



Work values and personality traits as predictors of enterprising and social vocational interests

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Abstract

The present study investigated the incremental validity of work values to predict enterprising and social vocational interests over and above personality traits in a sample of 178 undergraduate commercial engineering or commercial sciences seniors. Twelve work values, defined as broad tendencies to prefer general job characteristics, were operationalized as the extent to which people assign importance to a range of job characteristics when thinking about an ideal work situation. Personality traits were assessed with the Dutch authorized adaptation of the NEO-PI-R (Costa & McCrae, 1992; Hoekstra et al., 1996). Enterprising and Social vocational interests were assessed with three-item scales representing job titles. Although, the majority of the work values were related to the Five Factor Model-traits, correlations were modest to moderate, not exceeding 0.44. The results of the stepwise hierarchical multiple regression analyses show that work values have **incremental validity** over and above the FFM-traits **to predict enterprising and social vocational interests**. Enterprising interests are predicted by Extraversion, whereas Social interests are predicted by Openness. The work values Influence and Team respectively further add positively and negatively to the prediction of Enterprising vocational preferences, while interest in Social occupations is additionally characterized by putting less weight on Earnings. The discussion focuses on the validity of work values and personality traits for vocational and career streaming.

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Values and work values in particular are supposed to play a functional role in work-related central processes and outcomes, such as job satisfaction, motivation, organizational commitment, work performance and vocational streaming (Dose, 1997; Meglino & Ravlin, 1998; Roe & Ester, 1999). They are assumed to be predictors or moderators of these processes and criteria and they are further ascribed a central role in determining the fit between the individual and the employment organization. The underlying assumption is that people will be happier, more motivated, satisfied, and committed when the individual's values are congruent with those emphasized in the organization or vocational group. Because the previous criteria are valued outcomes by both organizations and employees, organizations hire individuals with compatible values, and people prefer organizations, jobs and vocations having opportunities to work in line with their values (Judge & Bretz, 1992). This basic idea goes back to Super (1953), who suggested that: "work satisfaction and life satisfaction depend upon the extent to which the individual finds adequate outlets for his abilities, interests, personality traits, and values ...". The interplay among these constructs is thus crucial to explain employment and career development questions and work outcomes.

The proposition of Super sounds self-evident, especially for youngsters who still have to develop their careers. Central elements in their anticipation about future work life are general ideas about what characteristics of work and work environment will be important to be happy, successful and self-accomplished. Examination of the relationship between such general work values and more specific vocational preferences can reveal aspects of their implicit expectations about vocations and vocational categories. Knowledge about these expectations can increase our understanding of why people prefer one vocation over another. Such updated information is especially valuable in the light of changing requirements of vocations. For example, think about the growing importance of social and team aspects of leadership (Belbin, 1996) in many functions or about the changing requirements for a teacher (Hargreaves, 1994), making an educational job less individual, less predictable and more stressful than has previously been the case.

Besides conscious considerations about what features are important, more compelling and deep anchored characteristics of the person can determine specific vocational interests. This influence can work both directly and indirectly. In the latter case personality traits are considered to influence specific vocational choices in so far they determine the general work values.

The present study focuses on the relationship between personality traits and work values and their validity to predict vocational preferences, more specifically enterprising and social vocational preferences. The manuscript outlines as follows. First, the relationship between personality traits and work values is described. The incremental validity of work values to predict vocational interests over and above personality traits is examined in a second step.

These objectives will be examined in a group of senior economy undergraduates who were enrolled in the same 4-year undergraduate program. The implicit assumption is that traits are more stable, whereas values are more malleable individual differences. Undergraduate programs are thought to mould students' knowledge and skills, but also to affect their attitudes and work values. The participants in this study are mainly prepared for a professional career either in a commercial business environment, eventually self-employed, or as a secondary school teacher in the public or non-profit sector, teaching courses in economics or business administration. The criterion vocational interests studied here are thus highly applicable for all participants. The main challenge of this study was to investigate whether personality traits contribute above and

beyond work values that were subject of intentional shape and influence the past 4 years. Besides these fundamental scientific perspectives, the scarcity on the labor market for young teachers in times of economical expansion makes it also important from an applied point of view to study the relative contribution of stable and malleable determinants of vocational preferences and choices.

1. Inventories

1.1. *Work values*

The concept of work values is defined and measured in a variety of ways, depending on the research objectives and theoretical background (Dose, 1997; Meglino & Ravlin, 1998; Roe & Ester, 1999). Some authors consider work values as broad tendencies to prefer certain job characteristics, outcomes or features of work environments (e.g. Furnham, Forde, & Ferrari, 1999; Hofstede, 1998; Lofquist & Dawis, 1971; Pryor, 1982; Super, 1973), whereas others define them as desirable modes of behavior (Meglino & Ravlin, 1998). Still another group (England, 1967; Jones, 1991; Treviño, 1986) describes values as systems of ethics, ideologies or philosophies. According to Dose (1997) the controversy about work values stems from the lack of clarity about the value concept itself. Dose (1997, p. 220) summarizes and defines values as: "... standards or criteria for choosing goals or guiding action..." that are "... relatively enduring and stable over time". This definition can be applied for the definition of work values by adding "relating to work or the work environment" (Dose, 1997, p. 227).

