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## Relationships between personality traits and values in middle aged men and women

Orta yaş dönemindeki kadın ve erkeklerde kişilik özellikleri ve değerler arasındaki ilişkiler

Merja Hietalahti<sup>1</sup>, Asko Tolvanen<sup>2</sup>, Lea Pulkkinen<sup>3</sup>, Katja Kokko<sup>4</sup>

### Abstract

The present study analyzed the relations between the Big Five personality traits (neuroticism, extraversion, agreeableness, conscientiousness, and openness to experience) and 14 values (societal concern, tolerance, protecting nature, caring, dependability, autonomy of thought, autonomy of action, stimulation, hedonism, achievement, tradition, security, conformity, and power) in middle-aged women and men. The 50-year-old participants (women  $n = 107$  and men  $n = 105$ ) were drawn from the ongoing Finnish Jyväskylä Longitudinal Study of Personality and Social Development. The personality traits were assessed using the 60-item NEO Five Factor Inventory. Values were measured using the 46-item version of the Schwartz Value Survey. The multi-group regression model confirmed that openness to experience, agreeableness, extraversion, and conscientiousness moderately explained 10 of the 14 values. Among both genders, the most consistent positive association was found between openness to experience and autonomy of thought and the most consistent negative relation was found between openness to experience and power. Statistically significant gender differences were found in three positive relations: agreeableness contributed to tolerance in men, whereas openness to experience was related to autonomy of action and conscientiousness to achievement in women.

**Keywords:** Big Five personality trait, values, gender, middle-age

### Özet

Bu çalışmada orta yaşlı kadın ve erkeklerde Beş Büyük kişilik özelliği (nevrotiklik, dışadönüklük, uyumluluk, sorumluluk ve deneyime açıklık) ve 14 değer (sosyal kaygı, hoşgörü, doğayı korumak, önemsemek, bağımlılık, düşünce özerkliği, eylem özerkliği, uyarılma, hazcılık, başarı, gelenek, güvenlik, uyumluluk ve güç) arasındaki ilişkiler incelenmiştir. 50 yaşındaki katılımcılar ( $n = 107$  kadın ve  $n = 105$  erkek) devam eden Fin Jyväskylä Boylamsal Kişilik ve Sosyal Gelişim Çalışması'ndan seçilmiştir. Kişilik özellikleri, maddeleri NEO Beş Faktör Envanteri'ndeki maddelerle uyuşan NEO-PI aracının 60 maddelik bir versiyonuyla ölçülmüştür. Değerler, Schwartz Değer Anketi'nin 46 maddelik versiyonuyla ölçülmüştür. Çok gruplu regresyon modeli deneyime açıklık, uyumluluk, dışadönüklük ve sorumluluğun 14 değerden 10'unu orta düzeyde doğrulamıştır. Her iki cinsiyet arasında, en tutarlı olumlu ilişki deneyime açıklık ve düşünce özerkliği arasında ve en tutarlı olumsuz ilişki deneyime açıklık ve güç arasında bulunmuştur. Üç olumlu ilişkide istatistiksel olarak anlamlı cinsiyet farklılıkları bulunmuştur: erkeklerde uyumluluk, hoşgörüyeye katkıda bulunurken kadınlarda deneyime açıklıkla eylem özerkliğinin ve sorumlulukla başarının ilişkili olduğu görülmüştür.

**Anahtar Kelimeler:** Beş faktör kişilik, değer, cinsiyet, orta yaş

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## Introduction

Personality traits and values are theoretically linked with each other. The self-perception theory (Bem, 1972) suggests that traits have an impact on values because individuals draw conclusions about what is important to them from their trait-expressive behavior. Further, they share a common motivational basis (Bilsky & Schwartz, 1994). Empirical support for the relations between traits and values has been demonstrated in recent meta-analytic studies (Fischer & Boer, 2015; Parks-Leduc, Feldman, & Bardi, 2015). However, knowledge about these associations remains incomplete. In particular, more information is needed, first, on possible gender differences in these relations and, second, on the simultaneous associations of the numerous fine-tuned values with the Big Five personality traits. A deeper understanding of the link between personality traits and values contributes to knowledge of individuals' behavior in general. In the present study, we examined the associations between the Schwartz Value Survey (SVS) values (Schwartz, 1992; Schwartz et al., 2012) and the Big Five personality traits (NEO-FFI; Costa & McCrae, 1989). Our analyses concerned 50-year-old Finnish women and men, and thus focus on middle-age, a part of the life course in which the relations between personality traits and values have been little investigated.

