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Personality traits and values: a replication with a Swedish sample

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To maintain rigor and transparency in the science of personality psychology, we conducted a replication of the often cited "The Big Five Personality Factors and Personal Values" by Roccas, Sagiv, Schwartz, and Knafo (2002). More than a decade ago, based on a study of Israeli students, they presented results on how personality traits and personal values relate. In the current replication study with Swedish students, we related the Big Five personality traits to Schwartz´s personal values. Our results replicated most of the earlier findings. Whereas the earlier study tested the predictive validity of traits and values on religious beliefs, presumed to be under a relatively high degree of cognitive control, our study tested the willingness-to-pay for Fairtrade alternatives. Our findings confirmed the earlier findings that personal values explain substantially more variance than personality traits in this. We discuss that traits and values are different constructs and that their relationship is consistent across the two geographic locations and student cohorts.

Keywords: personality traits, personal values, willingness-to-pay, Fairtrade alternatives

In this paper we aim to replicate the often-cited study by Roccas, Sagiv, Schwartz, and Knafo (2002). With a group of 246 Israeli students as their sample, Roccas et al. proposed that personal traits and personal values, although being different constructs, are nevertheless systematically linked. To make that point, they used Schwartz's (1992) circle value model (Figure 1). The main theme in the present study is the relationships and differences between personality traits and personal values. To increase external validity we used slightly different questionnaires, and we used a sample of Swedish students. In an attempt to crudely and comprehensively describe the difference between traits and values, Roccas et al. write: "Traits refer to what people are like, values to what people consider important" (p. 799).

Personality traits and values

A formal definition of personality traits is "dimensions of individual differences in tendencies to show consistent patterns of thought, feelings and actions" (Costa Jr & McCrae, 2013, p. 18). More specifically, such basic human traits are identified as the Big Five, as in the Five Factor Model (see, e.g., Larsen & Buss, 2008; McCrae & Costa Jr, 2013).

For an historical overview of the development of the Big Five model see, e.g., John and Srivastava (1999) and Wiggins (1996). Two major influences can be identified. The first is the lexical strategy which states that personality characteristics important in peoples' lives will become part of their language (Ashton & Lee, 2005; Goldberg, 1993; John, Angleitner, & Ostendorf, 1988). The second is the self-report strategy which states that important personality dimensions can be successfully captured by self-ratings in prearranged questionnaires; see, e.g., Costa and McCrae (1992). The five factors are (Costa, McCrae, & Dye, 1991):

- neuroticism (anxiety, hostility, depression, self-consciousness)
- extraversion (warmth, gregariousness, assertiveness, activity, excitement seeking, positive emotions)
- openness to experience (fantasy, aesthetics, feelings, actions, ideas, values)
- agreeableness (trust, straightforwardness, altruism, compliance, modesty, tender-mindedness)
- conscientiousness (competence, order, dutifulness, achievement striving, self-discipline, deliberation)

Various findings have been reported about these five trait factors. They were found to be strongly heritable (Jang, McCrae, Angleitner, Riemann, & Livesley, 1998; Plomin, DeFries, Knopik, & Neiderhiser, 2013), more or less stable over time (Costa, Herbst, McCrae, & Siegler, 2000; Costa & McCrae, 1994; Soldz & Vaillant, 1999; Specht, Egloff, & Schmukle, 2011; Terracciano, Costa, & McCrae, 2006), and they were found to exhibit a similar structure across cultures (McCrae & Costa, 2013; Oliver & Mooradian, 2003).

Others have shown that some of the Big Five factors were related to a degree of subjective well-being (DeNeve & Cooper, 1998), to the frequency rate of mortality, divorce, and occupational attainment (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007), to the use of social media (Correa, Hinsley, & De Zuniga, 2010; Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011), to entrepreneurial outcomes (Leutner, Ahmetoglu, Akhtar, & Chamorro-Premuzic, 2014), academic achievements (Komarraju,

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Karau, Schmeck, & Avdic, 2011), and to overall job satisfaction (Judge, Heller, & Mount, 2002).

