

The Development of Person–Vocation Fit: A Longitudinal Study Among Young Employees*

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This two-phase panel study examines the development of the congruence between vocational interests and perceived skill requirements. Participants were 492 Dutch men and women between 18 and 26 years old, with a paid job in both phases. Three hypotheses inspired by the theory of work adjustment (Dawis and Lofquist 1984) and congruence theory (Holland 1992) were tested, using a composite index of fit proposed by Cronbach and Gleser (1953). The first hypothesis proposing that participants experiencing incongruence between their vocational interests and their perceived skill requirements are dissatisfied with their job was supported. The hypothesis that incongruence has a positive relationship with job change and a negative relationship with tenure was not confirmed. The expectation that the congruence between vocational interests and perceived skill requirements increases over time was confirmed. Furthermore, exploring determinants of change in vocational interests and perceived skill requirements, it was found that change in these domains was predicted by different variables, educational level being the only common factor. It is concluded that this study supports the longitudinal propositions of prevailing work-related person-environment fit theories.

Introduction

The present study longitudinally examines the development of the fit between vocational interests and perceived skill requirements in a broad variety of occupational groups among a large sample of young employees at an early stage of their careers. Furthermore, the study focuses on multiple possible determinants and reactions to this fit, varying from (dis)satisfaction, tenure, changes in vocational interests and changes in perceived skill requirements.

A central assumption in theory and research in many domains of industrial, organizational and vocational psychology is that the congruence or fit between a person and his or her work environment (P–E fit) is an important predictor of individual and organizational outcomes. P–E fit approaches are widely adopted in the areas of vocational choice (Holland 1992), vocational counselling and career development (Osipow 1987), personnel selection (Schmidt, Hunter, Outerbridge and Goff 1988; Van den Berg and Feij 1993), organizational socialization (Premack and Wanous 1985; Wanous 1992), motivation (Hackman and Oldham 1980), job satisfaction (Dawis and Lofquist 1984; Locke 1976), and job stress (Caplan 1987; Edwards and Cooper 1990; French, Caplan and Harrison 1982).

Multiple forms of P–E fit can be distinguished. A clear classification in four categories of P–E fit has been proposed by Kristof (1996), namely the fit between the person on the one hand and the organization, vocation, group and job (or task) on the other. The focus of the present study is on perceived person–vocational fit; or to be more specific, on the congruence between the person's vocational interests and perceived skill requirements of the job.

Most authors agree that fit is a dynamic rather than static concept, which may change in time. French, Rogers and Cobb (1974) and Caplan (1987) describe the theory of P–E fit as an adjustment process. However, Edwards (1991) emphasized that the primary problem in the design of existing fit research is the almost exclusive reliance on cross-sectional data. Although the dynamic qualities of fit are widely recognized, Kulik, Oldham and Hackman's (1987) conclusion still seems valid:

most existing models that address the fit between a person and his or her work ... are static – they do not address, or provide the tools for addressing, the ongoing, reciprocal influences of work and person characteristics on each other. The development of such models, which will require longitudinal studies of person-job relationships, may be

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the most pressing of all the research needs. (p. 294)

The design of this study is, therefore, longitudinal.

Next, while Dawis and Lofquist (1984) use the term 'work adjustment' to denote the continuous and dynamic process by which the individual seeks to achieve and maintain correspondence with the work environment (see also Frese 1982; Pervin 1987), it seems plausible that, if a person and the work environment are not or no longer congruent, the person will seek to change their own characteristics, characteristics of the environment, or both (see also French *et al* 1982). Other theories than P-E fit, for example, work socialization theory (Feij 1998; Fisher 1986), also assume that most young people, especially in the early phases of their career, strive to establish consistency between their own characteristics and their work environment, by changing one or both of these. Holland (1992) also stated that incongruence will be resolved by seeking a new environment, by remaking the present environment or by changing personal behaviour and perceptions. As Spokane (1985, 1990) pointed out, the latter two propositions have rarely been subjected to test, whereas the first has been extensively studied. However, there is no consensus on the question of how turnover affects fit.

Besides tenure, another important indicator of an individual's success in achieving and maintaining correspondence is job satisfaction. With respect to the relationship between vocational interest congruence and job or academic satisfaction, meta-analyses showed overall positive correlations (Assouline and Meir 1987; Spokane 1985); however, Tranberg, Slane and Ekeberg (1993) found negative results. In two studies examining hypotheses on congruence theory using a longitudinal design (Gottfredson and Holland 1990; Meir and Navon 1992) support was found for the hypotheses that congruence is related both to subjective reports of satisfaction and to external evaluation by supervisors. However, people experiencing congruence did not persist significantly longer in their jobs than people with incongruence, which contradicted one of their hypotheses. Moreover, research literature is not clear with regard to change in the degree of congruence between vocational interests and job characteristics (Spokane 1985). According to his literature review, it has been shown that the congruence of occupational aspiration and actual job increases between 16 and 28 years old and stabilizes by age 30. All studies, reviewed by Spokane (1985), are flawed, however, by the lack of an adequate methodology to measure a series of individual and environmental changes.

Moreover, he stated that most of this research involved college students who had changed majors, or job incumbents who had shifted from one particular occupation to another.

Finally, Spokane (1985) mentioned a number of issues remaining relatively unstudied. For instance: is it true, that some individuals are more likely to change themselves than their jobs? Which specific mechanisms are involved in resolving incongruence? Does time alone resolve incongruence or do specific factors affect this? It can be concluded that the knowledge of the causes and consequences of changes in the fit between vocational interests and job characteristics is still incomplete. Therefore, this study not only examines the longitudinal development of congruence, but also the factors determining whether a person faced with incongruence will change (aspects of) his or her environment and/or personal characteristics.

Hypotheses

In this study the following three hypotheses are tested:

Hypothesis (1): People experiencing congruence between vocational interests and perceived skill requirements are more satisfied with their job than people experiencing incongruence.