The structure of individuals' personality traits has mainly been described using the Five Factor model (neuroticism, extraversion, conscientiousness, agreeableness and openness to experience; hereafter openness) (Costa & McCrae, 2001). According to Costa and McCrae (2001), neurotic people are typically distressed, depressed, impulsive and vulnerable, and they observe themselves closely. In turn, people characterized by openness are creative, inventive, sensitive and open-minded. Extraverted people are social, assertive, talkative and active, whereas those characterized by agreeableness are good-natured, compliant and modest. Agreeable individuals are also friendly and cooperative. Finally, conscientious people are typically cautious, careful, responsible and systematic. Personality traits are related to differences between individuals in their stable patterns of thought, emotions and actions (McCrae & Costa, 2003).

Values, in turn, are variously defined in the literature. However, most definitions share the six features in common: a value is seen as 1) a belief 2) pertaining to desirable behaviors that 3) prevail in different kinds of situations, and 4) guides the selection or evaluation of behavior, people, and events, that 5) is prioritized by relative importance, and 6) the relative importance of various values guides action (e.g., Schwartz, 2012). Values are central aspects of a culture and crucial issues that explain cross-cultural differences in the behavior of individual (e.g., Smith & Schwartz, 1997). In this study, we defined values as guiding principles in functioning (in the SVS, nouns represent terminal values, such as inner harmony) or as reflected in a course of action (adjectives, in turn, represent instrumental values, such as ambitious) in an individual's life (Schwartz, 1994).

Values have been classified in several ways. Schwartz (1992) identified ten values, forming a motivational continuum: power (e.g., social status and reputation), achievement (e.g., personal success), hedonism (e.g., pleasure and sensuous gratification for oneself), stimulation (e.g., excitement and novelty), self-direction (e.g., autonomy of thought and action), universalism (e.g., societal concern, tolerance and nature conservation), benevolence (e.g., caring and dependability), tradition (e.g., commitment to the customs and ideas of one's traditional culture or religion), conformity (e.g., inhibition of actions or impulses likely to harm others), and security (e.g., safety and harmony of society, relationship, and self).

Based on his theory, Schwartz (1992) developed the SVS measure, which seeks to explain much of the variation in specific attitudes and behaviors between individuals (Datler, Jagodzinski, & Schmidt, 2013). Schwartz's theory of basic human values (Schwartz, 1992) has since been refined (Schwartz et al., 2012). The revised theory presents a new instrument with the following 19 fine-tuned, conceptually distinct values (sub-factors in parentheses): universalism (*societal*

*concern, tolerance, protecting nature*), benevolence (*caring, dependability*), self-direction (*autonomy of thought, autonomy of action*), stimulation, hedonism, achievement, power (resources, dominance), face, security (personal, societal), tradition, conformity (rules, interpersonal) and humility which includes all the essential components of the original 10 values. The italicized 14 values were used in the present study (see Hietalahti, 2016; Hietalahti, Tolvanen, & Kokko, 2015). While the SVS has been the most widely used value instrument over the past two decades, the refined version with its 19 itemized values (Schwartz et al., 2012) has not, to our knowledge, been studied in relation to personality traits.

Traits describe “what people are like” and values refer to “what people consider important” (Roccas, Sagiv, Schwartz, & Knafo, 2002). Traits vary in the frequency and intensity of their occurrence, whereas values vary in their importance as guiding principles in life. Stankov (2007) showed that, as a single factor, the Big Five traits constitute a different factor than Schwartz’s values. All 11 of the Schwartz value scales (including spirituality) (Schwartz & Bardi, 2001) had salient loadings on the values factor. The only small loading on other domains was on the openness personality scale (Stankov, 2007).

It can be assumed that personality traits and values share a common motivational basis (Bilsky & Schwartz, 1994), and thus are connected. Several theoretical mechanisms linking traits and values have been suggested. Parks-Leduc et al. (2015) suggest that the strength of the relations between traits and values are based on similarities in the nature and content. In particular, more cognitively based traits like openness have stronger associations with values than more emotionally based traits like neuroticism. Content overlap exists for example between openness and self-direction as they both relate to creativity and curiosity. However, a motivation to avoid negative events would be likely to be associated positively with the personality trait of neuroticism and also be of high importance to the value of security (Wolfradt & Dalbert, 2003). On the other hand, McCrae and Costa (1999) proposed that the Big Five can be considered as the genotype of personality and that the five traits are at the root of all values. Personality traits can contribute to values through their links to behavior. Further, individuals draw conclusions about what is important to them by observing this behavior (Roccas et al., 2002).