Dose (1997) further presents an integrative framework, consisting of two bipolarities along which work values can be described. The first bipolarity concerns the moral component of the value concept. Meglino and Ravlin (1998; Ravlin & Meglino, 1987) identify moral obligations as a necessary component of work values, i.e. they are described as virtues or internalized moral principles, contrary to others (e.g. Hofstede, 1998; Pryor, 1982; Sverko, 1999), who define work values as preferences or desires not necessarily including an "oughtness" component. Values such as "concern for others" or "honesty" (Ravlin & Meglino, 1987) imply a strong moral connotation, whereas "security", "autonomy", "participation" and "prestige" (Lofquist & Dawis, 1971; Pryor, 1982; Super, 1973; Sverko, 1999) show more inter-individual variability in preference or liking. According to Hofstede (1980), work values can be operationalized as the extent to which people assign importance to several general job characteristics thinking about an ideal job. This preferences approach is also chosen in this study. The characteristics are mentioned to be "general" because they are not exclusively related to particular specific vocational settings. Each job has these characteristics in a certain amount.

The second bipolarity of Dose's framework refers to personal versus social consensus. Values can be conceptualized as personal characteristics, not necessary socially determined, that explain individual differences in organizational or vocational behaviour, value conflicts or mismatches. On the other side of the continuum the focus is on shared values as the core of national and organizational cultures with an integrative function (Schein, 1985). However, the personal and social consensus approaches are often difficult to distinguish, because the personal perspective is often used to explore differences across cultures and organizations (Hofstede, 1980, 1998;

Schwartz, 1992; Schwartz & Bilsky, 1987). Usually, the difference between the two is related to the level of aggregation (Roe & Ester, 1999). The focus in the present study is on values from a personal perspective.

1.2. Personality traits

Contrary to the research on values, personality psychologists did reach a consensus by the end of the past century on the common and basic dimensions underlying individual differences (Goldberg, 1993). Although consensus is far from complete, most agree that five orthogonal factors can be considered as the basic dimensions underlying personality traits. These so-called Big Five primarily evolved from the study of the natural language, i.e. from factoring self-ratings on large sets of personality descriptive adjectives culled from dictionaries. The resulting dimensions are usually labeled as Extraversion, Agreeableness, Conscientiousness, Neuroticism/Emotional Stability and finally Intellect/Culture.

Inspired by the lexical research, Costa and McCrae (1989) expanded their initial NEO-model, comprising scales assessing Neuroticism, Extraversion and Openness, to the so-called Five-Factor Model (FFM), appending scales to assess the missing factors of Agreeableness and Conscientiousness. The Big Five line of research mainly differs from the FFM conceptualization through its label for the fifth factor (De Raad & Van Heck, 1994). The fifth of the adjective-based Big Five is entitled “Intellect or Culture”, whereas the fifth of the FFM is called Openness. According to McCrae (1990) the Openness domain refers to traits that are not well represented in dictionary studies investigating the structure underlying trait adjectives. The attractive features of the FFM are that it serves as a framework to conduct systematic research and that it advances an integration of the diversity of individual differences measures. The Openness domain, assessing a wide range of preferences for aesthetics, ideas and values, might be particularly interesting for the study of values. The basic and comprehensive character of the FFM makes it a most appropriate model to examine its relationship with work values.

1.3. Work values and traits

The interplay between personality traits and vocational interests and preferences has been the subject of several recent studies (De Fruyt & Mervielde, 1997; Lindley & Borgen, 2000), demonstrating that traits explain variance in interest patterns and preferences. Furthermore, De Fruyt and Mervielde (1999) and Judge, Higgins, Thoresen, and Barrick (1999) longitudinally demonstrated that personality traits also predicted occupational streaming. However, the domains of personality traits and work values have been investigated rather independently, despite evidence that both domains are important to understand work-related processes and outcomes, such as vocational preference.

Recently, McCrae and Costa (1996) proposed a meta-theoretical framework, entitled the Five-Factor Theory, to study the interplay among different elements denoting differences among individuals. Basic tendencies are ascribed a central role in this framework, and are defined as abstract potentialities and dispositions, including motivational tendencies, which are largely inherited (Jang, McCrae, Angleitner, Riemann, & Livesley, 1998). They constitute the core of the individual and define his/her potential and direction at each stage in development. FFM personality traits are defined at this level. A second, but conceptually distinct element in this framework,

are characteristic adaptations, which are acquired and result from the interaction of the individual and the environment. Work values should be considered as characteristic adaptations, because they are assumed to be more malleable and result from the interaction of basic tendencies with the educational or work environment. The objectives of the present study can be easily tied into this framework. Given the basic character of FFM traits, they should be related with work values. Work values on the other hand, should include unique variance, over and above FFM traits, because they result from the interaction with the environment, and hence contribute to the prediction of vocational preference.

1.4. Enterprising versus Social vocations

The criteria of interest in the present manuscript are the preferences for two vocational types in Holland's RIASEC framework (Holland, 1985), i.e. "Enterprising" and "Social" types. The fact that these two represent different, but adjacent, RIASEC-types, makes it especially interesting to examine the relative importance of traits and work values to prefer one or the other. The study of Stokes, Barroso, Hecht, and Boyle (1999) suggests that preferences for these vocational groups reflect differences in both personality and work values. Stokes et al. found that the occupational clusters "entrepreneurs/upper level business" and "business management" on the one hand and "education" and "counseling and social work" on the other hand had different discriminant function weights on personality traits, attitudes and values.