Consistent with the approach taken by Roccas et al. (2002), in our research we used Schwartz's (1992) circle value model. In this model, values are defined as desirable, trans-situational goals and guiding principles in human life. Values are furthermore referred to as beliefs and as desirable end states or behaviours. Included in the Schwartz's model are ten value types, differentiated by their motivational goals (Schwartz & Boehnke, 2004). Here we list those value types and their motivational goals:

- power (social status and prestige, control or dominance over people and resources)
- achievement (personal success through demonstrating competence according to social standards)
- hedonism (pleasure and sensuous gratification for oneself)
- stimulation (excitement, novelty, and challenge in life)
- self-direction (independent thought and action-choosing, creating, exploring)
- universalism (understanding, appreciation, tolerance, and protection for the welfare of all people and for nature)
- benevolence (preservation and enhancement of the welfare of people with whom one is in frequent personal contact)
- tradition (respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self)
- conformity (restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms)
- and security (safety, harmony, and stability of society, of relationships, and of self)

Similar to the research on traits, researchers have found that values explain people's individual differences on a number of variables. Among these variables are political views (Cochrane, Billig, & Hogg, 1979; Schwartz, Caprara, & Vecchione, 2010), attitudes towards sustainable consumption (Thøgersen & Ölander, 2002), attitudes towards genetically modified food products (Dreezens, Martijn, Tenbült, Kok, & De Vries, 2005), and more ethical product alternatives (Shaw & Shiu, 2002).

This model is depicted as a circle in which values that share the same goals to a greater degree are more closely related (Figure 1). Schwartz´s value model has been tested in hundreds of samples in more than 60 countries (Schwartz et al., 2012). In almost all these tests, the model has confirmed the relationships and the structures (Schwartz, 1992; Schwartz & Sagiv, 1995).

Links between traits and values

Whether traits or values are more fundamental, and hence whether the main causal direction is from traits towards values, is not a settled question. In an early comment, Rokeach (1973) argued that personality traits were antecedent to values. Similarly, Oliver and Mooradian (2003, p. 109) stated: "Accumulating evidence shows that personality traits are largely endogenous characteristics, while

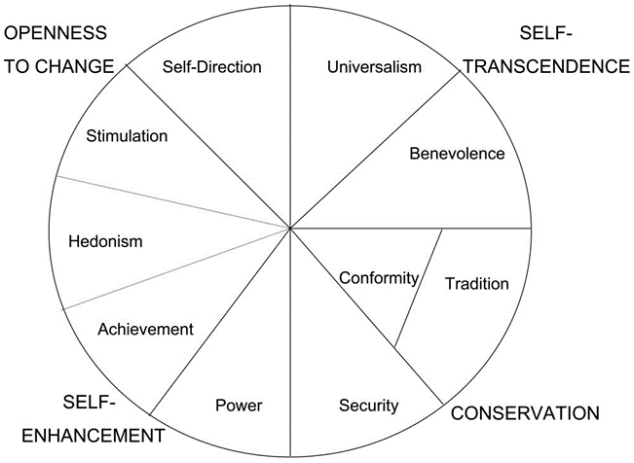

Figure 1. The Schwartz's (1992) value model

personal values are learned adaptations strongly influenced by the environment." In support of this position, some studies (e.g., DeYoung et al., 2010) found biological causes for the Big Five personality traits. Given this research, plus the consideration of the universal cross-cultural structures of the Big Five, we take traits to be viewed more as products of "nature" (i.e., biological/genetic) while values should be viewed more as the results of interactions between "nature" and the environment.

In a meta-analysis by Fischer and Boer (2014) stronger personality-value links were found in contexts with low financial and ecological threats, with more democratic institutions, and with a permissive social context. The trait openness was rated as relatively cognitive in nature, and neuroticism was rated as the most affective of the Big Five personality traits. Since values generally are considered as rather cognitive constructs, a suggestion is that in contexts as those described above openness will show a stronger association with values (Zillig, Hemenover, & Dienstbier, 2002).