A number of empirical studies have verified the existence of the links between personality traits and values (e.g., Athota & O’Connor, 2014; Fischer & Boer, 2015; Parks-Leduc et al., 2015; Roccas et al., 2002; Vecchione, Alessandri, Barbaranelli, & Caprara, 2011). Parks-Leduc et al. (2015) report a meta-analysis of 60 studies on the relations between personality traits and Schwartz (1992) values. Their findings show that openness has the strongest relations with values. Openness correlates mostly and positively with self-direction. Moreover, openness correlates positively with stimulation and universalism, and negatively with tradition, conformity and security. Agreeableness has also several strong associations with values, particularly and positively with benevolence. Further, agreeableness correlates positively with universalism, conformity and tradition, and negatively with power. Extraversion and conscientiousness have some moderate associations with values. Extraversion correlates positively with stimulation, power, achievement and hedonism. Conscientiousness, in turn, correlates positively with security, conformity and achievement. According to Parks-Leduc et al. (2015) neuroticism was not related to any of the values. However, anxiety, as a facet of neuroticism, has been associated with security (Aluja & Garcia, 2004; Roccas et al., 2002). Moreover, distressed people are probably unlikely to hold values that create unexpected challenges (Bilsky & Schwartz, 1994).

More studies are needed from new perspectives. First, the earlier studies are mainly based on student samples. The present study had a heterogeneous, age-cohort representative sample of middle-aged adults. Second, they do not usually take into account possible gender differences in the relations between traits and values. Gender differences, have, however, been shown in the prioritization of values (e.g., Schwartz & Rubel, 2005) and in the mean levels of traits (e.g.,

Schmitt, Realo, Voracek, & Allik, 2008). For example, men prioritize power more and benevolence less than do women. (e.g., Schwartz & Rubel, 2005). Moreover, in some studies women have reported higher levels of neuroticism, extraversion, agreeableness, and conscientiousness than men (e.g., Schmitt et al., 2008), whereas in other studies women have scored higher than men also in openness (e.g., Kokko, Tolvanen, & Pulkkinen, 2013). On the other hand, in their preliminary analyses, Dollinger et al. (1996) suggested that gender does not moderate the correlations between personality factors and values. Consequently, we further analysed the role of gender in the associations between traits and values. Third, as far as we know, no studies have examined the fine-tuned values by Schwartz et al. (2012) in relation to all the Big Five personality traits from the standpoint of gender. Schwartz et al. (2012) have stated that studying the relations of fine-tuned values to behavior is an important next step.

The present study contributes to filling the research gap in these specific domains. Hence, the main goals of this study were to 1) replicate and expand (using 14 value factors and five personality traits) investigation of the relationships between personality traits and values in 50-year-old individuals representative of their age-cohort and 2) analyze possible gender differences in these relations.

Based on meta-analytic evidence (Parks-Leduc et al., 2015), we set the following preliminary hypotheses: 1) Openness correlates positively with self-direction, stimulation and universalism, and negatively with tradition, conformity and security; 2) agreeableness correlates positively with benevolence, universalism, conformity and tradition, and negatively with power; 3) extraversion correlates positively with stimulation, power, achievement and hedonism; 4) conscientiousness correlates positively with security, conformity and achievement; 5) neuroticism is not associated with any values. However, considering that we focused on the uncovered associations between personality traits and fine-tuned values, and middle-aged, it was interesting to see whether there would be some unexpected links. We also tested these general assumptions for gender-differences.

## **Method**

### **Participants and Procedure**

This study was based on the Jyväskylä Longitudinal Study of Personality and Social Development (JYLS), in which the same participants have been followed from age 8 to 50 (Pulkkinen, 2017). The research was begun in 1968 by Lea Pulkkinen, with the random selection of 12 second-grade classes from schools in the city of Jyväskylä, Finland. The initial sample comprised 369 children (173 girls, 196 boys), most of whom were born in 1959. Since age 8, the main data collections have been implemented at ages 14, 27, 36, 42, and 50 years. In this study, information gathered at age 50 (in 2009) was used for assessing personality traits and values. The SVS was only available at that age in the JYLS.