2. Method

2.1. Subjects

All participants were undergraduate commercial engineering or commercial sciences seniors enrolled in a school of economics providing an academic education. Four months prior to graduation, 280 students were invited to complete a personality inventory together with questionnaires on work values and specific vocational interests. All inventories were filled in individually at home and were collected at the campus. Individuals participated on a voluntary basis and did not receive a reward or course credit for participation. One hundred and seventy-eight of the eligible 280 students returned their questionnaires. The sample of 178 students included 111 males and 67 females, roughly comparable to the gender distribution in the school. The mean age of the males was 22 years and 9 months (S.D. = 1.14) and 22 years and 7 months (S.D. = 1.23) for the females.

2.2. Questionnaires

The assessment battery included three inventories to assess work values, personality traits, and specific vocational interests.

2.2.1. Work values

A comprehensive set of 12 work values were assessed using a self-administered questionnaire comprising 50 items. The construction of this questionnaire is described by Berings (2002). Given

our focus on inter-individual variability, only work values that were the subject of debate in current organization and management practice, especially in educational settings, were retained (e.g. Hargreaves, 1994; Quinn, 1988), instead of values with a high a priori social desirability.

The questionnaire assessed the importance an individual assigned to (1) structure, (2) rationality, (3) autonomy, (4) influence, (5) creativity, (6) community, (7) team, (8) competition, (9) earnings, (10) stability, (11) innovation, and (12) stress avoidance, when considering his/her ideal job. The values were selected after a careful literature study, mainly referring to values described in the “work values as preference” paradigm (Lofquist & Dawis, 1971; Pryor, 1982; Super, 1973), the Competing Value Model, a comprehensive model of contrasting management values (Quinn, 1988; Quinn & Rohrbaugh, 1983), the literature about Individualism-Collectivism (Hofstede, 1980; Ramamoorthy & Carroll, 1998; Wagner, 1995), and customer service (Furnham & Coney, 1996). The selected work values are also conceptually related to the segments in the model for personal values of Schwartz (1992).

Inspection of Table 1 shows that the majority of the 12 work values are also included in other work orientation or value questionnaires such as the Minnesota Importance Questionnaire (MIQ;

Table 1
Twelve work values in comparison with other questionnaires

TWVI	MIQ	WVI	VS/WIS	WAPS	MIQ, WVI, VS/WIS, WAPS	CSQ	SVS
Berings (2002)	Lofquist and Dawis (1971), Gay et al. (1975)	Super (1973)	Nevill and Super (1986), Sverko (1999)	Pryor (1982)	Macnab and Fitzsimmons (1987)	Saville and Holdsworth (1992)	Schwartz (1992)
Structure		Management		Management		Approach to Organizing	Conformity/ Tradition
Rationality							
Autonomy	Independence <i>Autonomy</i>	Independence	Autonomy <i>Self-actualizing</i>	Independence	<i>Independence</i>		Self-direction
Influence			Participation				Power
Creativity	Creativity	Creativity	Creativity	Creativity	<i>Creativity</i>		Stimulation
Community			Social Relations <i>Social</i>				Benevolence
Team	Co-workers	Associates	Social Interactions	Co-workers	<i>Co-workers</i>	Group Orientation	Universalism
Competition	<i>Achievement</i>	Achievement	Achievement <i>Individualistic</i>				Achievement
Earnings	Compensation	Economic Returns	Economics <i>Utilitarian</i>	Money			
Stability	Security/Safety	Security	Risk	Security	<i>Security</i>		Security
Innovation			<i>Adventurous</i>			Attitude to change	
Stress avoidance							

Italic labels refer to broader underlying factors based on factor analysis.

Gay, Weiss, Hendel, Dawis, & Lofquist, 1975), the Work Aspect Preference Scale (WAPS; Pryor, 1981), Super's Work Values Inventory (WVI; Super, 1973), the Work Importance Study Values Scale (VS; Nevill & Super, 1986; Sverko, 1999), the Customer Service Questionnaire (CSQ; Saville & Holdsworth, 1992) and the Value Survey (Schwartz, 1992). The Cronbach α coefficients for the value scales obtained for this sample range between 0.64 (Stability) and 0.86 (Stress avoidance) and are comparable to other research with this measure (Berings, 2002) (see Table 2, also including example items for each value).

Comparable the Value Survey Module of Hofstede (1980), respondents were instructed to think about their ideal work situation, and to indicate on a five-point Likert scale how important they judged 50 items in choosing an ideal job. Each item was phrased in a similar format and the scale anchor points were labeled as “not at all important” [1], “a little bit important” [2], “rather important” [3], “very important” [4], and “utmost important” [5].

2.2.2. *Traits*

FFM personality traits were assessed with the Flemish authorized adaptation of the NEO PI-R (Costa & McCrae, 1992; Hoekstra, Ormel, & De Fruyt, 1996). The NEO PI-Revised assesses five domains, with six facets hierarchically structured under each domain. The psychometric characteristics were very satisfactory, with Cronbach alphas above 0.90 for all domains and a clearly replicated factor structure, with 28 of the 30 facets loading their expected factor.