Besides satisfaction, other concomitants were studied exploratively: the match between the person's present job and previous education, the degree to which the job is experienced as intrinsically motivating, and commitment to the company. These work experience variables are positively related to satisfaction and are frequently used to predict tenure or turnover (Mobley, Griffeth, Hand and Meglino 1979; Nicholson and West 1989; Taris, Heesink, Feij, Van der Velde and Van Gastel 1991; Taris, Van der Velde, Feij and Van Gastel 1992). From this the second hypothesis follows logically.

Hypothesis (2): People experiencing incongruence will seek congruence by changing their jobs.

This hypothesis rests on the proposition stating that if there is no congruence between a person's characteristics and his or her work environment, the person will seek congruence by changing the work environment. More specifically, the hypothesis predicts that a high level of congruence between vocational interests and perceived skill requirements at the first phase shows a positive correlation with tenure and a negative relationship with job change between the two phases.

The congruence between a person's characteristics and the work environment affects work outcomes. If there is a relationship between a high level of congruence and positive work outcomes, efforts will be made to increase the congruence between personal characteristics and work environmental properties. Besides resolving incongruence by job change, it is also possible that people change their vocational interests. *Grosso modo*, it is hypothesized that:

Hypothesis (3): The mean level of congruence between vocational interests and perceived skill requirements increases over time.

This hypothesis is derived directly from the theory of work adjustment (Dawis and Lofquist 1984) and Holland's congruence theory (1992) that people strive to establish harmony between their own characteristics and their work environment.

Additional Research Questions

Finally, the aim of this study is to extend the fit theory by answering the following two research questions: (1) If people show the hypothesized increase in the congruence between vocational interests and perceived skill requirements over time, which is more likely to change: vocational interests or perceived skill requirements? (2) Which factors explain why some people change their vocational interests, whereas others instead show changes either in their perception of skill requirements or in the reality of required skills? In other words, which factors predict changes in vocational interests and/or in the perception of skill requirements?

Work adjustment theory specifies how people may act when there is incongruence between their own characteristics and the work environment. A distinction is made between *activeness*, that is, the reduction of lack of correspondence by acting to change the environment, and *reactiveness*, that is, the reduction of lack of correspondence by acting on oneself, for example by changing vocational interests. Apart from the propositions of work adjustment theory, which have remained partially untested, literature tells little about the mechanisms by which incongruence is resolved (see Meir 1989; Spokane 1985).

Changes in perceived skill requirements, achieved for example by changing jobs, are expected among persons who display an active adjustment mode. On the other hand, changes in vocational interests will be seen among persons showing a reactive adjustment mode. Unfortunately, adjustment styles were not directly assessed in this study. Instead, a

construct was measured which seems to be theoretically related to active versus passive adjustment: *locus of control*. This construct was introduced by Rotter (1966), who argued that people differ in their generalized expectations with regard to the influence they have on the circumstances they are confronted with. Mortimer, Lorence and Kumka (1986) suggested that perceived internal control is highly related to sense of competence and personal efficacy, although these are not identical psychological phenomena (Bandura 1977). Moos (1987) suggested that competent people have a greater latitude of person-environment congruence and are able to function more effectively in a wider range of situations, while less competent individuals can function adequately only in a relatively narrow range of settings. Moos (1987) further suggested that this idea is embodied in Lawton's (1982) environmental docility hypothesis, which states that the behaviour of less competent persons is more likely to be shaped by environmental factors than the behaviour of more competent persons is. It can therefore be expected that internals may attempt to change the job environment more than externals.

In addition, two general factors were investigated as possible predictors of changes in both vocational interests and perceived skill requirements: age as a developmental factor and career path as an environmental factor. Pervin (1987) and Osipow (1987) asserted that the strengths and weaknesses of the worker probably change as he or she grows older, and environmental demands on the worker probably also change over time. Moreover, congruence, as job satisfaction, appears to increase with age and seniority (Gottfredson 1979; Wiener and Klein 1978). Since vocational interests will probably stabilize with age, a negative relationship between age and degree of change in vocational interests was expected. For perceived skill requirements no clear expectations are present; therefore, exploratory analyses are performed. A person's career path is likely to influence changes in perceived skill requirements. It seems plausible that job change is a primary source of influence on changes in perceived skill requirements, and affect vocational interests in a lesser degree, if at all.

Finally, a number of biographical variables, which have been found to be related to differences in vocational interests, vocational development and career path, are included in the study as control variables: sex, educational attainment and socio-economic status (e.g. Hansen, Collins, Swanson and Fouad 1993; Mazen 1989; Mortimer, Lorence and Kumka 1986; Smart 1989; Vondracek, Lerner and Schulenberg 1986).

Method

Procedure and sample

Data were collected as part of a larger research project with two main phases of data collection. Participants were Dutch men and women who were 18, 22 or 26 years old in 1987. The sampling procedure consisted of two steps. First, 20 municipalities stratified over four regions in the Netherlands and five levels of urbanization were randomly selected. Next, 2,800 home addresses of persons in the three age groups were randomly selected from the registry offices in these municipalities. These individuals received letters in which they were asked to participate in the study. In total 1,775 young people agreed (63%). They were equally divided into the three age groups, including approximately the same number of men and women, and were representative of the Dutch population in these age groups. The entire study was conducted in Dutch.

In the first phase (T1), participants were interviewed at home by trained interviewers using a structured interview schedule. Before they were interviewed, they completed a self-report questionnaire which among others measured vocational interests.

The second phase (T2) was four years later. This time interval of four years was considered long enough to enable the detection of relevant changes in vocational interests and/or changes in perceived skill requirements. Again, a structured interview and a self-report questionnaire were used. Due to panel attrition the total sample decreased to 1,257 participants at T2. Taris, Van der Vaart and Dijkstra (1993) concluded that there was slightly more attrition among young adults with a lower level of educational attainment. With respect to sex, age and socio-economic status, no sample attrition effects were found.

