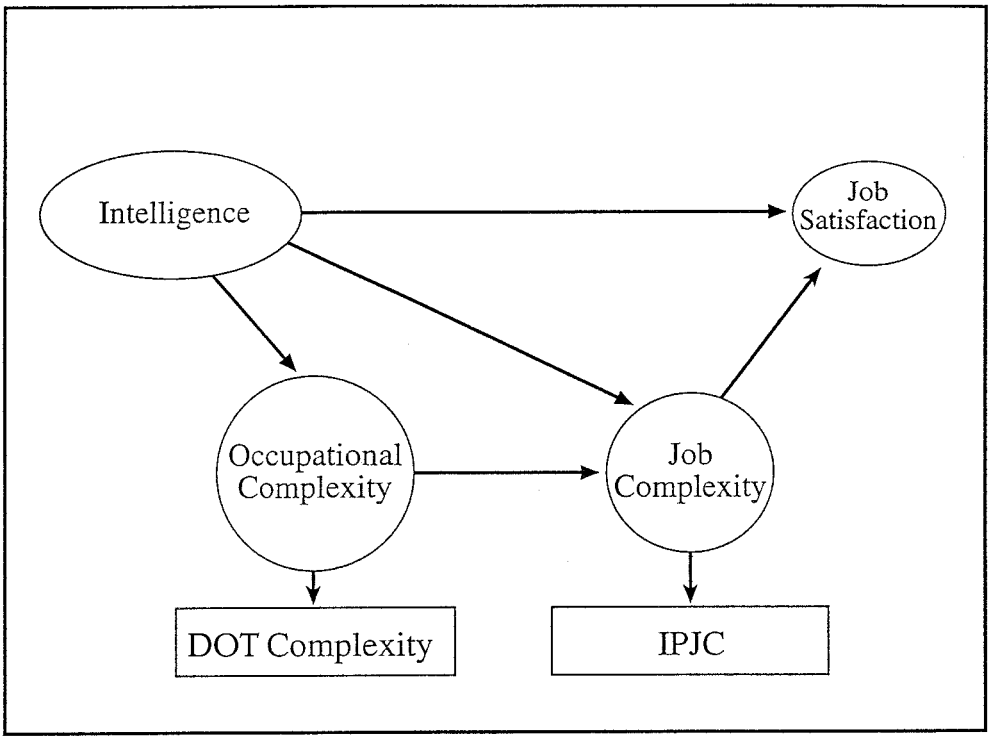

Figure 2. A causal model for the relationship among intelligence, DOT complexity, IPJC and job satisfaction.

analyses below we add such control variables to the model. Since two of these variables—education and age—are also important theoretically, they merit further discussion below.

Education and age

Education is relevant to our model because it is an important determinant of occupation. In fact, education is likely to be at least as important a determinant of a person's occupation—and therefore their occupational complexity—as intelligence, because occupational entry barriers are largely based on formal education. However, within an occupation, intelligence is likely to be a more important determinant of job complexity than education, since once a person enters an occupation, the processes which determine their job complexity within this occupation depend more on individual abilities than on formal education. Thus, it could be hypothesized that education will have a large effect on occupational complexity, but a small effect on job complexity once occupational complexity is controlled for.

Age is relevant to the questions under consideration because there are two conflicting hypotheses with regard to its effect on IPJC. One the one hand—if IPJC is influenced by job attitudes—the effect of age on IPJC should be negative. This prediction is derived from findings suggesting that among younger people age has a negative effect on job attitudes (Clark, Oswald, & Warr, 1996; Ganzach, 1998; Herzberg, Mausner, Peterson, & Campbell, 1957; Warr, 1992).[2] On the other hand, if IPJC is a valid measure of job complexity, the effect of age on IPJC should be positive, at least up to a certain age. In a young sample, such as the one used in the current research, older people are likely to hold more complex jobs within their occupation, as a result of gaining experience, climbing the organizational ladder and accumulating control over resources. In this respect, these two alternative hypotheses about the effect of age on IPJC are similar to the two alternative hypotheses concerning the effect of intelligence on IPJC. Both for intelligence and age, a positive effect indicates that IPJC is a valid measure of job complexity, and a negative effect indicates that IPJC merely reflects job attitudes.

