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Values and epistemological understanding

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The significance of values in understanding the ways people think and behave has been demonstrated in a wide range of studies (for a review, see Schwartz & Bardi, 2001). Values convey what is important to individuals in their lives (Bardi & Schwartz, 2003). Different values have different motivating goals (Schwartz, 1992). For example, the central goals of self-direction values include independent thought and action, whereas respecting and preserving the existing customs are central to tradition values. Are values significant also in guiding individuals' stance towards knowledge and knowing, i.e., their personal epistemology? The main aim of the present study is to address this question.

Values

Values have been given a variety of definitions by different theorists (Rohan, 2000). In this paper, values are conceptualised using the Schwartz (1992) model, because it has been widely used in social psychological research and has gained much empirical support (Schwartz, 2012; Schwartz et al., 2001). Schwartz (1992, p. 4) has defined the concept of values based on the existing literature as follows: “Values (1) are concepts or beliefs, (2) pertain to desirable end states or behaviors, (3) transcend specific situations, (4) guide selection or evaluation of behavior or events, and (5) are ordered by relative importance.” Regarding the content of values, the Schwartz (1992) theory suggests that values can be divided into 10 distinct motivational value types that are recognized across the cultures

(Table 1).

According to the theory (Schwartz, 1992), the value types are dynamically related to each other. Acting in line with one value type may be compatible or in conflict with acting in line with other value types depending on the psychological, practical, and social consequences of the value types in question. In the circular value structure depicted in Figure 1, the competing value types are located on the opposing sides and the compatible value types are located close to each other.

Table 1

Value types and their motivational goals (based on Schwartz, 1992)

<i>Self-direction</i> : independent thought and action
<i>Stimulation</i> : excitement, novelty, and challenge in life
<i>Hedonism</i> : pleasure or sensuous gratification for oneself
<i>Achievement</i> : personal success through demonstrating competence according to social standards, thereby obtaining social approval
<i>Power</i> : attainment of social status and prestige, and control or dominance over people and resources
<i>Security</i> : safety, harmony, and stability of society, of relationships, and of self
<i>Conformity</i> : restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms
<i>Tradition</i> : respect, commitment, and acceptance of the customs and ideas that one's culture or religion impose on the individual
<i>Benevolence</i> : preservation and enhancement of the welfare of people with whom one is in frequent personal contact
<i>Universalism</i> : understanding, appreciation, tolerance, and protection for the welfare of all people and for nature

Schwartz (1992) clarified the structural relations of values by introducing four higher order value types arranged to two dimensions. The first dimension is called *openness to change–conservation*, and it opposes stimulation and self-direction values to security, conformity and tradition values. In the second dimension, *self-enhancement–self-transcendence*, power and achievement values contradict universalism and benevolence values. Hedonism is considered as belonging both to openness to change and self-

enhancement.

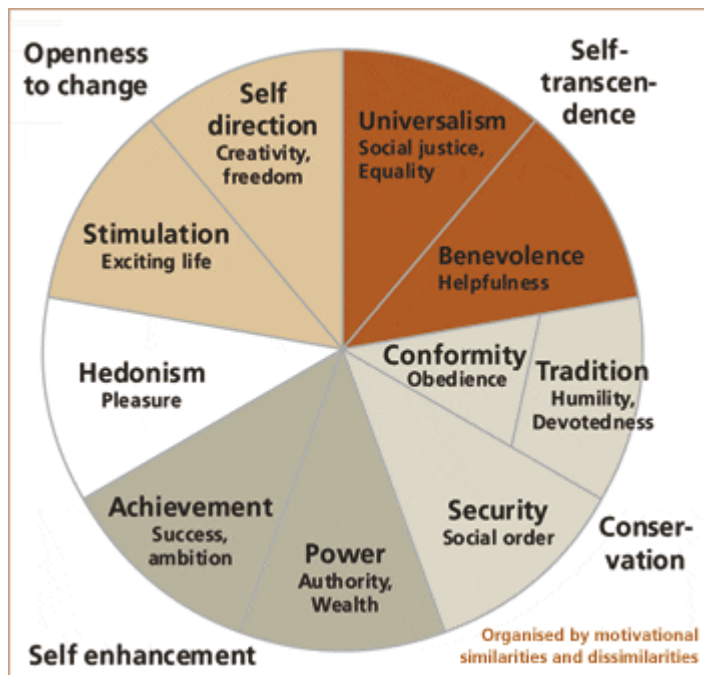


Figure 1. The value structure. Image from ESS EduNet, NSD, by Schwartz

(<http://essedunet.nsd.uib.no/cms/topics/1/1/2.html>)

Further, according to Schwartz (1992), the value structure should manifest itself in a sinusoid pattern of associations between values and other variables. For example, an external variable that correlates positively with self-direction is expected to correlate positively also with the values adjacent to self-direction. Moreover, correlations with this external variable should decrease going around the structure in both directions to security values. Research supports this model of basic human values. Both the content (10 value types) and the structure (the relations between values) has gained much support (Schwartz, 2012; Schwartz et al., 2001), and thus the model is close to universal (for departures from the proposed values structure, see Steinmetz, Isidor, & Baeuerle, 2012).