2.2.3. *Interests*

Two sets of three occupational titles corresponding to the Enterprising (entrepreneur, estate agent, sales-man) or the Social (social worker with youth, secondary school teacher, lecturer) vocational interest types from the RIASEC calculus were selected from the “Flemish Occupations Finder” (De Fruyt, Mervielde, Hogerheijde, & Van Amstel, 1995). The Flemish Occupations Finder provides a sorting of job titles in terms of RIASEC resemblance, with each title assessed by 12 trained judges well familiar with the RIASEC model. The selected occupational titles were all rated as clear markers of Enterprising or Social interests, respectively.

The subjects were asked to rate the attractiveness of each occupation on a five-point scale, ranging from “not at all attractive” [1], “a little bit attractive” [2], “rather attractive” [3], “fairly attractive” [4], to “extremely attractive” [5]. Composite Enterprising and Social Scales were constructed by aggregating the attractiveness' scores per set of three occupational titles. The Cronbach alpha coefficients were 0.61 for the Enterprising scale and 0.68 for the Social scale. The average inter-item correlations were 0.34 and 0.41 respectively. The alphas can be considered as acceptable (Cortina, 1993), given the small number of items and the substantial inter-item correlations.

2.3. *Statistics*

The amount of shared variance between work values and FFM domain traits was investigated through multiple regression analysis, regressing the 12 work values on the FFM dimensions. The incremental validity of work values over and above the FFM traits to predict vocational preference was examined with stepwise hierarchical regression analysis. The composite Enterprising and Social scales were regressed in a first step on the five personality scores, followed by the 12 work values in a second step.

Table 2

Twelve work values: description, example items, Cronbach α internal consistency coefficients

Label	Description	Employees (higher education) ($N = 1747$)	Student (this study) ($N = 178$)
Structure	A well organised and structured workplace e.g. “Everything is ordered in an orderly manner”	0.74	0.72
Rationality	Preponderance of rationality, cerebrality over emotions e.g. “People control their emotions”	0.67	0.62
Autonomy	Personal space, liberty and self-determination e.g. “You are free to determine which aspects of your work are more or less important”	0.76	0.66
Influence	Influence on and participation in decision making e.g. “You are involved in organizational policy making”	0.82	0.75
Creativity	Room for improvisation and experimentation e.g. “Your work allows for improvising”	0.73	0.77
Community	Work as a family with personal relationships e.g. “Your working environment feels like a family”	0.78	0.76
Team	Accent on team-work and team spirit e.g. “You regularly get the opportunity to work in a team”	0.85	0.85
Competition	Attention to individual achievement and competition e.g. “You get the opportunity to distinguish yourself from your colleagues”	0.70	0.74
Earnings	Opportunity to earn a lot of money e.g. “Your work provides you with a substantial income”	0.81	0.77
Stability	Stability and continuity in organization e.g. “The way in which things are organized remains unchanged for a long time”	0.73	0.64
Innovation	Preoccupation with innovation and change e.g. “The organization easily goes along with new trends in society”	0.72	0.67
Stress avoidance	Relaxed and easy going atmosphere e.g. “The job causes little pressure or stress”	0.84	0.86

3. Results

3.1. Trait–value relationships

Correlations between trait and value measures are low to moderate, and are maximally 0.44 (Conscientiousness with Structure). The results of the regression analyses, regressing the 12 work values on the five NEO domains, are reported in Table 3. Inspection of the R^2 shows that for 10 of the 12 work values, except for Stability and Autonomy, 15% or more of the variance is explained by the FFM traits. Preference for Structure, valuing Teamwork, and Innovation are explained up to 27, 25 and 24%, respectively. On average, near to 20% of the variance in work values is explained by the FFM traits.

Inspection of the standardized (std) beta coefficients demonstrates that all FFM domains contribute to the explanation of work values, although there are large differences across work values and traits. Work values usually are predicted by two or three FFM dimensions, except for Autonomy, that is only significantly explained by C (std $\beta=0.23$), and Earnings, which is significantly explained by N (std $\beta=0.21$), E (std $\beta=0.17$), A (std $\beta=-0.28$) and C (std $\beta=0.27$). Preference for Structure is explained by N (std $\beta=0.24$), O (std $\beta=-0.16$) and C (std $\beta=0.52$); Rationality by N (std $\beta=-0.18$) and C (std $\beta=0.31$); Influence by E (std $\beta=0.32$), A (std $\beta=-0.17$) and C (std $\beta=0.31$); and valuing Creativity is accounted for by E (std $\beta=0.29$) and O (std $\beta=0.26$). Preference for Community and Teamwork are both explained by E (std β s of 0.19 and 0.32) and A (std β s of 0.24 and 0.36, respectively), but Community is additionally explained by N (std $\beta=0.32$). Finally, Competition is accounted for by N (std $\beta=0.25$), A (std $\beta=-0.30$) and C (std $\beta=0.26$); Earnings by N (std $\beta=0.21$), E (std $\beta=0.17$), A (std $\beta=-0.28$) and C (std $\beta=0.27$); Stability by N (std $\beta=0.18$) and O (std $\beta=-0.19$); Innovation by E (std $\beta=0.25$) and C (std $\beta=0.24$) and Stress avoidance by N (std $\beta=0.28$) and A (std $\beta=0.28$). In general, Conscientiousness and Extraversion positively explain work values, whereas Agreeableness and to a lesser extent Neuroticism show a mixture of positive and negative standardized beta coefficients. Although these four dimensions play a substantial role in the prediction of several work values, the Openness domain only contributes modestly to the explanation of three work values, i.e. Structure (std $\beta=-0.16$), Creativity (std $\beta=0.26$) and Stability (std $\beta=-0.19$). Surprisingly, Openness did not contribute to the explanation of Innovation.