In addition to this it should be mentioned that Parks-Leduc, Feldman, and Bardi (2014), in their meta-analysis, report that 35 other studies have been performed on the associations between traits and values. Some of the data sets in those studies were, however, obtained from web sites such as Facebook, with little control over the data collection process.

De Raad and Van Oudenhoven (2008) reported from own and other studies, that the trait openness to experience was positively correlated with values self-direction, universalism, stimulation, and negatively correlated with conformity. Agreeableness was found positively correlated with values benevolence, tradition, and conformity, and negatively correlated with the power value. Extraversion was positively correlated with values stimulation, hedonism, and power, and conscientiousness was positively correlated with security, conformity, and achievement.

Taken together with results from studies such as Roccas et al. (2002) and Parks-Leduc et al. (2014), this paints a picture of the trait factor openness to experience as being essentially positively related to the value types universalism, self-direction, and stimulation, and negatively correlated to power, security, tradition, and conformity. This in-

dicates that openness is probably positively related to the value dimension openness-to-change, as well as to values found at the self-transcendent endpoint in the value model.

De Raad et al. (2008) and Roccas et al. (2002) found positive correlations between agreeableness and the values benevolence, conformity, and tradition. Negative correlations were found with the power value. Together with results from Parks-Leduc et al. (2014), this paints a picture of agreeable individuals to be likely found close to the conservation and self-transcendent endpoints on the two bi-polar axes.

Extraversion was found positively related to the value types stimulation, hedonism, and achievement, and negatively related to the value type tradition (Roccas et al., 2002). Taken together with results from De Raad et al. (2008) and Parks-Leduc et al. (2014) this provides a picture of extraversion as positively related to both the openness-to-change and self-enhancement endpoints on the bi-polar axes in Schwartz's value model (Figure 1).

Conscientiousness was found positively correlated with the value types achievement, security, and conformity (Roccas et al., 2002). Combined with results from De Raad et al. (2008) and Parks-Leduc et al. (2014), high scores on conscientiousness would mean a positive association, although not clearly and consistently, with being located at the self-enhancement and conservation ends at the bi-polar axes in the value model.

The only substantial association for neuroticism was a negative correlation with the value type achievement in the Roccas et al. (2002) study.

It should also be mentioned that no Swedish studies on these subjects have been found.

An interesting question is the following: Can traits and values be regarded as distinct constructs empirically? Parks-Leduc et al. (2014) argue that the correlations between traits and values they found in their meta-analysis were generally not large; hence, traits and values are probably distinct constructs. Yet, it is not an easy or straightforward matter to determine if correlations are large or small. With data from 380 meta-analytic studies, Hemphill (2003) found that about one third of all correlation coefficients was less than .20, another third was between .20 and .30, and the remaining third was more than .30 in magnitude. If rules of thumb for what should be considered small, medium, and large are based on these results, many of the correlations in Table 1 are medium or large. Another strategy, employed by Roccas et al. (2002), was the use of discriminant validity to show that traits and values have clearly different correlations with other variables. Since values are a kind of cognitive representation of trans-situational goals, they are probably more influential on preferences and behaviours that are under a relatively high degree of cognitive control (Schwartz & Sagiv, 1995). An example of this is religious belief.

Predictions

Since our goal was to conduct a replication of Roccas et al. (2002), using a sample of Swedish students, we hypothesize that their findings are still true more than a decade after their research. We also hypothesize that traits and values have different predictive validity, because values have stronger associations with variables under higher degrees of cognitive control. Instead of testing the predictive validity of traits and values on religious beliefs, as Roccas et al. did, we chose a different variable: Consumer willingness-to-pay for Fairtrade-alternatives (hereafter, Fairtrade). In Sweden, and in many other countries, Fairtrade is regarded as an important social movement that, like most religions, attaches importance to benefiting not only the individual, but also to humanity in a larger perspective. Since we believe that a relatively high degree of cognitive control is present in willingness-to-pay for, as well as to choose, Fairtrade products, we think these choices are explained better by people's values than by their traits.