Wach and Hammer (2003) have made an important extension to the Schwartz (1992) model by introducing two truth-related value types, namely rational truth and non-rational

truth. These opposing values represent two sides of the truth. The motivating goals of rational truth are theoretical, logical and predictable truth, whereas belief in non-rational truth, magic, intuitiveness, fatalism and denial of rationality are characteristic of non-rational truth.

According to Wach and Hammer's (2003) hypotheses, rational truth would be located between self-direction and universalism, and non-rational truth between power and security. In their studies conducted in six European countries, Wach and Hammer (2003) found that rational truth was located closest to self-direction with self-transcendence values (universalism and benevolence) also adjacent to it. Therefore, they suggest that rational truth might be considered a sub-type for self-direction. They studied non-rational truth only in France and found that it emerged closest to security, between security and power.

On the basis of Wach and Hammer's (2003) theory and observations concerning the two truth-related value types, it is hypothesised that rational truth is located closest to self-direction, between self-direction and universalism (H1) and that non-rational truth is located closest to security, between security and power (H2).

Epistemological understanding

Despite the existing discrepancies in defining the construct of personal epistemology, many researchers would agree that personal epistemology refers to individuals' conceptions about knowledge and knowing (Hofer & Pintrich, 1997; Pintrich, 2002), such as beliefs about the certainty of knowledge, the simplicity of knowledge, the source of knowledge, and the justification for knowing (Pintrich, 2002). Most models describing personal epistemology can be categorised into two views: cognitive developmental and system of beliefs views (Hofer, 2004).

In this study, I adopt the cognitive developmental model of Kuhn, Cheney and Weinstock (2000). As most models on personal epistemology, also the Kuhn et al. (2000) model can be traced back to Perry (1970), who was the first to show the developmental

sequence of epistemological thinking. The aim of Kuhn et al. (2000) is to describe this sequence as simply as possible, both theoretically and empirically. They suggest that “the developmental task that underlies the achievement of mature epistemological understanding is the coordination of the subjective and objective dimensions of knowing” (Kuhn et al., 2000, p. 310). In the course of this advancement knowledge claims are first seen as copies, then as facts, opinions, and lastly as judgements (Kuhn & Weinstock, 2002). According to Kuhn and Weinstock (2002), this series of qualitatively distinct understandings of the nature of knowledge claims is the essential product of epistemological development.

Kuhn et al. (2000) depict the development of epistemological understanding as a sequence of four levels: realist, absolutist, multiplist, and evaluativist. At the *absolutist* (and also at the preabsolutist realist) level, knowledge is considered objective and certain. In the absolutist thought knowledge claims are facts that can be compared to the external reality in order to conclude whether they represent the reality correctly or incorrectly. At the *multiplist* level, which is the next level, objectivity is abandoned and knowledge is now seen as subjective and uncertain. Claims are considered subjective opinions that individuals generate themselves. As in multiplist thought there exist no objective criteria against which to evaluate opinions that different individuals hold, all opinions are regarded as equally right. The *evaluativist* reintegrates objectivity, but with a novel meaning: claims are now seen as judgements, and even though knowledge is regarded as uncertain, standards can still exist for evaluating different views. Two positions can both be right to some extent, but the positions can be compared and evaluated and one of them can be considered “more right” on the basis of argumentation and evidence presented to support it.

In their model Kuhn et al. (2000) distinguish between different kinds of knowing judgement domains. Personal taste domain concerns judgements of pleasingness and the aesthetics domain concerns judgements of beauty. Further, the value domain pertains to

judgements of good. Finally, social truth domain refers to judgements of truth about the social world, whereas physical truth domain refers to judgements of truth about the physical world. Kuhn et al. recognize the possibility of other categorisations, but do not explain the basis for choosing these particular domains.

Generally, educational level and experience have appeared as important factors in fostering epistemological development, and more so than age (for a review, see Weinstock, Neuman, & Glassner, 2006). Some of the studies using Kuhn et al.'s (2000) model and its associated quantitative instrument to measure epistemological understanding have provided support for seeing the model as a developmental one, especially regarding the first transition from absolutism to multiplism. The proportion of those who have achieved this transition has been found to be larger among the more highly educated people (Kuhn et al., 2000; Mason, Boldrin, & Zurlo, 2006) although this progression is more like a trend than a linear progression across the grade levels (see also Weinstock et al., 2006). However, some studies (Wang, Zhou, & Shen, 2014; Weinstock & Zviling-Beiser, 2009) have found no associations between educational level and epistemological level. One possible explanation for these inconsistent findings could be that the impact of education on epistemological understanding as measured by the Kuhn et al. (2000) instrument might depend on the type and width of academic experience (including for example the type of curriculum) of the samples studied (Weinstock & Zviling-Beiser, 2009). For instance, Wang et al. (2014) observed that students from an experimental school were less absolutist and more multiplist than students from a regular school. However, as regards the evaluativist position, students from these two schools did not differ.