3.2. Incremental validity

The results of the hierarchical regression analyses predicting Enterprising and Social vocational interests, with the FFM traits entered in a first step and the work values in a second step, are presented in Table 4. Inspection of the standardized β coefficients obtained for the first step demonstrates that the Enterprising vocational interests are significantly predicted by Extraversion (std $\beta=0.34$), whereas Social vocational interests are predicted by Openness (std $\beta=0.25$). Although the betas for these predictors are somewhat lowered after introducing the work values in the second step, suggesting suppressor effects, they remain significant. Near to 13 and 12% of the variance in Enterprising and Social vocational interest scores is predicted by the FFM dimensions. However, prediction is substantially improved adding work values in a second step, increasing the total explained variance to 24 and 23% for the Enterprising and Social interests respectively. Influence positively (std $\beta=0.22$) and Team work negatively (std $\beta=-0.20$) predicted enterprising interests, whereas valuing Earnings (std $\beta=-0.24$) negatively predicted Social vocational preferences.

4. Discussion

The present study described the relationships between FFM traits and work values and examined their incremental validity to predict enterprising and social vocational interests in a sample of senior undergraduates facing vocational choices between enterprising versus social oriented vocations.

Table 3
Hierarchical multiple regression analysis, predicting work values with the NEO-PI-R ($N=178$)

	Structure	Rationality	Autonomy	Influence	Creativity	Community	Team	Competition	Earnings	Stability	Innovation	Stress avoidance
NEO-N	0.24**	−0.18*	0.04	0.12	−0.07	0.32***	−0.06	0.25**	0.21**	0.18*	−0.11	0.28**
NEO-E	0.12	−0.12	0.03	0.32***	0.29***	0.20*	0.32***	0.13	0.17*	−0.02	0.25**	−0.15
NEO-O	−0.16*	−0.12	0.11	0.06	0.26	−0.05	−0.03	0.09	−0.12	−0.19*	0.12	−0.08
NEO-A	0.10	−0.11	−0.03	−0.17*	−0.09**	0.24**	0.36***	−0.30***	−0.28***	−0.07	−0.13	0.28***
NEO-C	0.52***	0.31***	0.23**	0.31***	−0.10	−0.05	0.02	0.26***	0.27***	0.08	0.24**	0.06
R^2	0.27	0.21	0.06	0.23	0.21	0.16	0.25	0.17	0.20	0.08	0.24	0.19

Minimal $N=176$.

* $P<0.05$; ** $P<0.01$; *** $P<0.001$.

Table 4

Hierarchical multiple regression analysis, predicting vocational preferences with NEO-PI-R and 12 Work Values as predictors ($N = 178$)

	Enterprising		Social	
	Step 1	Step 2	Step 1	Step 2
	std β P	std β P	std β P	std β P
<i>Step 1</i>				
NEO-N	0.06	0.06	0.12	0.12
NEO-E	0.34***	0.25**	0.05	0.14
NEO-O	−0.09	−0.15	0.25**	0.20*
NEO-A	−0.05	0.07	0.14	0.02
NEO-C	0.13	0.04	0.06	0.14
<i>Step 2</i>				
Structure		0.10		−0.07
Rationality		−0.01		−0.02
Autonomy		−0.09		0.11
Influence		0.22*		−0.06
Creativity		0.12		−0.06
Community		0.01		0.09
Team		−0.20*		−0.04
Competition		−0.06		0.05
Earnings		0.05		−0.24*
Stability		−0.14		−0.15
Innovation		0.12		0.01
Stress avoidance		−0.04		0.16
R^2	0.13***	0.24***	0.12**	0.23***
R^2 change		0.11*		0.11*

Minimal $N = 176$.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

4.1. The trait–value relationship

The trait–value intercorrelation matrix and the multiple regression analyses show that FFM traits and work values share substantial variance, on average near to 20%. FFM traits and work values are thus related, but also have considerable unique variance, suggesting that they cannot be substituted by each other. These findings are in line with McCrae and Costa's Five-Factor meta-theoretical framework (1996), conceptualizing FFM traits and work values at two different but interconnected levels. FFM traits are described at the level of basic tendencies, considered as core qualities of the person with substantial heritability, whereas work values are conceptualized at the level of characteristic adaptations, and are assumed to be more malleable and to develop through the interaction with the environment. Prior to enrollment on the labor market, traits and work values share about 20% variance, ranging from 6 to 29%, depending on the work value.

