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Occupational specialty congruence: New data and future directions

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Abstract

The present research examined the relationship between within-occupational congruence and satisfaction, and attempted to integrate hypotheses and findings of prior studies with the conceptual implications of occupational specialty congruence. Correspondence between vocational interests within occupations and specialty choice has shown higher correlations with satisfaction than with congruence (Assouline & Meir, 1987). Occupational specialty congruence was derived by comparing preferred functions with the actual functions characterizing a given occupational specialty. In the present study, involving 120 computer software professionals, occupational specialty congruence correlated approximately .45 with satisfaction, using core job function dimensions. Specialty change within occupation, rather than occupational change, may help in cases of poor occupational choice, burnout, or a change in health. Further research should explore the generalizability of the function dimensions employed herein. Identifying core dimensions can aid in designing both career tracks and certification exams.

Keywords: Congruence; Specialty congruence; Within-occupational congruence; Occupational specialty congruence; Holland's theory; Satisfaction; Contact with people; Skill utilization; Software

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1. Introduction

Holland's (1997) theory of vocational choice advances the congruence hypothesis, which states that when occupational choice suits vocational interests employees display a higher level of satisfaction than when choice and interests do not coincide (i.e., are incongruent). Spokane (1985) reviewed 63 studies on congruence conducted between 1959 and 1983, Holland and Gottfredson (1990) subsequently identified some 500 studies designed to examine this hypothesis, and Spokane, Meir, and Catalano (2000) most recently reviewed 66 additional studies conducted up to 1999. Although investigations of the congruence hypothesis vary with respect to methodology and variables measured, results of such reviews support Spokane's (1985) comment that there exists a "magic .30 correlational plateau" (p. 335) for the relation between congruence and satisfaction. In the present study, we examined the issue of measuring occupational specialty congruence, or what was previously labeled within-occupational congruence (Meir & Yaari, 1988). Nearly all occupations contain distinct specialties, especially high-level professional occupations most affected by technological and scientific development. In many cases, this process of identifying specialties extends a step further to delineating occupational subspecialties, such as pre-retirement group counseling as a branch of vocational counseling.

A generalization, or extension of the findings on the relations between occupational congruence and satisfaction has been offered in the form of a mapping sentence, wherein level of congruence affects well-being (Meir, 1989). This mapping sentence implies that (a) congruence cannot be measured as a dichotomy but as a continuous variable on an appropriate scale, (b) there might exist several different types of congruence, and (c) satisfaction is not the only measure of well-being. Accordingly, Holland's congruence hypothesis has been expanded to include hypotheses on environmental congruence (Meir & Hasson, 1982), avocational congruence (Melamed, Meir, & Samson, 1995), skill-utilization congruence (ibid.), and within-occupational, or occupational specialty congruence (Meir & Erez, 1981).

Occupational specialty congruence means that the specialty in which one works meets one's vocational interests within a broad occupation. For example, a person in the medical profession who prefers working with sophisticated equipment would likely experience occupational specialty congruence as a surgeon and incongruence as a psychiatrist. Research suggests that occupational specialty congruence provides a more appropriate measure and better predictor of vocational satisfaction than does vocational congruence, or fit between the broad occupation and the individual's interests as defined by Holland (1997).

The relationship between occupational specialty congruence and vocational satisfaction to date has been explored in eight studies involving lawyers (Davidovits, 1984), biologists, (Eilam, 1984), registered nurses (Hener & Meir, 1981), police officers (Maloul, 1983), teachers (Meir, 1987), physicians (Meir & Engel, 1986), engineers (Meir & Erez, 1981), and psychologists (Rosenbloom, 1981). These investigations encompassed 978 participants, with 81–192 per occupation. Meir and Yaari (1988) replicated the eight studies on a new sample of 324 participants, with 30–50 participants per occupation. The mean correlation between occupational specialty

congruence and satisfaction was .42 in Assouline and Meir's (1987) meta-analysis, and .41 in Meir and Yaari's (1988) replication. Clearly, these correlations significantly exceed the magic .30 correlational plateau for congruence and satisfaction (Spokane, 1985), indicating the importance of a congruent occupational specialty choice.