Values and epistemological understanding

Empirical studies examining the relationship between values and epistemological understanding are almost non-existent. A rare exception is a study by Kessels (2013)

conducted among 161 university students in Germany. However, it considered only two values, conformity and power. To measure epistemological understanding, Kessels used Krettenauer's (2005) instrument (*Fragebogen zur Erfassung des Entwicklungsniveaus epistemologischer Überzeugungen, FREE*), in which respondents rate their agreement with different statements referring to conflicting viewpoints about twelve controversial issues, and to measure values, she used the Portrait Values Questionnaire (PVQ, Schwartz et al., 2001). Kessels (2013) found that conformity values were associated with lower level of epistemological understanding among women and in the total sample consisting of both men and women. Further, power values were associated with lower levels of epistemological understanding among men.

Relatedly, the relationship between values and integrative complexity of thought has been examined in two previous studies (Tetlock, Peterson, & Berry, 1993; Myyry, 2002). Even though epistemological understanding and integrative complexity of thought are not identical constructs, they share enough similarities for making assumptions about the connections between values and epistemological understanding. These similarities are described below in terms of the Kuhn et al. (2000) model.

Integrative complexity of thought is defined in terms of two cognitive characteristics, differentiation and integration (Suedfeld, Tetlock, & Streufert, 1992; Tetlock et al., 1993). Differentiation refers to the number of different views that an individual is able and willing to perceive and take into account in assessing a certain issue. Differentiation is necessary but not sufficient for attaining integration, which refers to developing conceptual connections between differentiated views or dimensions. According to Tetlock et al. (1993), characteristic of those low in integrative complexity is denying ambiguity and thinking dichotomously. This can be seen as resembling the thinking of those at the absolutist level of epistemological understanding, who deny the possibility that there could be more than one correct conclusion

about the reality (Kuhn et al., 2000). Further, those on moderate levels of integrative complexity are able to recognise different views but without means to coordinate the views (Tetlock et al., 1993). Similarly, those at the multiplist level of epistemological understanding acknowledge that differing views about the same issue can exist, but are unable to see any criteria that could be used to compare these views (Kuhn et al., 2000). Finally, those high in integrative complexity are capable of accepting different interpretations, and try to understand their origins and to deal with their consequences (Tetlock et al., 1993). Likewise, those at the evaluativist level of epistemological understanding think that there can be alternative valid views about an issue and that these views can be evaluated according to the evidence and arguments presented to support the views (Kuhn et al., 2000).

Tetlock et al. (1993) studied the correlates of integrative complexity by assessing 131 MBA (master of business administration) students from the University of California. Integrative complexity of thought was measured by analysing stories that the respondents constructed on the basis of six different pictures. Tetlock et al. found that complexity of thought was positively related to openness and creativity and negatively related to social compliance and conscientiousness. Further, integrative complexity was positively related to power motivation and negatively related to orderliness, responsibility and sensitivity to others. According to Myyry (2002) these findings can be seen in the context of the Schwartz value model. Creativity fits into the openness to change dimension, whereas social compliance matches the conservation dimension. Further, power motivation is part of the self-enhancement dimension, whereas responsibility and sensitivity to others belong to the self-transcendence dimension.

In her study of 126 Finnish university students, Myyry (2002) measured integrative complexity by analysing the participants' responses to six different value conflict issues. She measured values using the Schwarz Value Survey (Schwartz, 1992). Contrary to her

expectations, Myyry (2002) found that self-transcendence values correlated positively and self-enhancement values negatively with integrative complexity. Surprisingly, openness to change and conservation did not correlate significantly with the total score of integrative complexity, but these values had significant correlations with a few particular issues.

Further, values have been found to connect to another cognitive-developmental construct, namely, moral judgement development as defined in Kohlberg's (e.g. 1984) theory as a sequence of stages from pre-conventional to post-conventional thinking. According to Rest, Narvaez, Bebeau, and Thoma (1999), this development can be described with regard to acquiring schemas, of which the post-conventional schema (PCS) represents the highest level of thinking that is characterised by seeing moral obligations to be based on shared reciprocal ideals that are open to discussion and evaluation. PCS resembles thinking at the evaluativist level of epistemological understanding in its seeing moral obligations as open to argumentation and scrutiny.

Generally, reviews of research on the connections between values and moral judgement development (as measured in Kohlbergian terms) demonstrate that universalism values have the most consistent positive associations with moral judgement development, followed by benevolence and self-direction, and that conformity and security have the most consistent negative associations (Helkama et al., 2003; Myyry, Juujärvi, & Pessa, 2010). Further, as regards Rest's schemas, Myyry et al. (2010) found that power, achievement, and hedonism correlated significantly negatively with PCS, whereas universalism, benevolence, and self-direction correlated significantly positively with PCS. However, only achievement, universalism and self-direction were significant predictors of PCS after controlling for the effects of gender, age, empathic concern and perspective taking (Myyry et al., 2010). In addition, Lan, Gowing, McMahon, Rieger, and King (2008) found that tradition predicted PCS negatively. The results of the above-mentioned studies are presented below in relation to

the Schwartz (1992) value dimensions.