Method

Data

The data were taken from the National Longitudinal Survey of Youth (NLSY), conducted with a probability sample of 12 686 persons (with an oversampling of Afro-Americans, Hispanics and economically disadvantaged whites) born between 1957 and 1964. Thus, the basic sampling was of a specific cohort, but some variability in age exists in the sample. The interviews were administered annually, and aimed primarily to assess the labour market experience of the participants. We chose to analyse the interviews conducted in 1982, since they contained a measurement of IPJC. The only other NLSY containing this measure is the first one, administered in 1979. At that time, however, many of the participants were still at school, or were at the very beginning of their working career. Thus, all the measures, except the measure of intelligence, are taken from the 1982 survey. Intelligence was measured only once, in 1980, and this is the measure used in our study. The 3654 participants who reported working more than 35 hours per week at the time of the 1982 survey, and who did not have missing values on the variables in Fig. 2, were included in the study.

Measures

Intelligence. The measure for intelligence is derived from participants' test scores in the Armed Forces Qualifying Test (AFQT). This test was administered to groups of five to ten participants of the NLSY during the period June through October 1980; respondents were compensated, and the overall completion rate was 94%. The intelligence score in the NLSY is the sum of the standardized scores of four tests: arithmetic reasoning, paragraph comprehension, word knowledge and mathematics knowledge. Since this score is correlated with age ($r = .21$), we standardized it within each age group to obtain an age-independent measure of intelligence.

DOT complexity. This measure of occupational complexity is available for each of the 3-digit census bureau occupations. It was derived by Roos and Treiman (1980) from the Dictionary of Occupational

[2]The view that for younger people the relationship between age and job satisfaction is negative is derived from studies showing a U-shaped relationship between age and job satisfaction for the entire age range. Note, however, that this relationship is by no means unequivocal, since many researchers argue that the relationship between age and job satisfaction is universally positive (e.g. Glenn, Taylor, & Weaver, 1977; Rhodes, 1983). However, such positive relationship between age and job satisfaction may be the result of lack of adequate control (Kacmar & Ferris, 1989).

Titles (4th ed.). It is a summary index of the following characteristics of each occupation, evaluated by objective observers: complexity with regard to data, the degree to which the work is abstract and creative, the degree to which it requires verbal and numerical aptitudes, and the required educational and vocational preparation.

To establish each participant's DOT complexity, we used the NLSY occupation code, which was derived from participants' open-ended descriptions of their job. This information was categorized by the NLSY staff into 591 occupational categories using the 3-digit 1970 census classification.

Incumbent Perception of Job Complexity (IPJC). This measure was derived from the participants' ratings of the characteristics of their jobs using a seven-item questionnaire, in which each item represented one factor of the Job Characteristics Index (Sims *et al.*, 1976). The participants were asked to evaluate the degree to which their job involved: dealing with others, autonomy, feedback, opportunities for establishing friendship, opportunities to complete tasks, task identity and task variety. The ratings were given on a 5-point Likert scale ranging from 'minimum amount' to 'maximum amount'. Since these items measure a unidimensional construct (Aldag, Barr, & Brief, 1981; Drasgow & Miller, 1982), most appropriately labelled job complexity (Hackman & Oldham, 1980; Stone & Gueutal, 1985), the participants' ratings were average to construct an overall index of IPJC. The internal consistency of this index was .75.

Job satisfaction. The measure of global job satisfaction was derived from answers to the question 'How much do you like your job?' expressed on a 4-point Likert scale ranging from 'dislike it very much' to 'like it very much'. Although reliance on a single item is often questionable, in the case of job satisfaction it is likely to be a valid measure (Scarpello & Campbell, 1983; Wanous & Reichers, 1996). This single item measure was also used by Gerhart (1987) and Staw and Ross (1985), in their studies of job satisfaction.

Additional exogenous variables. These variables included years of education, hourly rate of pay, number of hours worked per week, and tenure (taken from the 1982 survey); as well as sex, age and ethnic origin (taken from the 1979 survey). Four variables, taken from the 1979 survey, were used to create an index for parental socio-economic status; family income (if the participant lived with his/her parents in 1978), education of the mother and the father, and the Duncan Index (prestige index) of the father's occupation.

Analyses

The basic model which was examined was a fully recursive (just identified) model which was based on the theoretical model depicted in Fig. 2. In this model, intelligence, education and age were the exogenous variables. Occupational complexity, job complexity, and job satisfaction were endogenous variables, having a causal order as in Fig. 2.