The participation rate in the JYLS study has been high with no systematic attrition (Pulkkinen & Kokko, 2010). At age 50, 12 participants had died and 34 refused to continue to participate in the study (Table 1). Thus, the eligible sample size was reduced from 369 to 323 participants. Of this number, 271 participants (127 female, 144 male; 84 %) took part in at least one of the main data collection components (life-situation questionnaire, psychological interview, and health examination). Comparison with data provided by Statistics Finland on, for example, number of children, marital status, family type and employment, showed that at age 50 the participants continued to represent the Finnish age-cohort born in 1959 (Pulkkinen & Kokko, 2010).

In this study, personality traits and values were measured by two mailed self-report questionnaires filled in and returned before or on arrival at the interview. 227 individuals (111 female, 116 male) participated in the psychological interview and 217 individuals (109 female,

108 male) returned the values questionnaire and 212 (107 female and 105 male) the personality questionnaire (Table 1), see also Pulkkinen (2017).

**Table 1.** *Study participants*

Eligible sample	323 (88% of the initial sample, 174 men, 149 women)	
Deceased	12 (3%)	
Withdrawn their participation	34 (9%)	
	Men*	Women*
Personality trait inventory	105 (60%)	107 (72%)
Values	108 (62%)	109 (73%)

*Note.* \*Percentages in parentheses refer to the proportion of the eligible sample

## Measures

Personality traits were assessed using the Five Factor Model framework. The personality trait inventory was based on an authorized adaptation of the Neuroticism, Extraversion, Openness Personality Inventory (NEO-PI; Costa & McCrae, 1985) for non-Indo-European languages in which about one-quarter of the items were substitutes for the original American items (Pulver, Allik, Pulkkinen, & Hämäläinen, 1995). A shortened 60-item version was formed from it to correspond to the 60-item NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1989) in which three items were substitutes for the original American items (Pulkkinen, 2017, p. 31). All five subscales (12 items each) – neuroticism (e.g., “*sometimes I feel completely worthless*”), conscientiousness (e.g., “*I’m pretty good about pacing myself so as to get things done on time*”), extraversion (e.g., “*I like to have a lot of people around me*”), agreeableness (e.g., “*I generally try to be thoughtful and considerate*”) and openness (e.g., “*I often try new and foreign foods*”) – were used in the present study. The response scale varied from 1 = *strongly disagree* to 5 = *completely agree*. Reliability, measured by Cronbach’s alpha was .78 for neuroticism; .79 for conscientiousness; .79 for extraversion; .75 for agreeableness; and .75 for openness at age 50 (Kokko et al., 2013).

Values were assessed with the Schwartz Value Survey (SVS) (Schwartz 1992, 1994). The SVS has been adapted to the Finnish culture and translated into Finnish (Puohiniemi, 1995). In general, the aim of the SVS has been to locate universal values that would apply in different cultures (Schwartz, Puohiniemi, M., & Puohiniemi, E., 2011). In the Finnish version of the SVS, participants were asked to evaluate the personal importance of 30 guiding principles in life (e.g., pleasure) and 27 ways of action (e.g., humble) (Puohiniemi, 1995). We used the 46-item version of the SVS (Schwartz & Boehnke, 2004; see also Hietalahti et al., 2015), in which the respondents evaluated the importance of each value as a guiding principle in their life on a 9-point scale ranging from -1 = *opposite to my values*; 0 = *not important*; 1 – 3 = *important*; 4 – 6 = *very important*; 7 = *extremely important*.

In our previous study on the 46-item SVS, confirmatory factor analysis yielded 14 value factors (Hietalahti et al., 2015). The reliabilities of the sum mean-scores based on the 14 value factors were measured by Cronbach’s alpha and were as follows (included items in parentheses): *societal concern* (equality, world at peace, social justice) .70, *tolerance* (wisdom, broad-minded) .48, *protecting nature* (unity with nature, world of beauty, protecting the environment) .73, *caring*

(honest, helpful, forgiving) .69, *dependability* (loyal, responsible) .62, *autonomy of action* (freedom, independent, choosing own goals) .49, *autonomy of thought* (freedom, creativity, curious) .65, *security* (social order, national security, reciprocation of favours, family security, clean) .59, *conformity* (politeness, self-discipline, honouring parents and elders, obedient) .77, *tradition* (respect for tradition, moderate, humble, accepting my portion in life, being devout) .63, *power* (social power, wealth, authority, preserving public image) .72, *hedonism* (pleasure, enjoying life, indulgent) .78, *stimulation* (exciting life, varied life, daring) .74 and *achievement* (ambitious, influential, competent, successful) .83. Following the Schwartz et al.'s (2012) suggestion, the item for freedom was set to load on both of the sub-factors of self-direction (autonomy of action and autonomy of thought) (Hietalahti et al., 2015).