Self-transcendence. Tetlock et al. (1993) found that integrative complexity was negatively connected to responsibility and sensitivity to others (compatible with self-transcendence values), whereas Myyry (2002) found a positive connection between complexity and benevolence and universalism value types, as well as self-transcendence value dimension. Consistent with the latter findings, universalism and benevolence have been found to relate positively to moral judgement development (see reviews in Helkama et al., 2003; Myyry et al., 2010) and to PCS (Myyry et al., 2010). Therefore, it is hypothesised that self-transcendence values will be positively associated with evaluativist epistemological understanding (H3).

Self-enhancement. Kessels (2013) found a negative association between power values and evaluativist epistemological understanding (but only among men). However, integrative complexity was positively related to power motivation (self-enhancement) in Tetlock et al.'s (1993) study and negatively related to power and hedonism value types and self-enhancement value dimension in Myyry's (2002) study. Moreover, Myyry et al. (2010) found that power, achievement and hedonism value types were negatively connected to PCS. Thus, it is hypothesised that self-enhancement values will be negatively associated with evaluativist epistemological understanding (H4).

Openness to change. Tetlock et al. (1993) observed that integrative complexity was positively connected to creativity (openness to change), whereas Myyry (2002) found a negative connection between complexity and stimulation value type and openness to change value dimension. Further, self-direction value type was found to associate positively with moral judgement development (see reviews in Helkama et al., 2003; Myyry et al., 2010) and to PCS (Myyry et al., 2010). Based on this, it is hypothesised that openness to change values will be positively connected to evaluativist epistemological understanding (H5)

Conservation. In Kessels' (2013) study, conformity values were negatively associated with evaluativist epistemological understanding. Tetlock et al. (1993) also found a negative connection between integrative complexity and social compliance (conservation), and Myyry (2002) found a negative connection between complexity and tradition value type. However, the correlation between complexity and conformity value type was positive in Myyry's (2002) study. Further, she found that conservation value dimension was negatively related to one issue and positively to another issue measuring integrative complexity. Additionally, moral judgement development has been found to have negative associations with conformity and security (see reviews in Helkama et al., 2003; Myyry et al., 2010), and tradition has been found to connect negatively to PCS (Lan et al., 2008). Therefore, it is hypothesised that conservation values will be negatively associated with evaluativist epistemological understanding (H6).

Rational and non-rational truth. To the author's knowledge, the connection between truth-related values and epistemological understanding, complexity of thought or moral judgement development has not been studied previously. However, as rational truth values motivate the pursuit of theoretical, logical and predictable truth, they seem compatible with the evaluativist epistemology. In contrast, non-rational truth values seem incompatible with the evaluativist epistemology as they are related to the denial of rationality. Accordingly, it is hypothesised that rational truth will be positively (H7) and non-rational truth negatively associated with evaluativist epistemological understanding (H8).

Method

The respondents were 75 parish staff and other workers. There were 49 females and 23 males (two respondents did not indicate their gender), ranging in age from 23 to 63, with a mean age of 44 ($SD = 11.4$) (three respondents did not indicate their age). Further, one respondent had not responded seriously, and was thus excluded from the analyses.

The data was gathered in 2005 using mainly an online questionnaire (some participants chose to fill in the paper-and-pencil version of the questionnaire). An e-mail was sent to all parish staff and other workers ($n = 361$) in a particular area in South Finland. The e-mail included a description of the objective of the study and a request to participate. The participants were told that the study was about their stance towards different ways of thinking and action. The response rate was 21 %.

The questionnaire consisted of three parts of which the first measured epistemological understanding and the second measured values. The third part consisted of demographic questions.

Values

Values were measured using the 40-item Portrait Values Questionnaire (PVQ) (Schwartz, Lehmann, & Roccas, 1999; Schwartz et al., 2001). To measure truth-related values, six items developed by Wach and Hammer (2003) were also included in the questionnaire. In each PVQ item a person is described with two sentences that are compatible with one value type. For example, the following item describes a person who values self-direction: “(S)he thinks it’s important to be interested in things. (S)he is curious and tries to understand everything.” The participants are asked to assess “How much like you is this person?” by checking one of six options ranging from “not like me at all” to “very much like me”. By emphasising what is important to a person the items describe a person’s values and not her or his behaviour or traits (Schwartz et al., 1999; Schwartz et al., 2001). A Finnish version of the PVQ (Koivula & Verkasalo, 2006) was used in this study. The items developed by Wach and Hammer were translated from French to Finnish using back translation procedure. An example of an item measuring rational truth is “It is important to her/him to find out the causes of things. (S)he likes to think logically and to appeal to reason.” An example of an item describing non-rational truth is “(S)he believes that most of the things

that take place in life have a hidden meaning. (S)he thinks that nothing happens by chance” (approximate translations).