Theoretically, a variety of approaches may be adopted to define the specialties of a given occupation. One approach that might be suitable for professional occupations, would be to employ the classification used in the academic world. For example, engineering is taught in electrical, mechanical, industrial, civil, and other departments, which for research purposes might be used as the specialties of engineering. Similarly, university psychology departments offer clinical, developmental, organizational, rehabilitation, and other programs that could be conceived of as psychology specialties. However, the academic division into specialties ignores psychological considerations, which entail the prime issue in efforts to predict vocational satisfaction. Various academic departments and programs can therefore be said to provide broad occupational classifications, rather than specialties within a broad occupation.

One possible way to measure specialty congruence would be to follow Holland (1997) and create occupational specialty interests codes. Accordingly, appropriate interest inventories, such as the Self-Directed Search (Holland, 1994), would be administered to groups of professionals in a given specialization and their average interest profile would be computed using Holland's RIASEC typology (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional). The outcome would represent the code for the respective specialty. An individual's interest code could then be compared with the group's code to determine congruence in the traditional way as described by Holland (1994). The number of specialties within each broad occupation would depend on the number of different homogeneous groups of professionals who share the same code. The problem with this approach is that it would require the empirical identification of the codes of thousands of professionals within hundreds of specialties in dozens of different occupations. This system would result in an enormous number of occupations and specialties that would consequently be of little use, because it would most likely be too difficult to handle in counseling, for instance. It might also be argued that this conservative system of differentiation ignores the common attributes of particular specialties with different labels, and thus distinguishes between specialties that might be very similar in psychological terms.

A more economical approach to measuring congruence would be to characterize the specialties within an occupation by means of a limited number of core function dimensions. The same core dimensions might be applied to a variety of occupations and would have to be identified by a group of experts. Congruence scores would be assigned to the professionals in a given specialty according to the level of correspondence between their interests in occupational activities and the activities characterizing their specialty. The validity of the core function dimensions would be examined by measuring the extent to which occupational specialty congruence predicts satisfaction with the chosen specialty.

In the nine studies (eight separate studies plus Meir & Yaari's, 1988 replication) in which the relationship between within-occupational congruence and satisfaction was

investigated, the core aspects of each occupation was specific to that field. We propose that a better conception of occupational breakdown into specialties would be based on worker function dimensions.

The idea of dividing occupations into specialties along activity or function dimensions can be illustrated by the example of the medical profession. Meir and Engel (1986) differentiated all medical specialties along three dimensions, including degree of contact-with-people, use of instruments such as sophisticated tools and equipment, and level of sensation defined in terms of occurrence of dramatic events and need for immediate decision making. Physicians responded to a relevant within-medicine activities interest inventory, and the degree of correspondence with the actual level of contact, instruments, and sensation in their job constituted the specialty congruence scores. These scores were then compared with their satisfaction scores to yield the occupational specialty congruence-satisfaction correlation. Participants comprised physicians specializing in ophthalmology, surgery, internal medicine, pediatrics, gynecology, orthopedics, psychiatry, pathology, and radiology. The underlying assumption was that it might be possible to categorize all medical specialties in terms of the three dimensions defined above. To this end, an interest inventory with items representing each of the dimensions was constructed. The physicians indicated their interest in the content of each item, and a profile of three dimension scores was assigned on the basis of their responses. A group of experts assessed the degree to which each specialty actually involved contact with people, required the use of instruments, and was characterized by sensation. Occupational specialty congruence was computed by comparing the respondent's interest profile and the actual job composition as determined by the experts. The congruence scores were then correlated with the respondent's satisfaction with his or her specialty choice. Two questions, as yet unanswered, emerged from this study. First, can differentiation of specialties in other occupations be similarly based on only a few dimensions? Second, to what extent are one, two, or all three of the dimensions found for the medical profession also relevant to other occupations?

An earlier study conducted on engineers may help to answer these questions. Meir and Erez (1981) assumed that all engineering specialties could be characterized in terms of six dimensions: planning and designing; production; maintenance of machinery, equipment, and facilities; management of people; and training. The occupational specialty congruence correlation with satisfaction was derived in a manner similar to that employed in the study of medical specialties.

In each of the nine occupational specialty studies noted above, the dimensions were formulated and translated into items on a within-occupational interest inventory in a preparatory investigation of the respective occupation. The preparatory phase included a survey of the literature, careful analysis of the relevant training programs and educational system, interviews with leading persons in the occupation, and a degree of trial and error in defining and examination. When successful, this method leads to a meaningful separation of the broad occupation into core characteristics, and their confirmation in an empirical study of the relation between occupational specialty congruence and satisfaction. Such confirmation, however, does not ensure that no alternative definition of an occupation's core function dimensions is possible.