The present data further demonstrate that all work values are predicted by FFM traits, i.e. no work value is completely outside the FFM, but also that all FFM dimensions are related to work values. The first observation suggests that work values are shaped in line with basic traits and are

not the sole product of environmental influences. The second observation illustrates that *all* FFM domains are necessary to explain work values, underscoring the comprehensiveness of the FFM and the importance and position of its dimensions as basic tendencies in development. Conscientiousness positively predicted both need for Structure and achievement-oriented values such as Earnings, Competition, Autonomy, Innovation and Rationality. Extraversion was a good predictor of people-oriented values such as Teamwork, Community, and Influence, but was also a predictor of Creativity and Innovation. The prediction of people-oriented values reflects the interpersonal side of Extraversion, whereas the validity to predict Creativity and Innovation refers to the adventure seeking facets of Extraversion as measured by the NEO PI-R. Agreeableness predicts values related to the quality of social interaction, such as valuing Teamwork and Community and a disapproval of Competition and Earnings. The Agreeableness dimension bifurcates a distinction between people versus more object/project-oriented values. Neuroticism positively predicted Stress avoidance, need for Structure and preference for Stability, and was negatively related to Rationality. The preponderance of negative emotions forces the subject to adhere to structure, stability and predictability and to opt for stress-avoiding strategies. Contrary to these findings and interpretations, Neuroticism positively predicted Competition and Earnings. Finally, Openness positively predicted Creativity and negatively valuing Structure and Stability. Contrary to the expectations, it did not predict Innovation, which was better explained by Extraversion, reflecting more sensation-seeking and adventurous behavior, and by Conscientiousness, referring to a striving to excel in business and entrepreneurship.

4.2. *Construct validity of work values*

The multiple regression analyses using a well-established trait model further helps to examine and establish the construct validity of the 12 work values. Although the trait standardized regression coefficients for the Community and Teamwork values are rather similar, there is an important difference for Neuroticism, i.e. Neuroticism positively predicts valuing Community but not Teamwork. This distinction points to different social aspects of the work environment, i.e. social-functional versus social-affective factors. Teamwork reflects the functional role of the group—in the sense of working together—whereas Community refers to the affective function of the group, i.e. being together. Neurotic individuals value the social comfort provided by the group, rather than expressing a preference for working together. This contrast parallels Sverko's distinction between 'social interactions' and 'social relations' when discussing work values (Sverko, 1999).

A second finding enhancing our understanding of work values is the differential correlation pattern for Creativity and Innovation with the FFM-traits. Both work values are strongly associated with Extraversion but they have a different relation with Openness and Conscientiousness. This differential pattern reflects the conceptual distinction between individual creativity and organizational change. The positive correlation between Openness and Creativity confirms the idea that an open mind values experimentation in the workplace, a statement that covers the idea that intuition and playfulness are characteristics of highly creative individuals (Kabanoff & Rositer, 1994). Innovation, however, is only weakly correlated with Openness, but moderately with Conscientiousness, underscoring the more achievement and competitive oriented character of this value. Creativity and Innovation are not isomorphic but complementary values, both necessary

to establish organizational change processes, requiring both experimentation (Creativity–Openness) and consolidation (Innovation–Conscientiousness) (King & Anderson, 1995).

4.3. *Why C and E are desirable work related traits?*

Conscientiousness and Extraversion were overall positive predictors of work values, contrary to Neuroticism, Agreeableness and Openness, showing a mixture of positive and negative standardized beta coefficients. Independent meta-analyses (Barrick & Mount, 1991; Salgado, 1997) previously demonstrated that Conscientiousness was an overall predictor of job performance, whereas Extraversion was a positive predictor of performance in entrepreneurial jobs. Furthermore, these traits were found to be valued traits in job applicants by employers and selection psychologists in laboratory (Dunn, Mount, Barrick, & Ones, 1995) and field (De Fruyt, 2002; De Fruyt & Mervielde, 1999) studies. The present study further shows that conscientious individuals also exhibit work values that are advantageous in most organizations, such as preferences for Structure, Rationality, Autonomy, Influence, Competition, Innovation and greater vulnerability for Earnings. Similarly, Extraversion demonstrated it could predict people-oriented work values, such as valuing Influence, Teamwork, and Community, next to more adventurous and enterprising values, such as valuing Creativity and Innovation. If the proposition is right that the core of most organizational cultures consists of a mixture of the work values subscribed by conscientious and extraverted individuals, then the advantaged position on the current labor market (De Fruyt, 2002; De Fruyt & Mervielde, 1999) of individuals high in C and E can be further explained by this trait–work value relationship.

4.4. *Incremental validity*

The results of the stepwise hierarchical multiple regression analyses show that values predict variance in vocational interests over and beyond traits, although this prediction is restricted to specific values. This significant increment cannot be attributed to random capitalization due to the large number of values, independently of the statistical significance of the variables, because the increment remains significant when only the specific values are entered in the regression. The two interest dimensions are predicted by different FFM traits, i.e. Extraversion versus Openness. These findings replicate De Fruyt and Mervielde's work on RIASEC–FFM relationships (1999), where Openness also predicted interest in Social vocations and Extraversion was a predictor of Enterprising interests. Work values significantly and substantially predicted over and beyond the FFM traits in the present study, with Enterprising vocational interests positively predicted by Influence and negatively by Teamwork, and Social interests additionally negatively predicted by Earnings.