A summated scale was computed for each value type. Centralised summated scales were used in order to follow Schwartz’s (1992) recommendation to control for participants’ different use of the response scale. The Cronbach alphas for the value types were: benevolence $\alpha = .79$, universalism $\alpha = .83$, self-direction $\alpha = .62$, stimulation $\alpha = .72$, hedonism $\alpha = .83$, achievement $\alpha = .76$, power $\alpha = .54$, security $\alpha = .72$, conformity $\alpha = .68$, tradition $\alpha = .18$, non-rational truth $\alpha = .30$ and rational truth $\alpha = .75$. Also other researchers have reported low alpha coefficients for some of the values types (Sagiv & Schwartz, 1995; Myyry, 2002). The alphas for the main dimensions (formed by calculating a mean of the value types belonging to each main dimension) were: conservation $\alpha = .73$, self-transcendence $\alpha = .89$, openness to change $\alpha = .82$, self-enhancement $\alpha = .81$ (including hedonism).

Epistemological understanding

Epistemological understanding was measured using Kuhn et al.’s (2000) assessment instrument of epistemological understanding. The instrument is meant to assess the respondent’s level of epistemological understanding in each five domains. Due to its simplicity it gives only a rough estimation of this level. The instrument comprises 15 items (three for each domain). Each item presents two contradictory statements from a particular domain, for example, “Robin believes one book’s explanation of what the atoms are made up of. Chris believes another book’s explanation of what the atoms are made up of.” The respondent is asked to choose one of the following two options: “only one of the views can be right” or “both could have some rightness”. Response that only one view can be right indicates the absolutist level. If the respondent chooses the second option, s/he is asked whether one of the views could be more right than the other. Choosing the response option

“one could not be more right” indicates the multiplist level, whereas a response that “one could be more right” indicates the evaluativist level.

The items of the Kuhn et al. (2000) instrument were translated from English to Finnish using back translation procedure. The respondents were assigned to the levels of epistemological understanding according to the Kuhn et al. (2000) procedure: a respondent was assigned to a particular level when at least two out of three responses in a particular domain represented that level. If all three responses represented a different level, the respondent was assigned to the middle, multiplist level. There were 14 participants who had not followed the instructions when responding to some of the questions. The domains with invalid responses were excluded from the analysis, because it was not possible to assign the epistemological level. Therefore the number of participants varies across the judgement domains.

In order to calculate the Cronbach's alphas in each judgement domain, the levels of epistemological understanding were given values of 1, 2, and 3 for absolutism, multiplism and evaluativism, respectively. The Cronbach's alphas in each judgement domain were: personal taste $\alpha = .54$, aesthetics $\alpha = .65$, values $\alpha = .28$, social truth $\alpha = .68$ and physical truth $\alpha = .64$.

Statistical analyses

Pearson correlations were used to analyse the location of rational truth and non-rational truth in the value structure and point-biserial correlations were used to analyse the relationship between values and epistemological understanding. For the purposes of the latter analysis, the personal epistemology variables were recoded into two groups, the evaluativist (scored as 1) and the non-evaluativist (scored as 0). The latter group included both absolutists and multiplists because of the low number of the former in most domains of epistemological understanding.

Results

Values

The means and the hierarchy for the 12 value types are presented in Table 2. The means were compared using paired t-tests. When the means of two value types did not differ statistically significantly from each other, they were given a shared rank, for example value types rational truth, benevolence and self-direction share ranks 2–4. As can be seen in Table 2, universalism values were the most important and power values the least important for the respondents. Of the truth-related values, rational truth was among the four highest ranked values, whereas non-rational truth was among the lowest ranked values.

Table 2

Value hierarchy and descriptive statistics of the 12 value types

Value type	Rank in hierarchy	<i>n</i>	Centralised mean	<i>SD</i>	Min	Max
Universalism	1	71	1.25	0.17	0.57	1.54
Rational truth		72	1.20	0.17	0.78	1.53
Benevolence	2–4	71	1.17	0.16	0.65	1.47
Self-direction		71	1.15	0.13	0.87	1.50
Security		72	1.05	0.18	0.59	1.50
Conformity	5–7	72	0.99	0.20	0.53	1.47
Hedonism		72	0.99	0.25	0.25	1.57
Stimulation		71	0.87	0.21	0.41	1.48
Tradition	8–9	70	0.87	0.16	0.46	1.47
Achievement	10	72	0.78	0.21	0.31	1.30
Non-rational truth	11	71	0.73	0.18	0.35	1.28
Power	12	72	0.68	0.22	0.33	1.22

The value structure and the location of the truth-related values was explored using Pearson correlations (see Table 3). In line with the assumptions of the Schwartz (1992) model, the correlations between openness to change and conformity values were negative, as were the correlations between self-transcendence and self-enhancement values. Not all of these correlations were statistically significant, but pointed, however, into the assumed

directions.