For the present study, only those participants were selected who had a paid job for more than 19 hours a week in both phases. This selection was made because jobs involving fewer hours usually entail monotonous tasks offering only limited opportunities for the realization of employees' vocational interests. Participants in military service and self-employed persons were also excluded from the study. Through listwise deletion of missing values, the final sample consisted of 492 Ss, 60% males with a mean age of 23 years (SD 2.8).

At T1, participants had an average of 5 years of work experience (SD 3.1), and an average of 2.7 different jobs (SD 1.6). The kinds of jobs varied considerably, with regard to organizational level as well as occupational sector; virtually all categories were represented. Male participants had 156 different job titles,

whereas females had 74. The sample also showed a high degree of job mobility: 56% of the participants changed jobs at least once during the four-year period.

Measures

A *vocational interests* profile was measured at both phases by means of the self-report questionnaire comprising 14 items (see Appendix). In this questionnaire, participants were asked to imagine various types of vocations defined in terms of required skills or competencies, and to rate the degree of interest in each type of vocation on a five-point scale ranging from (1) very unattractive to (5) very attractive.

In order to avoid possible negative effects of common method variance, a *perceived skill requirements* profile was measured at each phase by means of a series of structured interview questions. Moreover, the interview took place some time after the questionnaire had been filled out. The number, formulation and order of the interview items corresponded exactly to those of the self-report questionnaire items, in order to fulfil the requirement of commensurate measurement of person and job characteristics (Dawis and Lofquist 1984; French *et al* 1982). In this second profile, however, participants rated their present job. Therefore, the instruction, presented by the interviewer, was different from the instruction in the self-report vocational interests questionnaire. Participants were asked: 'What skills or competencies do you need in your present job, that is, which skills are important for good performance in your job?' The interviewer then mentioned specific skills (e.g., technical mindedness and dealing with machines, and so on). Following the interviewer's mention of each type of skill, participants indicated its importance on a five-point Likert scale. The response alternatives were presented to participants on a card varying from (1) not important to (5) very important.

Since it was a representative sample of young adults, the number of different jobs of participants was very large. As Meir (1989) emphasized, in some cases speciality jobs 'belonging' to different occupations are more alike than jobs within a single main occupation (see also Gati (1989) for a discussion of heterogeneity of occupations). It was considered appropriate to retain specific information at item level, rather than to average scores within possible domains. By this procedure, maximum differentiation among occupations could be achieved. The study of Engel (1997) gave clear evidence for the validity of the measures in this study; reasonably high correlations (ranging from 0.43 to 0.66) were found between the

Table 1: Mean scores, standard deviations and stability coefficients (r_{12}) for all vocational interest and perceived skill requirement items, and correlations between corresponding interest and skill requirement items at two phases ($N = 492$).

| | Vocational interests | | | | | Perceived skill requirements | | | | | Interests-Requirements correlations | |
|------------------------|----------------------|-----------|----------|-----------|----------|------------------------------|-----------|----------|-----------|----------|-------------------------------------|--------|
| | Time 1 | | Time 2 | | r_{12} | Time 1 | | Time 2 | | r_{12} | Time 1 | Time 2 |
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | |
| 1. Technical | 2.91 | 1.34 | 2.86 | 1.35 | 0.70 | 2.48 | 1.51 | 2.72 | 1.60 | 0.64 | 0.49 | 0.55 |
| 2. Scientific | 2.68 | 1.15 | 2.57 | 1.11 | 0.53 | 1.94 | 1.14 | 2.13 | 1.16 | 0.49 | 0.35 | 0.41 |
| 3. Creative | 3.22 | 1.25 | 3.22 | 1.17 | 0.57 | 2.43 | 1.40 | 2.87 | 1.39 | 0.58 | 0.35 | 0.28 |
| 4. Dealing with People | 4.37 | 0.76 | 4.35 | 0.69 | 0.40 | 4.22 | 1.00 | 4.40 | 0.85 | 0.49 | 0.33 | 0.39 |
| 5. Leadership | 3.71 | 0.99 | 3.73 | 0.94 | 0.49 | 2.67 | 1.39 | 3.18 | 1.31 | 0.50 | 0.35 | 0.45 |
| 6. Business | 3.43 | 1.12 | 3.49 | 1.06 | 0.52 | 2.93 | 1.39 | 3.30 | 1.32 | 0.55 | 0.37 | 0.51 |
| 7. Manual | 3.87 | 1.08 | 3.76 | 1.08 | 0.62 | 3.37 | 1.61 | 3.28 | 1.61 | 0.67 | 0.60 | 0.57 |
| 8. Mathematical | 2.47 | 1.26 | 2.49 | 1.18 | 0.63 | 2.00 | 1.23 | 2.16 | 1.24 | 0.57 | 0.51 | 0.59 |
| 9. Musical | 2.50 | 1.29 | 2.38 | 1.22 | 0.58 | 1.12 | 0.51 | 1.17 | 0.59 | 0.59 | 0.12 | 0.16 |
| 10. Teaching | 2.51 | 1.19 | 2.56 | 1.16 | 0.54 | 1.68 | 1.12 | 2.03 | 1.26 | 0.49 | 0.37 | 0.47 |
| 11. Persuading | 2.58 | 1.38 | 2.61 | 1.32 | 0.53 | 2.63 | 1.54 | 2.88 | 1.56 | 0.45 | 0.34 | 0.43 |
| 12. Clerical | 3.17 | 1.24 | 3.13 | 1.22 | 0.59 | 3.03 | 1.44 | 3.31 | 1.32 | 0.63 | 0.51 | 0.59 |
| 13. Caring | 3.71 | 1.03 | 3.64 | 1.01 | 0.51 | 3.48 | 1.34 | 3.51 | 1.28 | 0.51 | 0.41 | 0.43 |
| 14. Handling Computers | 3.20 | 1.27 | 3.19 | 1.19 | 0.57 | 2.41 | 1.53 | 2.87 | 1.51 | 0.61 | 0.44 | 0.60 |

Note: All correlations are significant at $p < 0.01$ (two-tailed).

vocational interest items as used in this study and similar items from the Dutch/Flemish adaptation of Holland's Self-Directed Search Beroepskeuze Zelf-Onderzoek (BZO); Hogerheijde, Van Amstel, De Fruyt and Mervielde 1995). Even stronger correlations were found by Engel (1997) between perceived skill requirement items and similar items from the Position Classification Inventory (Zeeuws Bureau voor Toegepaste Psychologie and Universiteit van Gent, 1995/1996); these correlations ranged from 0.49 to 0.82.