Hypothesis A: Extraversion is positively related with the value types stimulation, hedonism, and achievement, and negatively with tradition.

Hypothesis B: Openness is positively related with universalism, self-direction, and stimulation, and negatively with power, security, tradition, and conformity.

Hypothesis C: Agreeableness is positively correlated with benevolence, conformity, and tradition, and negatively with self-direction, stimulation, hedonism, achievement, and power.

Hypothesis D: Conscientiousness is positively correlated with achievement, security, and conformity, and negatively with stimulation and universalism.

Hypothesis E: Neuroticism is negatively correlated with the value type achievement.

Hypothesis F: Compared to traits, values show a stronger association with variables that are under a relatively high degree of cognitive control.

METHOD

Participants and procedure

Data were collected through paper and pencil questionnaires from November 2013 to February 2014. All responses were anonymous, participation was voluntary, and the questionnaires were collectively administered. Our sample consisted of 243 Swedish university students in Human Resources (78 % female; 22 % male); all participants returned usable questionnaires. The respondents were between 18 and 56 years of age with a mean age of 26.38 (SD = 7.05).

Instruments

We used the Portrait Value Questionnaire IV (PVQ-IV; Schwartz, 2009) which is a 40-item, self-report questionnaire that measures human values by describing how much the participant resembles a described portrait. Items are scored on a six-point Likert scale, ranging from "Not like me at all" to "Very much like me". The internal reliabilities of the value type scales in the present study were as follows: universalism .74 (6 items), benevolence .72 (4 items), tradition .45 (4 items)[1], conformity .57 (4 items),

[1] The low internal reliability for tradition required further analysis. We found that for item 20, "Religious belief is important to him/her. He/she tries hard to do what his religion requires", 64 % answered "Not like me

security .53 (5 items), power .64 (3 items), achievement .77 (4 items), hedonism .81 (3 items), stimulation .76 (3 items), and self-direction .56 (4 items). The value tradition was, because of the relatively low Cronbach alpha (Footnote 1), divided into two constructs; tradition_traditional and tradition_modest. The former, a measure of the degree to which the respondent thought it was best to do things in traditional ways, and to maintain the customs they had learned. The latter, a measure of the degree to which respondents indicated it important to be humble and modest, not to draw attention to themselves and not to ask for more than what they already had. That some reliability coefficients (Cronbach alphas) were found below the "threshold" of .70 could probably be explained by the low number of items used to measure the construct. For comments and criticisms on the .70 and other commonly used threshold, see Lance, Butts, and Michels (2006).

In agreement with recommendations by Schwartz (2009), each individuals' mean rating across all value items was calculated and used to control for tendencies to provide responses at the left or right end of the scale.

We measured the Big Five personality factors with the 44-item Big Five Inventory (BFI) (John, Naumann, & Soto, 2008), a self-report inventory measuring the Five Factor domains without including facets. Items are scored on a five-point Likert scale, ranging from "Strongly disagree" to "Strongly agree". The internal reliabilities for the trait factors in the present study were as follows: neuroticism .86 (8 items), extroversion .87 (8 items), openness .79 (10 items), agreeableness .74 (9 items), and conscientiousness .73 (9 items).

Respondents were also informed how Fairtrade product labelling tries to deal with issues connected with employee rights and with how "Fairtrade" production affects people and their communities. The main purpose of such labelling is to inform consumers, principally in the developed world, about product alternatives that have a presumably greater positive influence on workers' lives in developing countries (e.g.. safer working conditions and a living wage). Next, the respondents were asked to indicate their willingness-to-pay a price premium for products labelled as Fairtrade. The four products were the following: a cup of coffee, a banana, a soccer ball, and a rose. The suggested prices for these Fairtrade alternatives were 20 SEK (M = 26.40, SD = 4.30), 7 SEK (M = 10.10, SD = 2.20), 200 SEK (M = 250.90, SD = 49.10), and 50 SEK (M = 60.80, SD = 10.30), respectively. At the time of the questionnaire, the Euro was equivalent to approximately 9 Swedish crowns (SEK). Cronbach's alpha across these four items was .79, with correlations in the range of .42 to .61. Corrected inter-total correlations were in a range of .53 to .71.