Rational truth had the strongest positive correlation with self-direction and the second strongest positive, though statistically nonsignificant, correlation with universalism. These results indicate that rational truth was located between self-direction and universalism, as hypothesised (H1). Non-rational truth did not have statistically significant positive correlations with any values and its strongest positive (nonsignificant) correlations were with stimulation and tradition. Therefore, the hypothesised location (H2) of non-rational truth between security and power was not supported. Finally, as suggested by Wach and Hammer (2003), rational truth and non-rational truth were in opposition to each other as indicated by the negative correlation between these values.

Table 3

Pearson correlations between the 12 value types

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Benevolence											
2. Universalism	.44**										
3. Self-direction	-.06	-.04									
4. Stimulation	-.12	-.21	-.05								
5. Hedonism	-.24	-.21	-.11	.48**							
6. Achievement	-.44**	-.65**	.12	.01	-.04						
7. Power	-.48**	-.61**	.19	.09	.01	.58**					
8. Security	-.13	.01	-.25*	-.49**	-.20	-.06	-.23*				
9. Conformity	-.08	-.08	-.32**	-.30**	-.34**	-.13	-.07	.22			
10. Tradition	.08	-.09	-.26*	-.10	-.09	-.08	-.17	-.04	.12		
11. Non-rational truth	-.01	-.04	-.12	.12	.07	-.11	.04	-.26*	-.17	.09	
12. Rational truth	.07	.18	.31*	-.13	-.23	-.03	-.05	-.07	-.21	-.35**	-.34**

Note. Pairwise tests, the number of cases varies from 69 to 72

* $p < .05$. ** $p < .01$. Two-way tests.

Epistemological understanding

The percentages of participants in each level of epistemological understanding across the judgement domains are presented in Table 4. According to the percentages, multiplist thought was the most prevalent in the domains of taste, aesthetics and values, whereas evaluativism was the dominant level in the truth domains. The percentage of the absolutists was relatively low in all domains.

Table 4

Percentages of epistemological levels in each judgement domain

Judgement domains	Absolutist	Multiplist	Evaluativist	<i>n</i>
Taste	3	75	22	67
Aesthetic	2	85	13	68
Value	15	50	35	68
Social truth	0	26	74	69
Physical truth	23	33	44	66

Values and epistemological understanding

The results of the point-biserial correlation analyses are presented in Table 5 following the order of the hypotheses. The *self-transcendence* value dimension did not statistically significantly correlate with epistemological understanding and neither did the benevolence and universalism value types, which form the self-transcendence dimension (H3). The *self-enhancement* dimension correlated significantly positively with the evaluativist level in the domain of social truth judgements as did the value types achievement and power, whereas hedonism did not correlate significantly in any domain (H4). The *openness to change* dimension correlated significantly positively with the evaluativist level in the domain of values. Of the value types forming this dimension, self-direction correlated significantly positively with evaluativist epistemology in the domains of values and social and physical truth, whereas stimulation did not correlate significantly with epistemological understanding

(H5). All *conservation* values correlated statistically significantly negatively with the evaluativist level of epistemological understanding in one or more domains. Conformity did so in the domains of personal taste, aesthetics, and social and physical truth; security in the domain of physical truth; and tradition in the domain of values. The conservation dimension correlated negatively with the evaluativist level in the domains of values, and social and physical truth (H6). Rational truth and non-rational truth values did not correlate statistically significantly with epistemological understanding (H7 and H8).

Table 5

Point-biserial correlations between values and evaluativist epistemology

	Taste	Aesthetic	Value	Social truth	Physical truth
Values types					
Benevolence	-.09	.07	.15	-.13	.11
Universalism	.04	.03	.18	-.18	.01
Self-direction	.24	.22	.26*	.25*	.39**
Stimulation	-.00	-.03	.09	.05	.01
Hedonism	.13	.02	.12	.12	.05
Achievement	.04	.00	-.12	.25*	.07
Power	.01	.02	-.10	.27*	-.02
Security	-.03	-.03	-.10	-.24	-.31*
Conformity	-.26*	-.28*	-.16	-.29*	-.29*
Tradition	-.16	-.09	-.32**	.03	.14
Non-rational truth	.00	.10	-.09	-.06	.02
Rational truth	.21	.13	.06	.16	.14
Value dimensions					
Self-transcendence	-.03	.06	.20	-.17	.06
Openness to change	.16	.15	.25*	.17	.21
Self-enhancement	.03	.01	-.13	.29*	.03
Conservation	-.23	-.20	-.25*	-.26*	-.28*

Note. Pairwise tests, the number of cases varies from 63 to 67.

* $p < .05$. ** $p < .01$. Two-way tests.

Discussion

The main goal of this study has been to understand the role of different values in the development of epistemological understanding. Together with the results from previous integrative complexity and moral judgement development studies, the present study gives insights about the relationships between values and the development of thought also in a more general level.

As regards self-transcendence, previous studies (Myyry, 2002; Tetlock et al., 1993) have yielded contradictory results about its associations with integrative complexity. However, when taking into account also the results of several moral judgement development studies (see Helkama et al., 2003; Myyry et al., 2010), it seems that self-transcendence values are more consistently positively than negatively related to the more developed forms of thinking, and therefore, a positive association was expected also in the present study. However, it was found that self-transcendence values were not statistically significantly associated with epistemological understanding.