From Table 1, it appears that the scores on most items showed mean values close to the middle of the scale, sufficient variance and no excessive skewness. However, there are a few exceptions. Item 4 (dealing with people) was characterized by a high mean value, a low standard deviation and considerable negative skewness. Most participants apparently preferred (and had) jobs which involve dealing with people. With regard to perceived skill requirements, item 9 (being musical) had an extremely low mean, a low standard deviation and high positive skewness, which not surprisingly indicates that there were not many participants working in jobs in which musicality is an important skill requirement.

Furthermore, Table 1 shows that all items had remarkably high stability coefficients: between 0.40 and 0.70 for the vocational interest items and between 0.49 and 0.64 for perceived skill requirement items over the four years' period. Moreover, all vocational interest items correlated significantly with their perceived skill

requirement counterparts at both phases. With only a few exceptions, mean vocational interest scores at each measurement were higher than corresponding mean perceived skill requirements scores. The mean level of vocational interests seems to have remained rather constant over time, while the mean level of perceived skill requirements increased. Finally, the correlations between corresponding vocational interest and perceived skill requirement scores were mostly higher at time 2 than at time 1.

To assess the congruence between the vocational interests and perceived skill requirement item profiles (both cross-sectionally and over time), the dissimilarity measure D , described by Cronbach and Gleser (1953), was used. For every participant i , this measure is defined as the square root of the sum of squared differences between two series of commensurate item scores:

$$D_i = \sqrt{\sum_{j=1}^n (I_{ij} - R_{ij})^2}.$$

The larger D is, the smaller the congruence or fit between the respective pair of items compared.

Rounds, Dawis and Lofquist (1987) have criticized the practice of making profile comparisons with D ; see, however, Edwards (1991) for a reply. As Rounds *et al* (1987) remarked, the problem with the D index is that the direction of difference is removed by the squaring procedure. However, the direction of difference is not directly relevant for the hypotheses in the present study. Moreover, as

Cronbach and Gleser (1953) pointed out, large distances are magnified by squaring in the D metric; this could be an advantage for the study, since it is assumed that large dissimilarities between profiles are most relevant.

Four dissimilarity scores were derived for each participant by using the equation mentioned above:

- $D(I_1-R_1)$: the square root of the sum of squared differences between the vocational interests profile (I) and the perceived skill requirements profile (R) measured at time 1 (subscripts for participants and items are omitted);
- $D(I_2-R_2)$: the square root of the sum of squared differences between the vocational interests profile and the perceived skill requirements profile at time 2;
- $D(I_1-I_2)$: the square root of the sum of squared differences between the vocational interests profiles measured at time 1 and time 2, respectively; and
- $D(R_1-R_2)$: the square root of the sum of squared differences between the perceived skill requirements profiles measured at time 1 and time 2, respectively.

Besides age and gender, two *biographical variables* were measured: level of education of the participant and socio-economic status (SES) of the participants' family of origin. Level of education was measured in the interview using a nine-point scale indicating the highest level of education completed; the mean level was 4.9 (SD 1.6). At phase 1, three indices were used to measure the SES of the participants' family of origin: the highest level of education completed by participants' father and mother, respectively, and the level of the job of the father; SES scores ranged from 1 = low to 9 = high ($M = 3.3$, $SD = 1.5$). Cronbach's α of this composite SES-scale is 0.68. Job level was measured on a six-point scale representing the classification system proposed by Bakker, Jonker and Oud (1988).

Locus of control was measured using a 'self-constructed' scale consisting of nine self-report items pertaining to important areas of life (derived from Warr 1983), for example, variation and autonomy in life, and good relationships. For each area, participants indicated their perceived influence, on a five-point scale from (1) no influence to (5) much influence. Cronbach's α were 0.62 at time 1 and 0.72 at time 2 (Heesink 1992; Van der Velde, Feij and Taris 1995).

Four dimensions of work experience were measured at time 1 and time 2 in the interview.

1. The *match between the job and previous education*, measured by two items: 'How well does your present work match your

knowledge and skills?', and 'How well does your present work match your previous education?' The items were rated on a three-point scale (1 = matches badly to 3 = matches well); the correlation between the item-scores was 0.68, both at time 1 and time 2.

2. The experience of *important intrinsically motivating aspects of the job*. With regard to 7 job aspects (i.e. variation, autonomy, responsibility, initiative, self-realization, efficacy, and appreciation by colleagues), participants rated on a five-point scale, ranging from 1 = very little to 5 = very much, how much each of these aspects is present in their actual job (MOW International Research Team, 1987). For the respective phases, α 's were 0.81 and 0.82.
3. *Job satisfaction* was measured by one item ('How satisfied are you, in general, with your current job?') and rated on a five-point scale (range: 1 = very dissatisfied, 5 = very satisfied). Support for the appropriateness of single-item measures of overall job satisfaction was found by Wanous, Reichers and Hudy (1997); they concluded these correlated highly (0.67) with scale measures.
4. *Commitment to the company*, measured by three items: 'Are you trying to leave the company as soon as possible?' (coding on this item was reversed); 'Do you feel satisfied in this company?'; and 'Do you have the feeling that even the slightest change for the worse in your work situation would make you quit?' (coding reversed) and rated on a five-point scale ranging from 1 = definitely not to 5 = definitely yes). The last item is adapted from the Organizational Commitment Questionnaire (Mowday, Steers and Porter 1979) and translated in Dutch. The other two items are self-constructed. For the respective phases, α 's were 0.80 and 0.81.