The model was estimated using a structural equations technique. The major reason for using this technique was to correct the observed variables for random measurement errors. Measurement errors can be a serious threat to validity in this research, since, without correcting for them, the direct effect of exogenous variables (e.g. intelligence) on endogenous variables (e.g. IPJC) may be biased. In particular, errors in mediator variables (e.g. DOT complexity) may lead to false conclusions about the roles of direct vs. indirect effects.

The reliabilities of the variables were determined based on previous evidence in the literature. The reliability of DOT complexity was determined as .7 (Gerhart, 1988); the reliability of the AFQT as .9 (Gregory, 1996); the reliability of global job satisfaction as .7 (Gerhart, 1987; Wanous & Reichers, 1996). The reliability of IPJC was determined as .76 based on the internal consistency of its items.

In describing the results, we use the terminology of causal models in order to make the causal assumptions explicit. It should be understood, however, that although patterns of results may be consistent with these assumptions, the causal inferences are based on nonexperimental design, and therefore are only tentative.

Results and discussion

Table 1 provides the intercorrelations among the variables, as well as their means and standard deviations. Standardized estimates of the coefficients of the model are

Table 1. Means, standard deviations and intercorrelation for the variables in the model

Variable	1	2	3	4	5	*M*	SD
1. Intelligence	—					0.00	1.00
2. Years of education	0.49	—				12.3	1.90
3. Age	0.00	0.37	—			22.5	1.96
4. DOT complexity	0.34	0.41	0.21	—		3.53	1.83
5. IPJC	0.25	0.21	0.09	0.27	—	3.51	0.76
6. Job satisfaction	0.00	0.02	−0.02	0.16	0.41	3.25	0.74

Note. Intelligence was standardized within each age group.

given in Fig. 3. Only significant coefficients ($p < .0001$) were included in Fig. 3 (this significance level was chosen because of the power associated with our large sample size). The coefficients relating education to IPJC and to job satisfaction were non-significant ($p > .2$), and the coefficient relating age to IPJC was marginally significant ($p < .06$). The coefficients of a trimmed model not including the non-significant coefficients were very similar to the coefficients of the full model.

As can be seen from Fig. 3, the crucial parameters of the model—those relating intelligence to IPJC and to job satisfaction—provide strong evidence for the validity of IPJC as a measure of job complexity. The coefficient relating intelligence to IPJC is positive ($\beta = +.19$), whereas the coefficient relating intelligence to job satisfaction is negative ($\beta = -.23$). These findings indicate that, within an occupation, more intelligent people hold more complex jobs, as a result of their ability, but are less satisfied by these jobs, as a result of higher expectations. In particular, these findings provide a strong support for the discriminant validity of IPJC with regard to job attitudes.

A comparison between the effects of intelligence and education

Although intelligence and education are highly correlated ($r = .49$), the pattern of the effects of education on the endogenous variables is quite different from the pattern of the effects of intelligence. In particular, whereas intelligence directly affects both DOT complexity and IPJC, education affects only DOT complexity (its effect on IPJC is completely mediated by DOT complexity). This pattern is consistent with the notion that DOT complexity and IPJC measure different, but related, constructs. Education is an important determinant of a person's occupation—and therefore their occupational complexity—because it is often a prerequisite for entering into an occupation. But once a person enters an occupation, the level of their job within this occupation—and therefore their job complexity—is determined more by their ability than by their formal education.[3]

[3]Note also that whereas the direct effect of intelligence on job satisfaction is significant, the direct effect of education on job satisfaction is negligible (the null hypothesis that this path is equal to zero could not rejected, $p > .2$). These results are consistent with the notion that occupational expectations are determined by intelligence, but not by education.