Interest in Social occupations seems to be characterized by putting lower weights on Earnings. Regardless of whether this is a true job expectation or not, systematically attracting people caring less about salary, can result in an organizational culture where other work values associated with earnings, are also underrepresented. Values such as Rationality, Influence, Competition and Innovation are both conceptually and empirically associated with Earnings. These values in particular are given much weight in the current literature on innovation and total quality management, especially in the non-profit sector and education (e.g. Robertson & Briggs, 1998). The

present observations, however, are in line with the fact that teachers are rather reticent to participate in school decisions (Imber & Neidt, 1990). Moreover, despite the accent on team-work, -spirit and -building in the recent management literature, the hierarchical regression analyses even show a negative relation between Enterprising and Team.

In concluding, this study has shown that attention to individual differences, both personality and work values, can contribute to a better understanding of the vocational streaming and career choice process. Besides replication, the present research should be extended to the full RIASEC model and be further complemented with studies on employers' expectations and job requirements, preferably using commensurate measurement methodology. The FFM and the Twelve Work Values Model can be valuable tools to accomplish this goal. Such research can contribute to a better fit between personality and work values on the one hand and the requirements and work conditions on the other hand for which students are prepared in the educational program. The present study has demonstrated some strains between role requirements and the work value profile of students attracted by these occupations. From the idea that "people make the place" (Schneider, 1987) such discrepancies could hinder the implementation of new management ideas.

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References

- Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: a meta-analysis. *Personnel Psychology*, 44, 1–26.
- Belbin, R. M. (1996). *Management teams: why they succeed or fail*. London: Butterworth-Heinemann.
- Berings, D. (2002). *The Twelve Work Value Inventory*. Brussels: EHSAL.
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78, 98–104.
- Costa, P. T. Jr., & McCrae, R. R. (1989). *The NEO-PI/NEO-FFI manual supplement*. Odessa, FL: Psychological Assessment Resources.
- Costa, P. T. Jr., & McCrae, R. R. (1992). *NEO-PI-R. Professional manual*. Odessa, FL: Psychological Assessment Resources.
- De Fruyt, F. (2002). A person-centred approach to P-E fit questions using a multiple trait model. *Journal of Vocational Behavior*, 60, 73–90.
- De Fruyt, F., & Mervielde, I. (1997). The Five-Factor model of personality and Holland's RIASEC interest types. *Personality and Individual Differences*, 1, 87–103.
- De Fruyt, F., & Mervielde, I. (1999). Riasec types and big five traits as predictors of employment status and nature of employment. *Personnel Psychology*, 52, 701–727.
- De Fruyt, F., Mervielde, I., Hogerheijde, R., & Van Amstel (1995). *BZO—Beroepskeuze Zelf-Onderzoek. Beroepenzoeker—Vlaamse editie* (BZO—Occupations Finder—Flemish edition). Lisse, The Netherlands: Swets Test Services.
- De Raad, B., & Van Heck, G. L. (Eds.). (1994). The fifth of the Big Five (special issue) *European Journal of Personality*, Special issue, 8, 225–235.
- Dose, J. J. (1997). Work values: an integrative framework and illustrative application to organizational socialization. *Journal of Occupational and Organizational Psychology*, 70, 219–240.