The present research examined the relationship between within-occupational congruence and satisfaction, and attempted to integrate the hypotheses and findings of previous studies with the conceptual implications of the term occupational specialty congruence. The study involved professionals in computer software, a field highly popular among young people faced with the need to make an occupational choice and characterized by dynamic changes in both technology and theory. The potential incremental contribution of our study to previous investigations rests in the difference between the hypotheses examined. From the initial survey of the specialties in computer software, we proposed that the same dimensions found suitable for engineering might also apply to the software profession, as both are defined as Realistic and Investigative occupations in Holland's (1997) typology, and Technology and Science occupations in Roe's (1956) classification. Confirming this hypothesis would be of significant value because it might emerge that these different categories share certain dimensions that might be sufficient for differentiating specialties.

Attempting to extend both theory and methodology, we examined two additional independent variables and one additional dependent variable. The independent variables were skill-utilization congruence and contact-with-people congruence. The dependent variable was somatic complaints. Skill utilization has been investigated in earlier studies of the impact of the accumulation of congruences on well-being (Meir & Green-Eppel, 1999; Meir, Melamed, & Dinur, 1995). Given the very rapid changes in the field of computer software, we assumed that the question of whether or not an individual has enough opportunities to express his or her skills and special capacities would have a considerable impact on well-being. Similarly, contact with people has been found to be a very important aspect of occupational choice (Gati, 1998; Gati, Garty, & Fassa, 1996). In the realm of computer software, the goal of some specialties is technical efficiency alone. In contrast, other specialties are devoted primarily to helping others to resolve technical problems or deal with anxiety about using software or computer equipment. With respect to the dependent variable, most congruence studies (53 of 77 correlations in Assouline & Meir's, 1987, meta-analysis) used satisfaction. The other 31% examined the correlation between congruence and stability or achievements. Across the nine within-occupational congruence studies, the single dependent variable was satisfaction. In the present study, we decided to examine an additional dependent variable, somatic complaints, which has been featured in previous studies (Meir & Segal-Halevi, 2001). Somatic complaints are, of course, one of the negative expressions of well-being, and are therefore expected to yield negative correlations with congruence aspects. To our regret, as in the case of most congruence studies, both satisfaction and somatic complaints rely here on self-report, rather than on external measures, because for technical reasons we were unable to access any external measure (e.g., tenure or supervisors' evaluations).

Four hypotheses were examined as follows. First, level of congruence between vocational interests and specialty choice among software professionals correlates positively with satisfaction and negatively with somatic complaints. Second, computer software specialties yield a positive correlation between skill-utilization congruence (i.e., the individual's need to use his or her skills on the job and the actual utilization of these skills) and satisfaction, and a negative correlation between

skill-utilization congruence and somatic complaints. Third, computer software specialties yield a positive correlation between contact-with-people congruence (i.e., the individual's need for contact with others and the actual level of contact with others in the chosen specialty) and satisfaction, and a negative correlation between contact-with-people congruence and somatic complaints. Fourth, occupational specialty congruence, skill-utilization congruence, and contact-with-people congruence produce an additive effect, leading to higher satisfaction and fewer somatic complaints.

2. Method

2.1. Participants

The participants comprised 120 computer software professionals (89 men, 31 women) aged 20–50 years ($M = 31.0$ years), with work tenure ranging from 6 to 91 months ($M = 53.7$ months) across 22 different companies and organizations. Participants differed in the specific functions of their jobs. Excluded from the study were webmasters and individuals who used computers strictly as a drawing tool or word processor.

The distribution of software professionals among the core functions within the occupation is uneven; many more people specialize in design or development than in quality control or instruction. Nevertheless, an effort was made to include representatives of the less frequent specialties. The distribution of the main functions performed according to the participants' own judgment of their jobs was design and planning (23%), development (41%), support (7%), management (12%), quality control (10%), and training (7%).