Finally, a number of career path variables were assessed: (a) the number of jobs a participant held before T1; (b) the amount of work experience (in months) at T1; and (c) the occurrence of job change (i.e. change of employer and/or job title) between the two phases. The latter variable was dichotomous (yes/no).

Results

The first hypothesis was directed at factors which are cross-sectionally related to the fit between vocational interests and perceived skill requirements. Correlations are presented in Table 2. As is apparent from Table 2, the dissimilarity

Table 2: Descriptive statistics and correlations between variables ($N = 492$)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
|---------------------------------------|---|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| 1. Gender (male) | - | 0.11 | -0.03 | -0.08 | 0.14 | 0.06 | 0.06 | -0.04 | -0.05 | -0.03 | -0.05 | -0.01 | 0.00 | 0.01 | -0.02 | -0.01 | 0.12 | -0.08 | -0.10 | 0.08 | 0.05 | |
| 2. Age | | - | 0.12 | 0.29 | 0.24 | 0.71 | -0.07 | -0.06 | 0.07 | 0.07 | -0.07 | 0.07 | 0.00 | 0.09 | 0.10 | 0.02 | -0.09 | -0.04 | 0.00 | -0.10 | -0.18 | |
| 3. Socio-economic status | | | - | 0.39 | -0.03 | -0.16 | 0.08 | 0.01 | 0.03 | 0.10 | 0.00 | 0.11 | 0.02 | 0.03 | 0.12 | 0.01 | -0.04 | -0.06 | 0.00 | 0.00 | -0.08 | |
| 4. Level of education | | | | - | 0.04 | -0.16 | 0.02 | -0.02 | 0.15 | 0.09 | -0.02 | 0.07 | -0.02 | 0.18 | 0.13 | -0.01 | -0.09 | -0.08 | -0.03 | -0.14 | -0.21 | |
| 5. Number of jobs before T1 | | | | | - | 0.36 | 0.06 | -0.09 | -0.13 | -0.07 | -0.06 | 0.06 | -0.17 | -0.15 | -0.05 | -0.08 | -0.06 | 0.07 | 0.09 | 0.03 | -0.02 | |
| 6. Months of work experience T1 | | | | | | - | 0.09 | -0.05 | 0.02 | 0.06 | -0.06 | 0.06 | -0.01 | 0.01 | 0.05 | 0.00 | -0.02 | 0.02 | 0.02 | -0.09 | -0.09 | |
| 7. Job change between T1 and T2 (yes) | | | | | | | - | 0.16 | -0.06 | -0.07 | -0.17 | 0.00 | 0.10 | -0.05 | 0.09 | 0.06 | -0.04 | 0.02 | -0.02 | 0.23 | -0.03 | |
| 8. Job satisfaction T1 | | | | | | | | - | 0.28 | 0.52 | 0.65 | 0.09 | 0.18 | 0.23 | 0.21 | 0.19 | 0.14 | -0.16 | -0.16 | -0.04 | 0.08 | |
| 9. Fit job-previous education T1 | | | | | | | | | - | 0.46 | 0.19 | 0.14 | 0.03 | 0.54 | 0.24 | 0.02 | 0.02 | -0.25 | -0.18 | -0.15 | -0.02 | |
| 10. Intrinsic work aspects T1 | | | | | | | | | | - | 0.46 | 0.18 | 0.13 | 0.29 | 0.42 | 0.15 | 0.09 | -0.21 | -0.14 | -0.04 | 0.09 | |
| 11. Commitment T1 | | | | | | | | | | | - | 0.05 | 0.12 | 0.14 | 0.12 | 0.22 | 0.08 | -0.18 | -0.16 | -0.05 | 0.02 | |
| 12. Internal locus of control T1 | | | | | | | | | | | | - | 0.06 | 0.13 | 0.07 | 0.01 | 0.29 | 0.14 | 0.03 | 0.09 | 0.05 | |
| 13. Job satisfaction T2 | | | | | | | | | | | | | - | 0.18 | 0.52 | 0.63 | 0.20 | -0.08 | -0.20 | 0.09 | 0.02 | |
| 14. Fit job-previous education T2 | | | | | | | | | | | | | | - | 0.34 | 0.15 | 0.12 | -0.18 | -0.25 | -0.05 | -0.03 | |
| 15. Intrinsic work aspects T2 | | | | | | | | | | | | | | | - | 0.48 | 0.23 | -0.15 | -0.21 | 0.10 | 0.01 | |
| 16. Commitment T2 | | | | | | | | | | | | | | | | - | 0.16 | -0.09 | -0.17 | 0.09 | 0.06 | |
| 17. Internal locus of control T2 | | | | | | | | | | | | | | | | | - | 0.03 | 0.05 | 0.05 | 0.10 | |
| 18. $D(I_1-R_1)$ | | | | | | | | | | | | | | | | | | - | 0.36 | 0.31 | 0.24 | |
| 19. $D(I_2-R_2)$ | | | | | | | | | | | | | | | | | | | - | 0.14 | 0.11 | |
| 20. $D(R_1-R_2)$ | | | | | | | | | | | | | | | | | | | | - | 0.20 | |
| 21. $D(I_1-I_2)$ | | | | | | | | | | | | | | | | | | | | | - | |
| <i>M</i> | | | | | | | | | | | | | | | | | | | | | | |
| <i>SD</i> | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | 4.33 | 3.59 | 3.80 | 4.26 | 3.92 | 4.33 | 3.78 | 3.83 | 4.27 | 3.97 | 5.50 | 4.83 | 4.50 | 3.85 |
| | | | | | | | | | 0.83 | 0.97 | 0.60 | 0.87 | 0.48 | 0.79 | 0.84 | 0.55 | 0.82 | 0.48 | 1.60 | 1.45 | 1.52 | 1.15 |

Note: Correlations greater than 0.12 are significant at $p < 0.01$ and those greater than .09 are significant at $p < 0.05$ (two-tailed).

between vocational interests and perceived skill requirements at time 1, $D(I_1-R_1)$, showed a significant negative correlation with job satisfaction, the fit between job and previous education, the experience of intrinsically rewarding aspects of the job, and commitment to the organization. These relationships were replicated at time 2, $D(I_2-R_2)$. Therefore, the hypothesis that individuals experiencing incongruence are relatively dissatisfied with their jobs was clearly supported. Moreover, a high degree of dissimilarity between vocational interests and perceived skill requirements was related to internal locus of control at time 1, but not at time 2.