### Statistical Analysis

Preliminary analyses were conducted using the IBM SPSS Statistics program (version 20) to compare the means of the personality traits and values between genders by *t*-test for independent samples. The primary analysis consisted of Structural Equation Modelling (SEM) with a multi-group procedure using the Mplus statistical package (version 7; Muthén & Muthén, 1998-2012), in which robust (against non-normality) maximum likelihood estimation (MLR; full information maximum likelihood) was used. The MLR assumes that missing values are missing at random (MAR). For analysing the relations between traits and values, we first performed a multi-group regression model. In this analysis, we included at first those variables related to traits and values that had statistically significant correlations with each other (utilizing SPSS).

We next took into consideration the relations which were suggested to exist on the basis of the modification indices and set them identically for both women and men. After which hedonism, security, dependability and tradition were left away from the SEM model. With the chi-square difference test, we then analysed the statistical equality of the relations across gender. We compared two models in the chi-square difference test. One model estimated all regression coefficients as unequal and the other model as equal in men and women. If the chi-square difference test result was statistically significant (at least one regression coefficient is unequal in different genders), statistical testing was continued by analysing the regression coefficients to find possible differences between genders. Based on the equality tests, each of the regression coefficients entered in the final model was estimated as either equal or unequal in women and men. Equality of regression coefficient was tested with the help of new parameters, the feature implemented in Mplus program.

To evaluate the fit of the final multi-group regression model, the following aspects were taken into consideration: statistically significant regression coefficients and the goodness-of-fit of the model. Model fit was evaluated using the chi-square test, comparative fit index (CFI), Tucker-Lewis index (TLI), root mean-square error of approximation (RMSEA), and standardized root mean-square residual (SRMR). The model fits the data well if the chi-square *p* value is non-significant ( $p \geq .05$ ), RMSEA is  $\leq .06$ , SRMR is  $\leq .08$ , and finally, if CFI and TLI are  $\geq .95$  (Hu & Bentler, 1999).

## Results

### Descriptive Results

Means, standard deviations and *t*-tests for independent samples are shown in Table 2. There were a few statistically significant gender differences in the levels of the personality traits. As previously reported by Kokko et al. (2013) using the same data, women had significantly higher scores than men for agreeableness, openness, and conscientiousness. Conversely, no significant mean-level

gender differences for values were observed; men, however, showed a trend towards a higher score for power ( $p = .052$ ) and women for tolerance ( $p = .090$ ).

**Table 2.** Means and Standard Deviations of Personality Traits at Age 50 in Women ( $n = 107$ ) and Men ( $n = 105$ ) and of the Values of the 14-Value Factor Model at Age 50 in Women ( $n = 109$ ) and Men ( $n = 108$ ): T-Test for Independent Samples.

Variable	Women		Men		T-test		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Extraversion	3.20	0.53	3.16	0.57	0.53	210	.599
Openness	3.32	0.54	3.15	0.53	2.21	210	.029
Conscientiousness	3.74	0.49	3.55	0.55	2.70	210	.008
Agreeableness	3.80	0.43	3.58	0.48	3.49	210	.001
Neuroticism	2.37	0.67	2.24	0.69	1.38	210	.169
SD Thought	4.20	1.40	4.25	1.21	-0.26	215	.793
SD Action	4.26	1.29	4.20	1.16	0.36	214	.719
ST	3.66	1.37	3.94	1.49	-1.40	215	.164
HE	4.98	1.37	5.11	1.44	-0.68	215	.498
AC	4.26	1.46	4.19	1.33	0.33	212	.740
PO	2.54	1.27	2.88	1.32	-1.95	215	.052
SE	4.29	1.09	4.43	0.99	-0.98	215	.329
TR	3.31	1.25	3.46	1.21	-0.92	215	.358
CO	5.15	1.24	5.34	1.23	-1.10	215	.274
BE Caring	4.93	1.13	4.71	1.15	1.41	211	.160
BE Dependability	5.52	1.14	5.33	1.06	1.28	211	.202
UN Societal	4.88	1.38	4.77	1.32	0.60	215	.547
UN Tolerance	4.87	1.33	4.56	1.32	1.70	215	.090
UN Nature	3.99	1.44	3.71	1.37	1.47	214	.144

*Note.* 14 values: SD Thought = self-direction - autonomy of thought, SD Action = self-direction - autonomy of action, ST = stimulation, HE = hedonism, AC = achievement, PO = power, SE = security, TR = tradition, CO = conformity, BE Caring = benevolence - caring, BE Dependability = benevolence - dependability, UN Societal = universalism - societal concern, UN Tolerance = universalism - tolerance, UN Nature = universalism - protecting nature.