2.2. Measures

2.2.1. Indirect within-software interests inventory

We developed the indirect within-software interests inventory (WSII) for the present study as one measure of specialty congruence. The WSII measures level of interest in each one of six core function dimensions characterizing computer software specialties. The WSII contains 7 items per dimension for a total of 42 items. To select items, four software experts reviewed descriptions of six core engineering function dimensions (Meir & Erez, 1981) and adapted them so as to yield six core software function dimensions as follows: Planning and design (P), defined as implementing ideas or goals by formulating and specifying components of new systems and/or parts of a new product to be integrated into one system or a product; Development (D), coding of software components and/or integrating them according to content and time sequence as defined in the design; Support (S), assuring availability of software and hardware required for the development process; Management (M), managing project execution by assigning suitable personnel; Quality control (Q), supervising the phases of development to ensure product quality according to defined standards and specifications; and Training (T), transferring to personnel and

consumers requisite knowledge and skills for product development and use. Sample items include: design a product flowchart (P), write the code for the component of a software system according to specifications (D), prepare the infrastructure required for the design process (S), determine the order in which employees will perform tasks (M), confirm that a product meets the consumer's requirements (Q), and instruct customers on how to update a product (T).

Respondents indicate whether or not they are interested in the 42 activities contained in the WSII by responding yes, doubtful, or no, scored 2, 1, and 0, respectively. Interest scores represented the mean of a respondent's score on the seven items for each dimension and could range from 0 to 7 on each subscale. The six subscales yielded split-half reliability coefficients between .71 (Q) and .88 (D), with a median of .77. Each participant was assigned a two-letter code that represented the two highest scores on the six subscales (e.g., PD, MQ). In the case of ties, all combinations were used for analysis.

2.2.2. Direct within-software interest inventory

Developed for use in the present study as a second measure of specialty interest, the direct within-software interest inventory (DWSII) contains a single item that asks respondents to assign a percentage value to indicate how much time they would like to spend in each one of six activities. The six values should total 100% and errors are corrected by calculating the responses as percentages of the total. Respondents are assigned a two-letter code corresponding to the two activities scored highest (similar to the code on the WSII). In the case of tied scores, all combinations are used for analysis. Correlations between responses on the DWSII and the WSII in the present study ranged between .60 and .84 (median = .68).

2.2.3. Skill-utilization inventory

We used the skill-utilization inventory (SU) to operationally define skill-utilization congruence. The SU purports to measure the extent to which an occupation affords an individual opportunities to perform or display personally perceived skills. The inventory represents the Hebrew version of an instrument developed by Caplan, Cobb, French, Van Harrison, and Pinneau (1975) and has been used in previous occupational congruence research (Meir & Melamed, 1986; Meir et al., 1995; Melamed et al., 1995). The SU contains four items, such as "How often are you given a chance to do the things you do best?", with each item rated on a 5-point scale. Total scores on the measure range from 4 to 20. Studies have reported internal consistency reliability coefficients for the measure of .77 (Caplan et al., 1975) and .78 (Meir et al., 1995).

2.2.4. Contact-with-people congruence inventory (CON)

Two items were used to measure the degree of fit between interpersonal contact involved in a job and personality. One item asks, "To what extent does the frequency with which you have to meet other people in your job suit your personality?" The other item asks "To what extent does the level of contact you have with other people in your job suit your personality?" Respondents indicate their ratings for each item

using a 9-point scale. The two ratings in the present study yielded a split-half reliability coefficient of .78.

2.2.5. Personal data inventory

Participants were asked to provide biographical data, their formal job description, and their tenure in the software profession. In addition, they were asked to rank the six core function dimensions (P, D, S, M, Q, and T) in order of frequency they dealt with them in their job. Each participant was assigned a two-letter job code, similar in form to the interest codes, corresponding to the dimensions appearing first and second in order of frequency (e.g., PD, MQ).

2.2.6. Satisfaction inventory (SAT)

We adapted Meir and Yaari's (1988) inventory to measure level of job satisfaction as one indicator of well-being. Using a 20-point scale, respondents rated 10 items, such as "To what extent are you satisfied with the challenges you meet in your work?" A split-half reliability of .91 for the unmodified version has been reported (Meir & Yaari, 1988).

2.2.7. Somatic complaints inventory

Caplan et al.'s (1975) 10-item inventory was used to measure frequency of somatic complaints as a second indicator of well-being. Items such as "How often have you suffered from headaches in the last 3 months?" are rated using a scale of often, sometimes, and rarely. A Cronbach's α reliability coefficient of .89 has been reported for the somatic complaints inventory (SOM) (Meir & Melamed, 1986).