- Dunn, W. S., Mount, M. K., Barrick, M. R., & Ones, D. S. (1995). Relative importance of personality and general mental ability in managers' judgements of applicant qualifications. *Journal of Applied Psychology*, 4, 500–509.
- England, G. W. (1967). Personal value systems of American managers. *Academic of Management Journal*, 10, 107–117.
- Furnham, A., & Coveney, R. (1996). Personality and customer service. *Psychological Reports*, 79, 675–681.
- Furnham, A., Forde, L., & Ferrari, K. (1999). Personality and work motivation. *Personality and Individual Differences*, 26, 1035–1043.
- Gay, E. G., Weiss, D. J., Hendel, D. D., Dawis, R. V., & Lofquist, L. H. (1975). *Minnesota Importance Questionnaire—1975 edition*. Minneapolis: University of Minnesota, Department of Vocational Research.
- Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, 48, 26–34.
- Hargreaves, A. (1994). *Changing teachers, changing times. Teacher's work and culture in the postmodern age*. London: Cassell.
- Hoekstra, H. A., Ormel, J., & De Fruyt, F. (1996). *NEO Persoonlijkheidsvragenlijsten NEO-PI-R en NEO-FFI. Handleiding* (NEO personality inventories: NEO-PI-R and NEO-FFI. manual). Lisse: Swets & Zeitlinger.
- Hofstede, G. (1980). *Culture's consequences: international differences in work related values*. Beverly-Hills, CA: Sage.
- Hofstede, G. (1998). Attitudes, values and organizational culture: disentangling the concepts. *Organization Studies*, 19, 477–492.
- Holland, J. (1985). *The self-directed search*. Odessa, FL: Psychological Assessment Resources.
- Imber, M., & Neidt, W. (1990). Teacher participation in school decision making. In P. Reyes (Ed.), *Teachers and their workplace. Commitment, performance and productivity* (pp. 67–85). London: Sage.
- Jang, K. L., McCrae, R. R., Angleitner, A., Riemann, R., & Livesley, W. J. (1998). Heritability of facet-level traits in a cross-cultural twin sample: support for a hierarchical model of personality. *Journal of Personality and Social Psychology*, 74, 1556–1565.
- Jones, T. M. (1991). Ethical decision making by individuals in organizations: an issue contingent model. *Academy of Management Review*, 16, 366–395.
- Judge, T. A., & Bretz, R. D. Jr. (1992). Effect of work values on job choice decisions. *Journal of Applied Psychology*, 77, 261–271.
- Judge, T. A., Higgins, C. A., Thoresen, C. J., & Barrick, M. R. (1999). The Big Five personality traits, general mental ability, and career success across the life span. *Personnel Psychology*, 52, 621–652.
- Kabanoff, B., & Rossiter, J. R. (1994). Recent developments in applied creativity. In C. L. Cooper, & I. Robertson (Eds.), *International review of industrial and organizational psychology* (Vol. 9) (pp. 283–324). Chichester: Wiley.
- King, N., & Anderson, N. (1995). *Innovation and change in organizations*. London: Routledge.
- Lindley, L. D., & Borgen, F. H. (2000). Personal style scales of the Strong Interest Inventory: linking personality and interests. *Journal of Vocational Behavior*, 57, 22–41.
- Lofquist, L. H., & Dawis, R. V. (1971). Values as second-order needs in theory of work adjustment. *Journal of Vocational Behavior*, 12, 12–19.
- Macnab, D., & Fitzsimmons, G. W. (1987). A multitrait-multimethod study of work-related needs, values and preferences. *Journal of Vocational Behavior*, 30, 1–15.
- McCrae, R. R. (1990). Traits and trait names: how well is Openness represented in natural languages? *European Journal of Personality*, 4, 119–129.
- McCrae, R. R., & Costa, P. T. Jr. (1996). Toward a new generation of personality theories: theoretical contexts for the Five-Factor Model. In J. S. Wiggins (Ed.), *The five-factor model of personality: theoretical perspectives* (pp. 51–87). New York: Guilford Press.
- Meglino, B. M., & Ravlin, E. C. (1998). Individual values in organisations: concepts, controversies, and research. *Journal of Management*, 24, 351–389.
- Nevill, D. D., & Super, D. E. (1986). *The Value Scale: theory, application, and research (manual)*. Palo Alto, CA: Consulting Psychologists Press.
- Pryor, R. G. L. (1981). Tracing the development of the work aspect preference scale. *Australian Psychologist*, 16, 241–257.
- Pryor, R. G. L. (1982). Values, preferences, needs, work ethics and orientation to work: toward a conceptual and empirical integration. *Journal of Vocational Behavior*, 20, 40–42.
- Quinn, R. E. (1988). *Beyond rational management. Mastering the paradoxes and competing demands of high performance*. London: Jossey-Bass Publishers.

- Quinn, R. E., & Rohrbaugh, J. (1983). A spatial model of effectiveness criteria: towards a competing values approach to organizational analysis. *Management Science*, 29, 363–377.
- Ramamoorthy, N., & Carroll, S. J. (1998). Individualism/collectivism orientations and reactions toward alternative human resource management practices. *Human Relations*, 51, 571–588.
- Ravlin, E. C., & Meglino, B. M. (1987). Effect of values on perception and decision-making: a study of alternative work values measures. *Journal of Applied Psychology*, 72, 666–673.
- Robertson, P. J., & Briggs, K. (1998). Improving schools through school-based management: an examination of the process of change. *School Effectiveness and School Improvement*, 9, 28–57.
- Roe, R. A., & Ester, R. (1999). Values at work: empirical findings and theoretical perspective. *Applied Psychology: An International Review*, 48, 1–21.
- Salgado, J. F. (1997). The Five-Factor model of personality and job performance in the European Community. *Journal of Applied Psychology*, 82, 30–43.
- Saville, P., & Holdsworth, R. (1992). *Customer service questionnaire*. Esher, UK: Saville & Holdsworth.
- Schein, E. H. (1985). *Organizational culture and leadership*. San Francisco, CA: Jossey-Bass.
- Schneider, B. (1987). The people make the place. *Personnel Psychology*, 40, 437–453.
- Schwartz, S. H. (1992). Universals in the content and structure of values: theoretical advances and empirical tests in 20 countries. *Advances in Experimental Social Psychology*, 25, 1–65.
- Schwartz, S. H., & Bilsky, W. (1987). Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology*, 53, 550–562.
- Stokes, G. S., Barroso, C., Hecht, J., & Boyle, B. (1999). Personality, values, attitudes, and life experiences as predictors of occupational choice: a longitudinal investigation. In I. Mervielde, I. J. Deary, F. De Fruyt, & F. Ostendorf (Eds.), *Personality psychology in Europe* (Vol. 7) (pp. 377–391). Tilburg: Tilburg University Press.
- Super, D. E. (1953). A theory of vocational development. *American Psychologist*, 8, 186–195.
- Super, D. E. (1973). The work values inventory. In D. G. Zytowski (Ed.), *Contemporary approaches to interest measurement* (pp. 189–205). Minneapolis, MN: University of Minnesota Press.
- Sverko, B. (1999). The work importance study: recent changes of values in Croatia. *Applied Psychology: An International Review*, 48, 89–102.
- Treviño, L. K. (1986). Ethical decision making in organizations: person–situation interactionist model. *Academy of Management Review*, 11, 601–617.
- Wagner, J. A. (1995). Studies of individualism–collectivism: effects on cooperation in groups. *Academy of Management Journal*, 38, 152–172.