The second hypothesis, stating that persons experiencing incongruence are more apt to change jobs than persons experiencing congruence, was not supported: a near-zero correlation between the initial dissimilarity, $D(I_1-R_1)$, and later job change can be observed from Table 2.

The main hypothesis of this study was that the congruence between vocational interests and perceived skill requirements shows an increase over time. In other words, it was predicted that $D(I_1-R_1)$ would be greater than $D(I_2-R_2)$. The mean dissimilarity scores, displayed in Table 2,

are 5.50 (SD 1.60) and 4.83 (SD 1.45). A *t*-test for paired samples yielded a highly significant result: $t(491) = 8.62$ ($p < 0.001$), indicating that the hypothesis was supported. In addition, a significant correlation between the dissimilarity scores at time 1 and time 2 ($r = 0.36$, $p < 0.001$) should be noted. Although the average dissimilarity diminished in the course of time, individual differences showed a certain degree of constancy, that is, normative stability.

Finally, analyses were performed to answer the exploratory research questions. Although participants showed the hypothesized decrease over time in the mismatch between vocational interests and perceived skill requirements, this does not answer the question what is more likely to change: the vocational interests profile or the perceived skill requirements profile? And second, which factors explain why some people change their vocational interests, whereas others change the reality or perception of skill requirements?

The first question was investigated by comparing the average dissimilarity between the perceived skill requirements profiles at time 1 and time 2, $D(R_1-R_2)$, with the average dissimilarity between the vocational interests profile at time 1 and time 2, $D(I_1-I_2)$. Stated differently, the stabilities of the two profiles over

Table 3: Multiple regression analysis for variables predicting change in the perceived skill requirements profile, $D(R_1-R_2)$, with change in vocational interests, $D(I_1-I_2)$, entered in the first step ($N = 492$)

| Variable | B | SE B | β |
|-----------------------------------|-------|------|---------|
| Step 1 | | | |
| $D(I_1-I_2)$ | 0.27 | 0.06 | 0.20*** |
| Step 2 | | | |
| Gender | 0.13 | 0.14 | 0.04 |
| Age | 0.05 | 0.04 | 0.10 |
| Socio-economic status | 0.01 | 0.05 | 0.01 |
| Level of education | -0.14 | 0.05 | -0.10* |
| Locus of control (internal) at T1 | 0.35 | 0.14 | 0.11* |
| Number of jobs before T1 | 0.02 | 0.05 | 0.03 |
| Months work experience at T1 | -0.01 | 0.00 | -0.17 |
| Fit job-previous education at T1 | -0.21 | 0.08 | -0.13** |
| Job satisfaction at T1 | 0.01 | 0.11 | 0.00 |
| Intrinsic work aspects at T1 | 0.08 | 0.15 | 0.03 |
| Commitment at T1 | -0.04 | 0.11 | -0.02 |
| Job change between T1-T2 (yes) | 0.69 | 0.14 | 0.23*** |

Note: $R^2 = 0.04$ for Step 1; $\Delta R^2 = 0.09$ for Step 2 ($ps < 0.05$). * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

time were compared. As the data in Table 2 show, the perceived skill requirements profile was more likely to change over time than the vocational interests profile: the mean $D(R_1-R_2)$ value was 4.50 (SD 1.52) and significantly higher than the mean $D(I_1-I_2)$ value, 3.85 (SD 1.15); $t(491) = 8.45$, $p < 0.001$.

In order to answer the second question aimed at comparing the factors contributing to changes in vocational interests and/or changes in perceived skill requirements, respectively, two regression analyses were performed: The dependent variable in the first analysis was change of the perceived skill requirements profile, $D(R_1-R_2)$, and in the second, change of the vocational interests profile, $D(I_1-I_2)$, was the dependent variable.

Table 3 displays the results of the first analysis. Independent variables were the biographical and career path variables mentioned in Table 2 (variables 1 to 7), internal locus of control measured at time 1 (variable 12), and the work experience variables, also measured at time 1 (variables 8 to 11). This analysis intended to examine the determinants of change in perceived skill requirements independent of change in vocational interests. It should be noted that the correlation between the dissimilarity of vocational interests over time and the dissimilarity of perceived skill requirements over time was low, but significant, $r = 0.20$, $p < 0.001$. Therefore, the effect of $D(I_1-I_2)$ was entered in the regression equation first. In the second step, all other variables were entered.

It is apparent from Table 3 that, besides

change in vocational interests, four variables influenced change in perceived skill requirements over time: job change between time 1 and time 2, an initial mismatch between job and previous education, internal locus of control and (low) educational level. The change of the perceived skill requirements profile was unrelated to age. These five independent variables explained 13% of the variance in change of the perceived skill requirements profile; i.e., an increase of 9% compared with the contribution of the change of the vocational interests profile alone (Adjusted R^2 0.04).

The results of the second regression analysis, with longitudinal change in the vocational interests profile as the dependent variable, are presented in Table 4. In this analysis, change in perceived skill requirements was entered first, and the independent variables were the same as those in the previous analysis.

Table 4 shows that change in the vocational interests profile over time was related to change in the perceived skill requirements profile. Additionally, change in the vocational interests profile over time was predicted by low educational level, younger age, and an intrinsically motivating job at time 1. In other words, a stable pattern of vocational interests was more likely among those young adults who were older and better educated, or who did not have an intrinsically motivating job. The total explained variance in change of the vocational interests profile was 9%; i.e., an increase of 5% compared with the contribution of change of the perceived skill requirements profile alone.