2.3. Procedure and analysis

Participants required approximately 20 min to respond to all measures in the order in which they were described above. The WSII, DWSII, and relevant data from the personal data inventory were used as measures for two within-software congruence scores. Two within-software occupational specialty congruence scores were calculated by comparing the participants' two-letter interest codes on the WSII and the DWSII separately with their two-letter job code. Scores were assigned as follows: 5 = the same two letters in the same order (e.g., PD, PD); 4 = the same two letters in different order (e.g., PD, DP); 3 = the same first letter, different second letter (e.g., PD, PM); 2 = the same second letter, different first letter (e.g., PD, MD); 1 = one identical letter, different position (e.g., PD, DM); and 0 = no similarity (e.g., PD, MT). In the case of tied scores, the mean of all the corresponding comparisons was used as the specialty congruence score. A similar method has been used to derive field congruence scores (Meir, Hadas, & Noyfeld, 1997; Melamed et al., 1995).

Total scores on SU, CON, SAT, and SOM were used in the data analysis. To test the fourth hypothesis about the additive affect of specialty, skill-utilization, and contact-with-people congruences, we divided participants into two groups (congruent vs. incongruent) for each variable. The median of each scale was used as the cut-off point for this dichotomy: 2.5 for occupational specialty congruence, $\geqslant$13.0 for skill-utilization

congruence, and $\geqslant 5.0$ for contact-with-people congruence. We then divided participants into four groups for each of the two interest inventories, containing individuals displaying all, two, one, or none of the three congruences. The number of respondents in each group was 60 (50%), 41 (34%), 12 (10%), and 7 (6%), respectively, for the WSII, and 69 (58%), 31 (26%), 15 (13%), and 5 (4%), respectively, for the DWSII. It may be assumed that the highly skewed distribution resulted from the fact that many of those who were incongruent in any or all of the three areas (specialty, skill utilization, or contact with people) chose to change their job and/or profession.

3. Results

Table 1 presents the correlation matrix for the three types of congruence and the two well-being measures. Intercorrelations among the three congruences (including the two measures of specialty congruence) ranged from .30 to .40. Intercorrelations between the two measures of specialty congruence, WSII and DWSII, was .60 (all $p < .01$). These magnitudes are consistent with Holland's (1997) congruence hypothesis. Because the different congruences do not have the same impact on any of the variables (i.e., the well-being measures), their contribution to well-being may be either cumulative or compensatory.

A correlation of −.23 ($p < .01$) was found between the two dependent variables, SAT and SOM. A negative correlation was expected in view of the contradictory connotations of satisfaction and somatic complaints. Moreover, it was predicted that the correlation coefficient would not be very high because both of these dimensions are affected by a wide variety of factors beyond those examined herein, such as working conditions and health. All of the correlations are consistent with findings of prior studies that similarly measured several types of congruence and aspects of well-being (Meir, Melamed, & Abu-Freha, 1990; Meir et al., 1995; Melamed et al., 1995).

Intercorrelations between congruence and satisfaction were .45 and .46 for the two specialty congruence measures, and .62 and .70 for the contact-with-people and skill-utilization congruences, respectively (all $p < .01$). As expected, all correlations between congruence and somatic complaints were negative ($p < .05$ or .01), ranging between −.19 and −.28. These findings confirmed the first three hypotheses.

Table 1
Intercorrelations among measures of occupational specialty congruence and well-being ($n = 120$)

	WSII	DWSII	SU	CON	SAT	SOM
WSII		.60	.30	.32	.45	−.19
DWSII			.40	.33	.46	−.28
SU				.38	.70	−.20
CON					.62	−.22
SAT						−.23

Note. WSII, Indirect within-software interests; DWSII, direct within-software interests; SU, skill-utilization congruence; CON, contact-with-people congruence; SAT, satisfaction; SOM, somatic complaints. All correlations significant at $p < .05$ level or better.

In the case of satisfaction, the correlations with the contact-with-people and skill-utilization congruences exceeded the correlations with occupational specialty. However, this pattern was not repeated with respect to somatic complaints.