RESULTS

Extraversion

In agreement with hypothesis A and with Roccas et al. (2002), significant and positive correlations were found with stimulation, hedonism, and achievement values. In addition, positive significant correlations were found with self-direction and power. Furthermore, and in line with hypothesis A, significant negative correlations were found with both the traditional values (see footnote 1). In addition, significant negative correlations were found with the values conformity and security. Taken together, these results are in line with the idea that extraversion is a trait positively related to both the openness-to-change and self-enhancement endpoints on the bi-polar axes in Schwartz's value model. All values were regressed on extraversion and resulted in a significant model, with F (232, 10) = 5.34, $p < .001$, $R^2 = .20$, $R^2_{adj} = .17$. If the main causal direction, as suggested earlier, is considered from traits towards values, the interpretation of this result is that extraversion explains 17 % of the individual variation in the importance attached to values.

Openness to Experience

In agreement with hypothesis B and with Roccas et al. (2002), positive and significant correlations were found with universalism, self-direction, and stimulation. Negative significant correlations were, in line with hypothesis B, found with power, security, conformity, and tradition_traditional. No significant correlation was found with tradition_modest. In addition to what was hypothesised, a significant negative correlation was found with achievement. Taken together, these results are in line with the idea that the trait openness is positively related to both the openness-to-change and self-transcendent endpoints on the bi-polar axes in Schwartz's value model. All values were regressed on openness to experience and yielded a significant model, with F (232, 10) = 16.08, $p < .001$, $R^2 = .41$, $R^2_{adj} = 0.38$.

Agreeableness

In agreement with hypothesis C and with Roccas et al. (2002), positive and significant correlations were found with benevolence, conformity, and tradition_modest and humble. Contrary to what was expected, a significant negative correlation was found with the tradition_traditional values. In line with hypothesis C, negative and significant correlations were found with power and achievement. Correlations with hedonism, stimulation, and self-direction were, however, not significant. These results are partially in line with the idea of agreeableness being a trait positively related to the self-transcendent endpoint in the value model. All values regressed on the trait agreeableness resulted in a significant model, with F (232, 10) = 18.74, $p < .001$, $R^2 = .45$, $R^2_{adj} = 0.42$.

at all" and an additional 19 % answered "Not like me". The fact that 83 % indicated they had little in common with an individual whose religious beliefs were important, and our understanding that religion isn't especially important for most Swedes, led us to exclude Item 20 as an indicator of the importance of the value tradition. Item 25: "He thinks it is best to do things in traditional ways. It is important to him to keep up the customs he has learned" was uncorrelated (r = .00) with Item 38: "It is important to him to be humble and modest. He tries not to draw attention to himself", and only weakly (r = .11) correlated with Item 9: "He thinks it's important not to ask for more than what you have. He believes that people should be satisfied with what they have". Items 38 and 9 were, however, statistically significantly correlated (r = .18). Since it made sense to us, as Swedes, that modesty and satisfaction with what you have, do not have much to do with doing things in a traditional way, we decided to use Item 25 as an indicator of a value-factor tradition_traditional (Tt) and the average of items 38 and 9 as a measure of the value-factor tradition_modest and humble (Tm).