Table 4: Multiple regression analysis for variables predicting change in the vocational interests profile, $D(I_1-I_2)$, with change in perceived skill requirements, $D(R_1-R_2)$, entered in the first step ($N = 492$)

| Variable | B | SEB | β |
|-----------------------------------|-------|------|---------|
| Step 1 | | | |
| $D(R_1-R_2)$ | 0.15 | 0.03 | 0.20*** |
| Step 2 | | | |
| Gender | 0.11 | 0.11 | 0.05 |
| Age | -0.05 | 0.03 | -0.13** |
| Socio-economic status | -0.02 | 0.04 | -0.02 |
| Level of education | -0.10 | 0.04 | -0.15** |
| Locus of control (internal) at T1 | 0.10 | 0.11 | 0.04 |
| Number of jobs before T1 | 0.01 | 0.04 | 0.02 |
| Months work experience at T1 | 0.00 | 0.00 | -0.04 |
| Fit job-previous education at T1 | -0.03 | 0.06 | -0.03 |
| Job satisfaction at T1 | 0.06 | 0.09 | 0.05 |
| Intrinsic work aspects at T1 | 0.27 | 0.11 | 0.12** |
| Commitment at T1 | -0.12 | 0.08 | -0.09 |
| Job change between T1-T2 (yes) | -0.19 | 0.11 | -0.08 |

Note: $R^2 = 0.04$ for Step 1; $\Delta R^2 = 0.06$ for Step 2 ($ps < 0.05$). * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Discussion

The purpose of this study was to contribute to a better understanding of what happens to individuals in their early work career. Previous research supports the fact that people may be motivated to strive for some degree of matching between themselves and their job. The results of the present study show that young people try to reach a balance between their own characteristics and the environment by changing their vocational interests, the skill requirements of their job, or both. Moreover, the results of this study fit with the theories mentioned in the introduction.

The first hypothesis, which proposed that fit predicts job satisfaction, was confirmed. However, the relationship between fit and tenure, as predicted by the second hypothesis, was not confirmed by the data. These results are consistent with those of Meir and Navon (1992), who did find a relationship between congruence and satisfaction, but not between congruence and tenure. Similarly, Bretz and Judge (1994) found that, as predicted by the theory of work adjustment, person-organization fit explained a significant amount of additional variance in tenure and in job satisfaction beyond the effects accounted for by other variables, although the effect was substantially more powerful for satisfaction. It seems that the relationship, if any, between fit and tenure is not direct, but is mediated by job satisfaction. Indeed, job attitudes, such as job (dis)satisfaction, have been shown to be consistent predictors of turnover

decisions (see Hulin 1991). In future studies this causal interpretation of our findings could be further tested, for example by using LISREL techniques.

The third hypothesis of this study, that the congruence between vocational interests and perceived skill requirements increases over time, was confirmed. This result suggests that the claims of the theory of work adjustment and of Holland's theory are valid with regard to the specific domain of fit studied here. Although the direction of changes in the vocational interests and perceived skill requirements profiles was not specified a priori, the data suggested that young adults are less apt to change their vocational interests profile than their perceived skill requirements profile. This finding is consistent with what Dawis (1991) called the 'hard-won conclusion', that vocational interests are stable dispositions in most adult individuals.

Nevertheless, vocational interests may change somehow after all. The results of this study indicate that change in vocational interests may be triggered first of all by change in the perceived skill requirements profile, which suggests that people adapt their vocational interests to a certain degree to the kind of work they are doing. However, the finding of a rather low, though significant correlation between change of the vocational interests profile and change of the perceived skill requirements profile (see Table 2) suggests that there is no strong causal relationship between these two types of change. People who show a strong shift in perceived skill requirements do not necessarily

change their vocational interests profile, and vice versa. Furthermore, change of vocational interests was negatively related to age, which corroborates the commonly held belief that vocational interests stabilize with age. The data also suggest that the higher the level of education, the more stable the vocational interests profile. This seems plausible while this effect might be explained in terms of the great investment of energy and time, and the large degree of specialization required by most forms of higher education. Clearly, a higher-level education, which usually implies longer time than a lower-level education, may promote the development (or be the consequence) of a more pronounced and crystallized pattern of vocational interests.

Moreover, the data indicate that people who experienced their initial job as intrinsically rewarding were more likely to change their vocational interests. This finding was not predicted and needs further study. It may be possible that having an intrinsically rewarding job offers opportunities for personal growth and therefore fosters the development of new vocational interests.

Finally, it appeared in this study that change of the perceived skill requirements profile was related to a different set of variables than those predicting change of vocational interests, with the exception of level of education. A high level of education was related not only to stable vocational interests, but also to a stable pattern of perceived skill requirements. The finding that a stable pattern of perceived skill requirements was predicted by a good fit between the initial job and previous education as well as by tenure is logical, and may be taken as an indication of the validity of the dissimilarity measure used.

The relationship found between internal locus of control and change in the pattern of perceived skill requirements, in combination with the absence of a relationship between the former variable and change in vocational interests, may be considered supportive of the theory of work adjustment. Internally controlled people feel competent, and have an active role in changing their environment. However, replication of this finding with a more commonly used measure of locus of control seems necessary. Furthermore, our use of the concept of locus of control as a proxy to assess work adjustment styles needs some comment. While we assumed a similarity between active versus reactive adjustment styles and internal versus external locus of control, one may also argue that both active and reactive adjustment styles are related to internal locus of control. In this view, the individual acts, in both active and reactive adjustment, upon changing the environment or himself/herself. As such, the

individual assumes control over events rather than allowing external forces to take control of them. For future studies, the use of active and passive coping styles to assess work adjustment is recommended.