Correlations between personality traits and values among women and men are shown in Table 3. Many statistically significant correlations emerged between traits and values in both genders. Among women, correlations ranged from -.19 (between neuroticism and achievement and between openness and power) to .50 (between openness and autonomy of thought) and among men from -.21 (between openness and tradition) to .56 (between openness and autonomy of thought). According to the descriptive results, we took these possible gender differences into consideration in the links between personality traits and values.



**Table 3.** Correlations between the Big Five Personality Traits at Age 50 in Women ( $n = 107$ ) and Men ( $n = 105$ ) and Values of the Variables of the Latent Higher-Order 14-Value Factor Model at Age 50 in Women ( $n = 109$ ) and Men ( $n = 108$ ).

Variables	Women					Men				
	EX	OP	CO	AG	NE	EX	OP	CO	AG	NE
Self-direction - autonomy of thought	.23*	.50***	-.14	.04	-.16	.37***	.56***	.02	.18	-.15
Self-direction - autonomy of action	.12	.38***	.04	-.12	-.07	.10	.06	.07	-.20*	-.06
Stimulation	.33**	.19*	-.08	-.01	-.18	.44***	.27**	-.04	-.12	.03
Hedonism	.05	.02	.04	-.02	-.01	.04	-.13	-.01	-.13	.08
Achievement	.30**	.01	.27**	-.01	-.19*	.46***	.18	.09	-.08	-.04
Power	.01	-.19*	.15	-.17	.05	.24*	-.10	.06	-.20*	.03
Security	-.13	-.16	.22*	.08	.12	.14	-.01	.04	.07	.05
Tradition	-.09	-.00	.07	.11	.13	-.14	-.21*	.03	-.01	.19*
Conformity	-.10	-.07	.22*	.20*	.10	.06	-.06	.16	.23*	.05
Benevolence - caring	.06	.17	.13	.31**	.10	.21*	.23*	-.00	.29**	.03
Benevolence - dependability	.13	.09	.22*	.15	-.12	.01	.10	.19	.24*	-.17
Universalism - societal concern	.00	.14	-.05	.10	.08	.16	.25*	-.03	.33***	.01
Universalism - tolerance	.18	.43***	-.07	.06	-.18	.19	.46***	-.01	.31**	-.16
Universalism - protecting nature	.12	.42***	-.07	.12	-.01	.09	.23*	.06	.18	-.05

Note. EX = extraversion, OP = openness, CO = conscientiousness, AG = agreeableness, NE = neuroticism. \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ .

### **Multi-Group Regression Model of the Associations between Personality Traits and Values**

In the SEM model, four personality traits contributed to 10 of the 14 values (Table 4). The chi-square difference test,  $\chi^2_{\text{difference}}(21) = 38.35, p = .012$ , showed that the models for women and men were significantly different. Based on parameter tests, we set some of the associations as unequal in women and men, after which the model fitted the data well:  $\chi^2(56) = 63.60, p = .227, CFI = .99, TLI = .98, RMSEA = .04$  and  $SRMR = .06$ .

Despite of the gender difference in the entire model, many of the associations between the personality traits and values were similar in women and men. In both genders, extraversion (positively), openness (positively), and agreeableness (negatively) were significantly related to stimulation. Furthermore, conscientiousness and agreeableness were associated positively, and openness negatively, with conformity. Extraversion was linked positively, and openness negatively with power, whereas openness and agreeableness were related positively with societal concern. Openness was also positively associated with protecting nature, tolerance and autonomy of thought. In turn, agreeableness contributed positively to caring and extraversion to autonomy of thought and achievement. Finally, agreeableness was negatively linked with autonomy of action.

There were three gender-specific associations. Firstly, conscientiousness was linked positively with achievement in women. Secondly, openness was related positively to autonomy of action in women. Thirdly, agreeableness correlated positively with tolerance in men. Neuroticism showed no association with any of the values in the present study. Additionally, in the SEM model personality traits were not related to the following values: hedonism, tradition, security, and dependability.

**Table 4.** Multi-group Regression Model with Structural Equation Modelling for Women at Age 50 (n = 107) and Men at Age 50 (n = 105): Standardized Regression Coefficients, Standard Errors in Parentheses and Statistical Significance; Values as Dependent Variables and Personality Traits as Independent Variables.