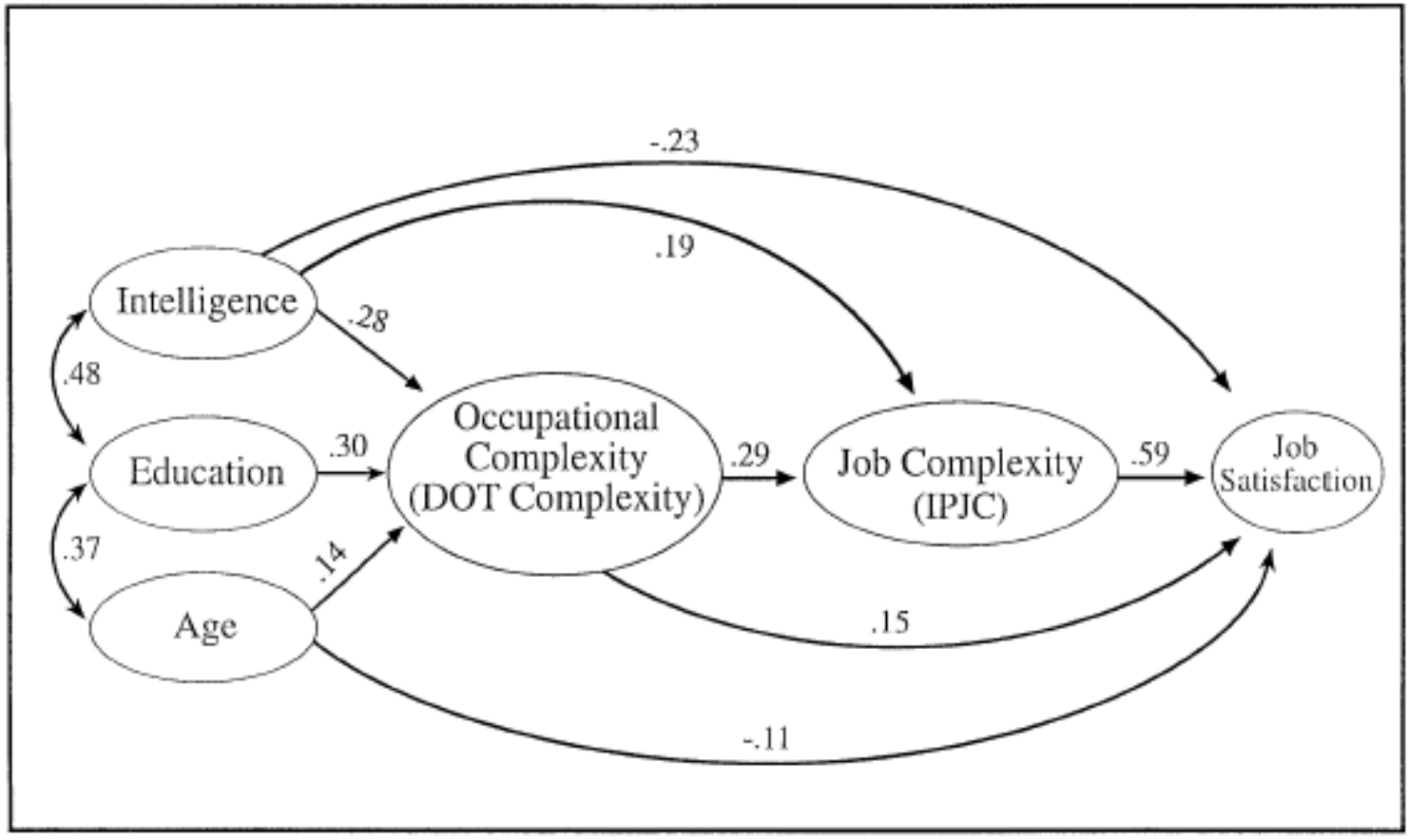

Figure 3. Standardized coefficients of structural equation model of the relationship among intelligence, age education, DOT complexity, IPJC and job satisfaction. All coefficients are significant at the .0001 level.

The effects of age

Age had a negative effect on job satisfaction and a positive effect on DOT complexity (see Fig. 3). The former effect is consistent with the U-shaped view of the relationship between age and job satisfaction (Hezberg *et al.*, 1957) suggesting that for young people, increase in age leads to an increase in occupational expectations. The latter effect is consistent with the notion that the relatively older participants in our young sample have had more opportunities to gravitate towards more complex occupations (Wilk *et al.*, 1995).[4]

More important to this study is the effect of age on IPJC, which was positive but only marginally significant, $\beta = +.04$, $p < .06$. (However, a more sensitive analysis in Footnote 5 does indicate a positive effect of age on IPJC.) Since the effect of age on job satisfaction is negative, this positive effect is consistent with the idea that IPJC is a valid measure of job complexity, and is not merely a measure of job attitudes.