Methodological Limitations

A number of methodological limitations of this study should be discussed. First, it may be argued that the type of fit addressed in this study is somehow unconventional; it can be interpreted at the intersection of the two approaches mentioned by Edwards (1991), focusing respectively on fit between needs/desires and supplies, and on fit between abilities and demands. On the person side, vocational interests are defined operationally as the perceived interest in classes of occupations that require certain abilities. We measured vocational interests by the appropriate Dutch term 'attractiveness' to describe a person's likes and dislikes, that is, his or her interests (see Dawis 1991, for a conceptual analysis). On the environment side, skill requirements were also measured by means of self-reports regarding the categories of skills. Although instructions in the vocational interests questionnaire placed some emphasis on perceived skill requirements as a basis for participants' likes and dislikes, the measures of vocational interests and skill requirements were probably not confounded. The measures have clear similarities, yet they were administered separately in time and by different modalities: written self-reports in the case of vocational interests, and an oral interview schedule for perceived skill requirements. Moreover, it is realistic to consider skill requirements as salient defining characteristics or sources of a person's likes or dislikes, and to use these as valid cues for the measurement of vocational interests, as is done in this study. There might be an intrinsic relationship between abilities and interests. Randahl (1991), for example, found strong relations between vocational interests and measured abilities, in accordance with Holland's (1992) theory.

Another point for discussion regards the items used to measure vocational interests and requirements. Although they are not meant to be representative for Holland's domains, however, they are significantly related to them, proving their validity (Engel 1997). Furthermore, the data appeared satisfactory from a psychometric point of view. The item scores generally showed sufficient variance, an absence of excessive skewness, fairly high retest reliability, and considerable stability. It is concluded that the instruments in this study, despite their simplicity, are sufficiently reliable and valid, and may

provide a valuable supplement to more traditional methods.

An alternative possibility for further establishing the validity of the skill requirements measure would be to derive direct codings of participants' jobs according to Holland's typology. Such analyses, however, would exceed the aim and scope of this article. For now, it is sufficient to conclude that the findings reported in this study can be generalized across a broad range of occupations and organizations.

Moreover, a possible discussion point lays in the self-report character of the measures. Meir and Navon (1992) suggested that the results of their study might be biased by faking or social desirability. For two reasons this does not seem plausible in the present study. First, participants in our study were job incumbents rather than applicants as in the Meir and Navon study. And second, there was a relatively long time period of four years between the two phases in the present study. Consequently, it is unlikely that these factors or memory effects have threatened the validity of the data.

Another point requiring some discussion is the operationalization of congruence or fit. In this study, a composite index was used. This is considered acceptable – no claim was made about whether there would be changes in vocational interests or in perceived skill requirements; it was merely predicted that match or congruence would increase over time. At the same time, it has to be admitted that using a composite index of profile dissimilarity means losing information about which component of the profile changes over time, and about whether there are any direct relations between either vocational interests or perceived skill requirements and satisfaction or intention to keep or quit one's job. Alternative ways of addressing fit issues without using composite indices have been proposed (Edwards 1991; Evans 1991; Hesketh and Gardner 1993). For example, Edwards (1991) has pointed out that indices commonly used in P-J fit research may provide no conceptual or empirical advantage over their constituent components. He calls for alternative models to predict satisfaction, which uses five predictors, including the person, the job, the person squared, the job squared, and the product of the person and the job. These analyses should be carried out at the level of separate person and job attributes. However valuable these methods may be, they were too complicated for the purpose of this study. As noted by Hesketh and Gardner (1993), one of the disadvantages of performing analyses at the attribute level 'is that it fails to capture the essence of either Proposition III of the Minnesota Theory of Work Adjustment or Holland's congruence concept, which imply a

matching of types or profiles' (p. 329). Since this was precisely the aim of the present article, rather than the demonstration of the attributes which optimally predict job satisfaction or turnover, the use of a single composite index seems justified (see also Kristof, 1996).

Implications of the Study

As pointed out earlier, the present findings may be generalized across occupations, since a large number of different jobs were represented in the sample. Even more importantly, the results may be generalized across SES and gender. These variables did not emerge as important determinants of change in vocational interests, and neither were they important predictors of change in perceived skill requirements.

In summary, the major contribution of this study is the demonstration of the longitudinal development of person-vocation fit, as predicted by various work and organizational theories, using a traditional method of assessing congruence. In addition, this study provides some indication of what changes most – vocational interests or perceived skill requirements – and about factors influencing these changes. Future work should attempt to extend the reported findings to other domains of person-environment fit and to alternative methods of measurement. Besides its theoretical value, such an endeavour would have practical relevance. Feij, Banks, Parkinson and Whitely (1992) and Feij, Peiró, Whitely and Taris (1995), for example, have demonstrated that an optimal fit between expectations and the reality of a job contributes significantly to the young worker's well-being and job satisfaction and stimulates the further development of career enhancing strategies. These findings suggest a continued role for vocational counsellors in helping clients clarify their needs and interests in relation to work preferences and opportunities.

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Appendix: Vocational Interests Questionnaire at Time 1 and Time 2

Instruction. Vocations differ in terms of the skills or competencies required. Can you indicate how attractive you would regard vocations that require each of the following skills?

| | very unattractive | | | very attractive | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | 1 | 2 | 3 | 4 | 5 |
| 1. Technical mindedness and dealing with machines | <input type="checkbox"/> |
| 2. Scientific mindedness | <input type="checkbox"/> |
| 3. Creativity and artistic ability | <input type="checkbox"/> |
| 4. Facility in dealing with people | <input type="checkbox"/> |
| 5. Leadership | <input type="checkbox"/> |
| 6. Business mindedness | <input type="checkbox"/> |
| 7. Manual skills | <input type="checkbox"/> |
| 8. Mathematical skills | <input type="checkbox"/> |
| 9. Musicality | <input type="checkbox"/> |
| 10. Teaching skills | <input type="checkbox"/> |
| 11. Persuasiveness (e.g., getting others to buy something) | <input type="checkbox"/> |
| 12. Clerical skills | <input type="checkbox"/> |
| 13. Caring and helping | <input type="checkbox"/> |
| 14. Computer skills | <input type="checkbox"/> |