Variables	EX	OP	CO	AG	EX	OP	CO	AG
	Women				Men			
SD Thought	.09(.04)*	.45(.05)***			.11(.05)*	.53(.06)***		
SD Action		.42(.07)***		-.10(.05)*		.11(.09)		-.13(.06)*
STIMULATION	.37(.06)***	.13(.06)*		-.12(.06)*	.39(.06)***	.13(.06)*		-.14(.06)*
ACHIEVEMENT	.33(.05)***		.24(.08)**		.40(.06)***		.04(.06)	
POWER	.23(.06)***	-.24(.06)***			.25(.06)***	-.23(.06)***		
CONFORMITY		-.17(.05)***	.11(.05)*	.29(.05)***		-.16(.05)**	.12(.05)*	.32(.06)***
BE Caring				.35(.06)***				.37(.06)***
UN Societal		.12(.06)*		.17(.06)**		.12(.06)*		.20(.07)**
UN Tolerance		.40(.06)***		-.02(.09)		.39(.06)***		.19(.06)**
UN Nature		.39(.06)***				.23(.08)**		

*Note.* EX = extraversion, OP = openness, CO = conscientiousness, AG = agreeableness, SD Thought = self-direction - autonomy of thought, SD Action = self-direction - autonomy of action, BE Caring = benevolence – caring, UN Societal = universalism - societal concern, UN Tolerance = universalism - tolerance, UN Nature = universalism - protecting nature. \*\*\* p < .001; \*\* p < .01; \* p < .05.

Table 5 shows the coefficient of determinations ( $R^2$ ) with statistical significance of the final multi-group regression model in women and men. Statistically significant coefficient of determinations ( $R^2$ ) of the final multi-group regression model ranged between .063 and .336 in women and men. All the  $R^2$  values were statistically significant in either men or women or both.

**Table 5.** *Coefficient of Determinations ( $R^2$ ) with Statistical Significance of the Multi-group Regression Model in Women at Age 50 ( $n = 107$ ) and Men at Age 50 ( $n = 105$ ). Personality Traits as Independent Variables.*

Variables	Women	Men
	$R^2$	$R^2$
Self-direction - autonomy of thought	24.6***	33.6***
Self-direction - autonomy of action	17.2**	1.7
Stimulation	17.7***	18.4***
Achievement	17.3**	16.7**
Power	6.3*	6.8*
Conformity	11.9***	12.0**
Benevolence - caring	11.9**	13.3**
Universalism - societal concern	4.8	7.8*
Universalism - tolerance	15.8**	25.6***
Universalism - protecting nature	15.3**	5.4

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$ .

## Discussion

The primary aim of the present study was to investigate relations between the Big Five personality traits and Schwartz's 14 values. The second aim was to take possible gender differences in these relations into consideration. The analyses were based on an age-cohort representative sample of 50-year-old Finnish women and men. The results, based on the multi-group regression model, indicated some moderate-level relations between personality traits and values. Despite of the gender difference in the entire model, the majority of the associations were the same in both genders. This is mainly in line with the preliminary results of Dollinger et al. (1996), suggesting that gender did not moderate the correlations between values and traits.

Openness contributed positively, as expected, to autonomy of thought, stimulation, and all of the three sub-factors of universalism in both genders and, in addition, to autonomy of action in women. In support of the hypotheses, openness was associated negatively with conformity. The

most consistent negative link was between openness and power. This finding in fact replicates that reported by Roccas et al. (2002). Autonomy of thought, autonomy of action, and stimulation belong to the dimension of openness to change in one's values (Schwartz & Boehnke, 2004), the most consistent positive association in the present study was between openness and autonomy of thought in both genders. The finding that this was the most consistent association is in line with Stankov (2007) who found that while the Big Five traits belong to a different factor than Schwartz's values, openness was the only one that loaded on the latter. The present results showed that openness was, of all the personality traits, the one most consistently associated with what people value in their lives. This finding replicates previous findings (e.g., Parks-Leduc et al., 2015).

In support of the hypothesized associations, agreeableness contributed positively to caring, societal concern and conformity in both genders. Moreover, supporting the expected links, agreeableness contributed to tolerance in men. These values are all social-focused values, i.e. values that emphasize others' well-being (Fontaine, Poortinga, Delbeke, & Schwartz, 2008). A new result was that agreeableness was negatively associated with autonomy of action and stimulation, both of which represent person-focused values, i.e. values which emphasize one's own interests (Fontaine et al., 2008). One explanation for the positive contribution of agreeableness to conformity is that individuals high in harm avoidance prioritize conformity. In addition, agreeableness as a homeostatic serving trait has a similar motivational basis as conformity (Athota & O'Connor, 2014).