The fourth hypothesis, that the three congruence aspects would have an additive affect on well-being, was also confirmed by the data. When WSII was used as the measure of occupational specialty congruence, the mean satisfaction of participants displaying all three congruences ($n = 60$), was 15.60, two congruences ($n = 41$) 13.55, one congruence ($n = 12$) 11.18, and no congruences only 7.99 ($F = 23.00$, $p < .01$; $df = 116, 3$). When DWII was used as the measure of occupational specialty congruence, the mean satisfaction of participants was 15.68 ($n = 69$), 12.93 ($n = 31$), 10.73 ($n = 15$), and 7.54 ($n = 5$), for three, two, one, and no congruence, respectively ($F = 30.03$, $p < .01$, $df = 116, 3$). Post hoc Scheffé tests revealed that the difference between no and one congruence and between one and two congruences did not reach the level of significance, whereas the other four differences (i.e., none vs. two, and none, one or two vs. three) were all significant at $p < .01$.

The results for somatic complaints as the measure of well-being also point to confirmation of the additive hypothesis. With WSII as the measure of occupational specialty congruence, the mean somatic complaints were 13.18, 13.83, 15.50, and 15.00 ($F = 2.63$, $p < .05$) for three ($n = 60$), two ($n = 41$), one ($n = 12$), and no ($n = 7$) congruences, respectively. With DWSII as the measure of occupational specialty congruence, the respective means were 13.04 ($n = 69$), 14.32 ($n = 31$), 15.00 ($n = 15$), and 16.00 ($n = 5$) for the same groups, respectively. None of these differences was found to be significant at the conservative $p < .05$ level in post hoc Scheffé comparisons.

4. Discussion

Overall, the present data supported the four hypothesized relationships between occupational specialty congruence, skill-utilization congruence, and contact-with-people congruence on the one hand, and well-being, as measured by satisfaction and somatic complaints, on the other. Our findings are consistent with those of earlier studies indicating a positive relationship between occupational specialty congruence and satisfaction. With the present findings, the occupational specialty congruence-satisfaction link has now received support across a total of nine occupations, comprising hundreds of specialties, thereby seeming to have firmly established the generalizability of this association.

Assouline and Meir's (1987) meta-analysis found the mean correlation between within-occupational congruence and satisfaction to be .42. The same correlation in the current study was .45 with one measure and .46 with the other. An earlier study on engineers (Meir & Erez, 1981), in which a very similar breakdown was employed, also produced a correlation of .45 ($n = 109$). The nearly identical correlation coefficients found for the fields of engineering and software might thus indicate the similarity, in terms of the core function dimensions, between these two occupations. Most of the specialties in both occupations do not involve close relations with customers, and are manned primarily by realistic and investigative types (Holland, 1997) or technology and science types (Roe, 1956).

Determining why some of the within-occupational congruence studies did not find similar correlations between occupational specialty congruence and satisfaction in the range of .45 requires further research. Possibly, using function dimensions that were found appropriate for engineering and software, rather than using idiosyncratic breakdowns as in other studies, might indeed yield correlations close to .45. Alternatively, it is possible that this breakdown is unsuitable for particular occupations (such as socially oriented professions), and that perhaps there is no good substitute for the breakdown that was originally employed. The study of medical specialties, for example, used only three categories and found occupational specialty congruence-satisfaction correlations of .31, .27, and .53 for contact, instruments, and sensation, respectively. Where a future study on medical specialties to employ these three categories and an appropriate modification of the six function dimensions found for engineering and software, it might contribute significantly to examining the generalizability of the six core dimensions.

Skill-utilization congruence and contact-with-people congruence yielded higher correlations with satisfaction than did occupational specialty congruence. Because ours is the only study known to us to investigate several congruence aspects vis á vis satisfaction, sufficient data are lacking at this stage to determine the relative impact of the various types of congruence on satisfaction. However, the correlations found for somatic complaints do not support the proposition that either skill-utilization or contact-with-people congruence has a greater impact than occupational specialty congruence.

In methodological terms, the present study differs from earlier investigations in its use of two different methods for assigning congruence scores, one indirect (WSII) and the other direct (DWSII). Both produced very similar correlations of .45 and −.19 for satisfaction and somatic complaints, respectively, by the indirect method, and .46 and −.28 for the two variables by the direct method. The difference is not statistically significant, and it might be argued that the seeming advantage of the direct method was a result of the fact that the participants had previously responded to the indirect inventory.