Unexpectedly, self-enhancement was found to be positively associated with evaluativist epistemology, but only in the domain of social truth. More specifically, power values were positively associated with epistemological understanding, which is in line with Tetlock et al.'s (1993) results concerning integrative complexity, but contradicts those of Kessels' (2013) study on epistemological understanding, Myyry's (2002) study on integrative complexity and Myyry et al.'s (2010) study on moral schemas. Achievement values were connected to a more developed level of epistemological understanding in the present study, whereas in previous studies achievement was not associated with the development of thinking (Tetlock et al., 1993; Myyry, 2002) or was negatively associated (Myyry et al., 2010). Taken together, these results might lead us to suggest that self-transcendence and self-enhancement values connect to the development of thinking only in particular contexts, domains of

knowledge or areas of development of thinking.

How could we interpret the finding that endorsing self-enhancement was related to evaluativist epistemology only in the social truth domain? Maybe evaluativist thinking in the domain of social truth could help attaining power and achievement in social world, in which these values are likely to be pursued. An individual striving for these values might also be more motivated in thinking about the nature of social knowledge, which could lead to having more developed epistemological understanding in this domain.

In line with what was hypothesised, the openness to change main dimension and self-direction values were found to associate positively with evaluativist epistemology. Congruent with this, Tetlock et al. (1993) found that values compatible with openness to change were positively connected to the complexity of thought. Self-direction and moral judgement development have also been found to be positively connected (see reviews in Helkama et al., 2003; Myyry et al., 2010) as have self-direction and PCS (Myyry et al., 2010). On the contrary, in Myyry's (2002) study the openness to change dimension was negatively associated with the complexity of thought, as was stimulation, whereas in the present study stimulation was not connected to epistemological understanding. Due to these inconsistent findings, no straightforward conclusions about the openness to change values can be made. However, it seems that self-direction is quite consistently connected to more developed thinking, whereas stimulation either connects to less developed thinking or is unconnected to levels of thinking.

The findings were the most consistent for the conservation values, of which all (conformity, security, and tradition) correlated negatively with evaluativist epistemology, as expected. Also Kessels (2013) found a negative association between conformity values and evaluativist epistemological understanding. Further, in the Tetlock et al. (1993) study those higher on social compliance (compatible with conservation values) were lower on integrative

complexity and in Myyry (2002)'s study tradition values were negatively associated with the complexity of thought, as was the conservation main dimension. However, in Myyry's (2002) study the conservation dimension had also a positive connection to complexity as did the conformity value type. As regards moral judgement development, conformity and security have been found to associate negatively to moral judgement development (see reviews in Helkama et al., 2003; Myyry et al., 2010), and also a negative association has been found between tradition and PCS (Lan et al., 2008). Thus, generally, conservation values seem to connect to less developed thinking quite consistently.

To sum up, value dimension openness to change–conservation was found to be associated with epistemological understanding more consistently than the self-enhancement–self-transcendence dimension. However, because of the cross-sectional design of this study it is not possible to make firm conclusions about the direction of causality, i.e. whether the direction actually is from values to epistemological understanding or vice versa. Future studies should address this question by using longitudinal designs.

Surprisingly, the truth-related value types, rational and non-rational truth, were not statistically significantly associated with epistemological understanding. It is possible that these correlations did not reach statistical significance because of the small sample size, but it is equally possible that truth-related values simply are not connected to epistemological understanding. As regards rational truth, the former interpretation may be more plausible considering that the associations of rational truth were consistently positive (as hypothesised) across the judgement domains of epistemological understanding, though statistically nonsignificant. The reliability for non-rational truth was quite low ($\alpha = .30$), and therefore future studies may consider reformulating at least some of these items.

Further, because of the small sample size, taking into account the effects of background variables was not possible. Therefore, it would be advisable to use larger samples in future

studies to further elaborate the role of different values for individuals' epistemological understanding. It would also be worthwhile to investigate the associations of values with different components of epistemological understanding, such as trust in different sources of knowledge and justification for knowing.

References

- Bardi, A., & Schwartz, S. H. (2003). Values and behavior: Strength and structure of relations. *Personality and Social Psychology Bulletin, 29*, 1207–1220.
- Helkama, K., Uutela, A., Pohjanheimo, E., Salminen, S., Koponen, A., & Rantanen-Väntsi, L. (2003). Moral reasoning and values in medical school: a longitudinal study in Finland. *Scandinavian Journal of Educational Research, 47*, 399–411.
- Hofer, B. K. (2004). Epistemological understanding as a metacognitive process: Thinking aloud during online searching. *Educational Psychologist, 39*, 43–55.
- Hofer, B. K., & Pintrich, P. R. (1997). The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of Educational Research, 67*, 88–140.
- Kessels, U. (2013). How epistemological beliefs relate to values and gender orientation. *Learning and Individual Differences, 23*, 256–261.
- Kohlberg, L. (1984). *The psychology of moral development*. San Francisco: Harper & Row.
- Koivula, N., & Verkasalo, M. (2006). Value structure among students and steelworkers. *Journal of Applied Social Psychology, 36*, 1263–1273.
- Krettenauer, T. (2005). Die Erfassung des Entwicklungsniveaus epistemologischer Überzeugungen und das Problem der Übertragbarkeit von Interviewverfahren in standardisierte Fragebogenmethoden. *Zeitschrift für Entwicklungspsychologie und*

Pädagogische Psychologie, 37, 69–79.