Table 1. Pearson product-moment correlation coefficients of the ten personal values with big five personality trait factors and willingness-to-pay for Fairtrade-alternatives (N = 243)

		Personal values										
Personality Traits	WTP	BE	UN	SD	ST	HE	AC	PO	SE	CO	Tm	Tt
Extraversion	.01	.11	-.12	.14	.22	.13	.15	.19	-.17	-.23	-.32	-.20
Openness	.12	.02	.32	.44	.28	.11	-.16	-.16	-.28	-.31	-.09	-.38
Agreeableness	.05	.62	.12	-.12	-.02	-.02	-.21	-.40	-.17	.17	.23	-.22
Conscientiousness	-.02	.11	-.10	-.08	-.21	-.30	.06	-.02	.33	.22	-.07	.04
Neuroticism	.03	.00	.04	-.18	-.20	-.06	.10	-.02	.10	.16	.03	.08
WTP for Fairtrade-alternatives		.12	.28	.12	.06	-.01	-.14	-.20	-.11	-.07	.02	-.23

Note: BE = benevolence, UN = universalism, SD = self-direction, ST = stimulation, HE = hedonism, AC = achievement, PO = power, SE = security, CO = conformity, Tm = strive to be modest and humble, Tt = strive to preserve traditions. Correlations |r| > .13 are statistically significant at the .05 level and |r| > .17 imply significance at the .01 level, two-tailed.

Conscientiousness

In agreement with hypothesis D and with Roccas et al. (2002), positive and significant correlations were found with security and conformity, and a negative significant correlation was found with stimulation. Different from what hypothesised, no significant correlations were found with achievement and universalism. In addition to what was hypothesised, a significant negative correlation was found with hedonism. Taken together these results are partially in line with the idea that the trait conscientiousness is positively related to the conservation endpoint in the value model. All values regressed on conscientiousness resulted in a significant model, with F (232, 10) = 7.88, p < .001, R^2 = .25, R^2_{adj} = 0.22.

Neuroticism

Different from Roccas et al. (2002), achievement was not significantly correlated with neuroticism. Both self-direction and stimulation were, however, negatively and significantly correlated with neuroticism. In addition, conformity was positively and significantly correlated with neuroticism. All values regressed on neuroticism resulted in a significant model, with F (232, 10) = 2.50, p = 0.007, R^2 = .10, R^2_{adj} = 0.06. For additional results, see Table 1.

The circular structure of Schwartz's (1992) value model suggests how variables not included in the model would relate to values in the model. If a variable correlates strongest with one value type, its correlations with other value types should tend to decrease monotonically in the opposite directions in the circle. In deviation from Roccas et al. (2002), and with the ambition to present a richer picture of found relationships between personality traits and values, we use words, and not correlation coefficients.

For *extraversion***,** the stimulation value type showed the strongest positive correlation with self-direction, while hedonism, achievement, and power, all of which are closely located, also showed positive but somewhat weaker correlations. Negative correlations were found for the values located at the opposite side of the model, with the strongest correlation for the tradition_modest and humble value type. For *openness***,** an almost equally clear pattern emerged. Self-direction showed the strongest positive correlation, and values close to this value type, universalism and stimulation, were positively but more weakly correlated. Values located opposite to self-direction were negatively correlated, and the tradition_traditional value showed the strongest negative correlation. The correlation between *agreeableness* and the benevolence value was the strongest of all correlations between traits and values. The power and achievement values were located opposite to agreeableness, both with negative correlations. The remaining correlations did not smoothly follow the monotonic decrease or increase in patterns as found for the two previous trait factors. *Conscientiousness* was positively correlated with security and with the closely located conformity value. Negative correlations were found with hedonism and stimulation, both located almost opposite each other in the value model. The rest of the correlations did not follow the suggested monotonic pattern. *Neuroticism* was positively correlated with conformity and negatively correlated with self-direction and stimulation, which are the two values located almost opposite to conformity.

Fairtrade

None of the five trait factors were statistically and significantly associated with willingness-to-pay for Fairtrade alternatives. Some value types were, however, significantly correlated with Fairtrade (see the bottom row of Table 1), namely universalism (.28), and its circular opposites, power (-.20) and achievement (-.14). Furthermore, a low score on tradition_traditional was associated with a higher willingness-to-pay for Fairtrade alternatives (-.23).