As was expected, extraversion contributed positively to achievement, power and stimulation in both genders. However, extraversion was also positively related to autonomy of thought in both genders. These values are all person-focused; specifically, autonomy of thought and stimulation are aligned with the openness to change dimension of values, and power and achievement to the self-enhancement dimension of values (Fontaine et al., 2008). Openness to change highlights independence of emotion, action and thought and the favouring of change. Self-enhancement, in turn, emphasizes striving for personal success and dominance over others (Schwartz & Boehnke, 2004). Extraverted individuals have higher needs for arousal, which entails high prioritization of stimulation (Furnham, 1984). Moreover, extraversion as a transformative trait contributes further to the prioritizing of stimulation (Athota & O'Connor, 2014).

Supporting the hypotheses, conscientiousness was positively related to conformity in both genders and to achievement in women. As Roccas et al. (2002) have stated, the proactive feature of conscientiousness is consistent with the motivational goal of achievement, while the inhibitive part is congruent with the motivational goal of conformity. The hypothesized associations not found in this study showed correlations that were either near to zero or significant for women or men only, and hence not high enough to be in the final regression model.

Furthermore, it was found that the associations between personality traits and values were partially different for women and men. There were three statistically significant gender differences in these relations: 1) agreeableness contributed positively to tolerance in men; 2) conscientiousness was associated positively with achievement in women; and 3) openness was related positively to autonomy of action in women. It may be speculated that one explanation for these differences is related to the importance of traditional gender roles for the maintenance of gender differences in some behavior (Wood & Eagly, 2002). A second possible explanation for some of the present gender differences may be that women and men attach different meanings to some values. The degree of meaning equivalence with respect to the items featured in the SVS is a topic of ongoing debate (e.g., Fischer, 2012). Some of the new associations found in the present study may be explained by the use of the fine-tuned values in investigating the links between personality traits and values and testing for the possible role of gender in these associations.

The results yielded new information on gender differences and similarities in the contribution of personality traits to value preferences in middle-aged persons. The results also shed some light on the use of the Schwartz fine-tuned values with sub-factors, showing that they can give more precise information about associations in the domain of personality traits and values. Neuroticism did not contribute to any of the values, as has also been shown in previous studies (e.g., Aluja & Garcia, 2004; Parks-Leduc et al., 2015; Roccas et al., 2002). In this study, personality traits were not related to hedonism, tradition, security or dependability, albeit there were some descriptive correlations between traits and tradition, security or dependability at least in one gender. The present results replicate the findings of the meta-analysis by Parks-Leduc et al. (2015) that the fact that only moderate-level associations were found between personality traits and values confirms that they are indeed distinct constructs.

The present study has important strengths. The first concerns the advanced statistical methodologies used, such as multi-group regression modeling (SEM) using the Mplus statistical package. The second is that it was based on a representative sample of the Finnish age cohort born in 1959 (Pulkkinen, 2017). Consequently, the results can be generalized at least to 50-year-old Finnish middle-aged adults (Pulkkinen & Kokko, 2010). Third, to the best of our knowledge, this study is the first to investigate the relations between the Big Five personality traits and the fine-tuned values of the Schwartz refined values theory (Schwartz et al., 2012).

However, we recognize that this study also has some limitations. First, it was based on cross-sectional analyses, as SVS data were only available to us at age 50. Consequently, the reported associations cannot indicate any causality. Second, with respect to the number of variables studied, the sample size was relatively small. For this reason we used the mean  $z$ -scores of the variables instead of latent variables. Third, the Cronbach's reliability coefficients for some of the values were relatively low. Although, the reliabilities were in the same level as in many other studies considering Schwartz values.

### **Concluding Remarks**

In conclusion, we found, first, many significant associations between personality traits and values, and, second, that the relations were in part different in women and men. Nevertheless, personality traits do not exist in individuals independently from each other, but form profiles which have consistent associations with individuals' psychological and social functioning (Pulkkinen, 2017). The study of differences between personality profiles in their values considering the higher-order value structure might open new ways of analyzing the relations between personality and values. Longitudinal studies would also be needed to determine whether personality traits modify values across time or vice versa. It would also be important to study the mechanisms explaining the associations between personality and values by including different mediator or moderator factors. Here we only considered gender as a moderator. More studies are needed to replicate the relations between personality traits and fine-tuned values reported here for gender.

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