The effect of combinations of congruences has previously been studied in teachers (Meir et al., 1990); lawyers, psychologists, and physicians (Meir et al., 1995); and engineers, technicians, physicians, and lawyers (Melamed et al., 1995). These investigations confirmed the hypothesis of an additive affect of congruences on satisfaction. It should be remembered, however, that there is inevitably a restriction-of-range effect in this sort of study, because those who lack several aspects of congruence have a higher tendency (and good reason) to quit their job or change their occupation. The descending number of participants displaying three, two, one, and no congruences in the present study not only supports the assumption of a restriction-of-range, but also lends further credence to the importance of the existence of all kinds of congruence, including occupational specialty congruence.

The relation found between contact-with-people congruence and satisfaction might be assumed to be associated with social support. It goes without saying that workers who enjoy social support will generally find it easier to overcome daily frustrations and will thus express a higher level of satisfaction. In other words, it might be

argued that the correlation between contact-with-people congruence and satisfaction is spurious. However, what was measured here was not merely high level of contact, but rather the existence of congruence between preferred level of contact and actual level of contact in one's job. In this case, congruence means both that those who prefer contact with others have a high level of contact in their job, and that those who prefer little or no contact have a low level of such contact. While it might be argued that workers with a higher level of contact will express a high level of satisfaction as a result of the social support they enjoy, this cannot explain the high level of satisfaction expressed by respondents who prefer a low level of contact and for whom congruence therefore means little contact and little corresponding social support.

It would be interesting for future studies to explore the dynamic changes that people make to improve their interest congruence by selecting a given specialty within an occupation that best suits their interests. The fact that at any given point in time, a certain percentage of workers display occupational specialty congruence may suggest that dynamic changes do take place. It might be argued that while initial vocational choices may be satisfactory and reflect an individual's preferences at the time, after a number of years in the occupation this congruence diminishes, perhaps due to worker changes such as boredom, fatigue, and burnout, a higher aspiration level, or the development of new skills. Decreased congruence might also derive from changes in the job itself that may affect the worker's interests, such as alterations in working conditions, supervisor's attitudes, and promotion prospects. The combination of occupational specialty congruence, which is likely to be accompanied by the opportunity to bring one's special skills to bear, may serve to enhance satisfaction in spite of the changes that may occur over time with respect to both the employee and the job.

The practical implications of dividing an occupation into core function dimensions, and the differentiation of specialties accordingly, are manifold. First, in the case of dissatisfaction (which may result from a bad occupational choice, changes in occupational characteristics due to technological development, or a shift in personal preferences), the individual might switch, within his or her broad occupation, to a specialty that emphasizes a more congruent dimension. This option would not require an entirely new course of occupational training, with all its implications in terms of cost and loss of status. Second, changing specialty is likely to be an effective "defense mechanism" against burnout (Meir, 1990, 1994). After many years of experience, even the most congruent occupational choice may prove to be stressful (e.g., consider how many teeth a dentist fills in the course of 40 years). A change in specialty within one's occupation might very well help to reduce this stress (e.g., the dentist might do research or supervise students). Third, a specialty change might be recommended following a significant change in an individual's health. Without doubt, rehabilitation will be enhanced if an employee can resume work and continue to make a living as soon as possible without the need for a lengthy new training program in addition to the financial and social problems that accompany the deterioration in health. Fourth, in planning a career track, it is often beneficial for promising candidates for high-level jobs to have experience in a variety of the specialties that constitute a broad occupation. For example, it is valuable for a newspaper editor to

have previous experience as a financial, political, or sports reporter, as well as intimate knowledge of the realms of printing, marketing, and advertising. Moreover, some organizations, such as the military, may institute regular specialty changes to avoid potential adverse effects such as fatigue, burnout, and lack of innovation associated with remaining in the same job for a long period of time. Finally, the appropriate delineation of an occupation into core function dimensions can help in the construction of training programs and certification exams. Identification of the core activities of a given occupation can aid in defining the types of tasks for which trainees should be prepared, as well as those in which examinees should demonstrate adequate proficiency to be accredited for the occupation.

Perhaps the most important contribution of the present study relates to the finding that dividing one broad occupation (engineering) into core function dimensions applies to another broad occupation (software). Demonstrating the generalizability of this breakdown to additional occupations would be of considerable benefit in the realms of vocational counseling, vocational choice and information, training programs, promotion decisions, and solving problems of personal maladjustment.

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