Robustness checks

To examine for the robustness of the effects with regard to omitted variables, a number of models were examined which included hourly rate of pay, number of hours worked per week, tenure, and parental socio-economic status as exogenous variables. The coefficients of these variables were not significant, and including them in the model had only a small impact on the effects of the other variables. (Note that Gerhart found partial support for the effect of pay on IPJC. This effect is discussed below.) In addition, the model in Fig. 3 was estimated for males vs. females and for blacks vs. non-blacks. The coefficients in these analyses did not differ much from the coefficients in Fig. 3, except that the direct effect of age on IPJC was significantly positive ($p < .0001$, $\beta = +.09$) for males, but insignificant for females. This difference may result from the fact that, in our young sample, older males had more opportunities of finding more complex jobs within their occupation, whereas older females, facing increased household responsibility associated with marriage and childbirth had less opportunities than their male counterparts. The effect of age on job complexity among men, and the gender difference in this effect, are consistent with IPJC being a valid measure of job complexity.[5]

[4]Note that these two effects imply that the negative direct effect of age on job satisfaction is 'cancelled out' by its positive indirect effect (mediated by DOT complexity, which is positive related to job satisfaction)—indeed the zero-order correlation between age and job satisfaction is not significantly different from zero (see Table 1). This suggests that the failure to find U-shaped relationships in studies concerning the relationship between age and job satisfaction may be the result of insufficient control over job characteristics (see also Kacmar & Ferris, 1989). Finally, it is worthwhile to emphasize the similarities of the effects of intelligence and age on job satisfaction and DOT complexity. Both age and intelligence have a (direct) negative effect on job satisfaction and a positive effect on DOT complexity. The former effect associated with the positive effect of age and intelligence on occupational expectations, and the latter associated with occupational gravitational processes.

[5]To examine further for the robustness of the effects in Fig. 3 to the assumption that the causal relationship goes from IPJC to work satisfaction, we analysed a model similar to that in Fig. 3, but in which the causal relationship goes from work satisfaction to IPJC. This model assumes that much of the variance in IPJC is subjective, but examines whether intelligence still has the hypothesized effects on job complexity and job satisfaction. The results of this model were similar to the results reported in Fig. 3. In particular, the coefficients relating intelligence to IPJC and work satisfaction were, +.25 and −.12, respectively, both signifciant when $p < .0001$. The only important difference between the results of this model and the results in Fig. 3 is that the direct effect of age on IPJC was significantly positive, $\beta = +.08$, $p < .0001$ (while the direct effect of age on work satisfaction remained significantly negative, $\beta = -.09$, $p < .0001$). This difference between the effect of age on work satisfaction and its effect on IPJC is consistent with the hypothesis that the variance of IPJC has a significant objective component.

Conclusion

The analyses reported here indicate that intelligence has a positive effect on IPJC, even after DOT complexity is controlled for. This finding suggests that within the constraints of their occupation, more intelligent people hold more complex jobs. Since the effect of intelligence on job satisfaction is negative, this positive effect of intelligence on IPJC is inconsistent with the notion that IPJC is merely a reflection of job satisfaction—that people's ratings of job characteristics are simply a reflection of their attitudes towards their work. Thus, the relationship between intelligence, IPJC and job satisfaction revealed in this paper supports the notion that a significant part of the within-occupation variance in IPJC is a reflection of objective job complexity.

The results of the paper also suggest that DOT complexity and IPJC measure two different, yet related, constructs, and that IPJC is a valid measure of job complexity even when occupation is held constant. Thus, evidence for the validity of IPJC as a measure of job complexity come not only from the variance it shares with DOT complexity, but also from the variance it does not share with it. The evidence for the validity of IPJC after controlling for the variance shared with DOT complexity are particularly interesting, since they suggest that, to some extent, IPJC is a valid measure of job complexity within occupations.

Finally, the relationships between the variables in our model demonstrate a number of processes by which job complexity is determined, both between- and within-occupations. In particular, our results show that within-occupations, intelligence, but not education, plays a major role in gravitation towards more complex jobs, at least when the complexity of these jobs is assessed by IPJC, whereas between-occupations the role of education and intelligence in the gravitation process is about the same.

Acknowledgement

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