Next, we conducted two hierarchical regression analyses. In the first analysis, values were first entered as predictors of the willingness-to-pay for Fairtrade alternatives, and then traits were included at a second step. In the second analysis, traits were entered first, followed by values. In line with Roccas et al. (2002), we only included the value types that correlated significantly (p< .01) with Fairtrade (namely universalism, power, and traditional_tradition). Also, we used the five trait factors as predictors, although none of them correlated significantly (p < .05) with Fairtrade. Values accounted for 10 % (R^2_{adj} = .10) of the variance when entered in the first step and the trait factors accounted for no additional variance. The trait factors accounted for 0 % (R^2_{adj} = .00) of the variance in Fairtrade when entered first, and values accounted for 9 % of the additional variance. These results showed, in line with hypothesis F, that values account for substantially more variance in the willingness-to-pay for Fairtrade alternatives than traits.

DISCUSSION

In our study, we measured values and traits using different instruments than used in Roccas et al. (2002). We used the 40-item Portrait Value Questionnaire that measures values by participants' rating of how much they resemble a described portrait. Roccas et al. used the 62-items Schwartz Value Survey in which respondent's rate the importance of the presented items as guiding principles in life. We measured personality factors with the 44-item Big Five Inventory, a self-report questionnaire measuring the five personality factors without including facets. Roccas et al. used a 180-items questionnaire (NEO-PI) where each trait factor was measured with six subscales, one for each facet. Moreover, we used the willingness-to-pay for Fairtrade alternatives, instead of the degree of religiosity, as an example of a variable likely to be under a relatively high degree of cognitive control. Furthermore, we used a Swedish sample, and collected the data in late 2013 and early 2014, some ten years after Roccas et al.'s study on an Israeli sample. Nonetheless our study replicated most of the earlier results, and certainly confirmed the main findings of the Roccas et al. study, which provides evidence for the robustness of the relationships between traits and values.

In contrast to Parks-Leduc et al. (2014) and Roccas et al. (2002), we found that neuroticism was significantly correlated with the attachment of more importance to conformity with rules and norms, and of less importance to self-direction and stimulation. Since Sweden is a country with relatively low financial and ecological threats, with probably more democratic institutions, and with a more permissive social context than most other countries, stronger associations between traits and values is in line with results presented by Fischer and Boer (2014). The finding that more neurotic persons rated stimulation as less important could be explained by the fact that those persons were already (more than enough) "stimulated" or "occupied" by their own thoughts and ideas.

If the main causal direction is from traits to values, it is clear that some traits are more influential on values than others. Openness and agreeableness had an overlap with values of 38 % and 42 %, respectively. Since openness is a relatively "cognitive" trait (Zillig et al., 2002), a substantial overlap with values was not unexpected. Neuroticism, which is the most affective of the five traits, showed the smallest overlap with values.

In both our study with Swedish students and the Roccas et al. (2002) study with a sample of Israeli students, values explained more variance than traits of the variable under a relatively high degree of cognitive control (i.e., Fairtrade and religiosity). This supports the idea that traits and values are different constructs. A tentative conclusion is that studies of areas not very well understood (e.g. consumers' preference for ethical alternatives or ordinary people's philosophical intuitions) should include measures of both traits and values. In the words of Roccas et al. (2002), when it comes to issues that people have under relatively high degree of volitional or cognitive control, what people consider important could be just as, or more, important than what people are like.

Limitations and conclusion

The question of how traits and values interact and influence each other over time can only be settled by longitudinal studies. Until more such studies are conducted and their results published, we have to rely on other claims, some of them more convincing than others. At this time, we conclude that the most compelling arguments regarding causality suggest that the main direction is from traits to values. Perhaps future studies will provide better data on how traits and values actually interact in ways not understood or even anticipated today.

Because this study was a successful replication, it supports the previous study's results and findings. We have constructed an outline of how traits probably influence values. We have also provided additional evidence that traits and values are distinct concepts.

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