- Kuhn, D., Cheney, R., & Weinstock, M. (2000). The development of epistemological understanding. *Cognitive Development*, 15, 309–328.
- Kuhn, D., & Weinstock, M. (2002). What is epistemological thinking and why does it matter? In B. Hofer & P. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 121–144). Mahwah, NJ: Lawrence Erlbaum.
- Lan, G., Gowing, M., McMahon, S., Rieger, F., & King, N. (2008). A study of the relationship between personal values and moral reasoning of undergraduate business students. *Journal of Business Ethics*, 78, 121–139.
- Mason, L. Boldrin, A., & Zurlo, G. (2006). Epistemological understanding in different judgment domains: Relationships with gender, grade level, and curriculum. *International Journal of Educational Research*, 45, 43–56.
- Myyry, L. (2002). Everyday value conflicts and integrative complexity of thought. *Scandinavian Journal of Psychology*, 5, 385–395.
- Myyry, L., Juujärvi, S., & Pessa, K. (2010). Empathy, perspective taking and personal values as predictors of moral schemas. *Journal of Moral Education*, 39, 213–233.
- Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. New York: Holt, Rinehart and Winston.
- Pintrich, P. R. (2002). Future challenges and directions for theory and research on personal epistemology. In B. K. Hofer & P. R. Pintrich (Eds.), *Personal epistemology: The psychology of beliefs about knowledge and knowing* (pp. 389–414). Mahwah, NJ: Lawrence Erlbaum.
- Rest, J., Narvaez, D., Bebeau, M., & Thoma, S. (1999). A neo-Kohlbergian approach: The DIT and schema theory. *Educational Psychology Review*, 11, 291–324.
- Rohan, M. J. (2000). A rose by any name? The values construct. *Personality and Social*

Psychology Review, 4, 255–277.

- Sagiv, L., & Schwartz, S. H. (1995). Value priorities and readiness for out-group social contact. *Journal of Personality and Social Psychology*, 69, 437–448.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (pp. 1–65, Vol. 25). San Diego: Academic Press.
- Schwartz, S. H. (2012). An overview of the Schwartz theory of basic values. *Online Readings in Psychology and Culture*, 2(1). <http://dx.doi.org/10.9707/2307-0919.1116>
- Schwartz, S. H., & Bardi, A. (2001). Value hierarchies across cultures: Taking a similarities perspective. *Journal of Cross-Cultural Psychology*, 32, 268–290.
- Schwartz, S. H., Lehmann, A., & Roccas, S. (1999). Multimethod probes of basic human values. In J. Adamopoulos & Y. Kashima (Eds.) *Social psychology and culture context: Essays in honor of Harry C. Triandis* (pp. 107–123). Newbury Park, CA: Sage.
- Schwartz, S. H., Melech, G., Lehmann, A., Burgess, S., Harris, M., & Owens, V. (2001). Extending the cross-cultural validity of the theory of basic human values with a different method of measurement. *Journal of Cross-Cultural Psychology*, 32, 519–542.
- Steinmetz, H., Isidor, R., & Baeuerle, N. (2012). Testing the circular structure of human values: A meta-analytical structural equation modelling approach. *Survey Research Methods*, 6, 61–75.
- Suedfeld, P., Tetlock, P. E., & Streufert, S. (1992). Conceptual/integrative complexity. In C. P. Smith (Ed.), *Motivation and personality: Handbook of thematic content analysis* (pp. 393–400). New York: Cambridge University Press.
- Tetlock, P. E., Peterson, R. S., & Berry, J. M. (1993). Flattering and unflattering personality portraits of integratively simple and complex managers. *Journal of Personality and Social Psychology*, 64, 500–511.

- Wach, M., & Hammer, B. (2003). *La structure des valeurs est-elle universelle? Genèse et validation du modèle compréhensif de Schwartz*. Paris: L'Harmattan.
- Wang, X., Zhou, J., & Shen, J. (2014). Personal epistemology across different judgement domains: effects of grade level and school curriculum. *Educational Psychology*. Advance online publication. <http://dx.doi.org/10.1080/01443410.2014.915932>
- Weinstock, M. P., Neuman, Y., & Glassner, A. (2006). Identification of informal reasoning fallacies as a function of epistemological level, grade level, and cognitive ability. *Journal of Educational Psychology*, 89, 327–341.
- Weinstock, M., & Zviling-Beiser, H. (2009). Separating academic and social experience as potential factors in epistemological development. *Learning and Instruction*, 19, 287–298.