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Measurement and Evaluation in Counseling and Development 2011 44: 16
DOI: 10.1177/0748175610391607

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Measurement and Evaluation in
Counseling and Development
44(1) 16–31

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DOI: 10.1177/0748175610391607

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Abstract

This study applies a multidimensional scaling (MSD) technique to investigate the structural validity of the Work Values Inventory for Adolescents with a sample of Italian students. The MSD results indicated the presence of two underlying orthogonal dimensions: individuality versus sociality and conservation versus exploration. Implications for future research are also discussed.

Keywords

values, assessment in career counseling, career counseling, counseling, scaling, scales, measurement

The Schwartz Value Theory

Shalom Schwartz Value Theory (Schwartz, 1992; Schwartz & Bardi, 2001), based on Rokeach's (1973) studies, is an approach conceptualizing values on a more general level, grounded on research from social and cross-cultural psychology (Fries, Schmid, Dietz, & Hofer, 2005). Schwartz claims that values are based on universal requirements for human existence (Bardi & Schwartz, 2003, p. 1208). Schwartz's theory was tested using more than 2000 samples from more than 60 countries (Schwartz & Bardi, 2001) and was recognized within and across cultures (Schwartz & Boehnke, 2004), with specific structural deviations depending on the population and the influence of cultural context (Fontaine, Portinga, Delbeke, & Schwartz, 2008).

Values can be considered as socially approved cognitive representations of basic motivations and an integrative concept, which describe and explain these basic aspects of motivations

(Fries et al., 2005; Hitlin & Piliavin, 2004; Knafo & Schwartz, 2004; Sagiv, 2002; Schwartz & Bilsky, 1990). The crucial aspect that distinguishes values is the type of motivational goal they express (Sagiv & Schwartz, 1995; Schwartz, 1992; Schwartz & Bilsky, 1990; Rohan, 2000). For example, *security* values were derived from the security motivation of organisms and groups to protect themselves against threats to their integrity, whereas *conformity* values were derived from the prerequisite of smooth interaction and group survival, whereby individuals restrain impulses and inhibit actions that might hurt others (Schwartz & Bilsky, 1990).

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Table 1. Definitions of Types of Values

Bardi and Schwartz's (2003) Values System

1. Power: Social status and prestige, control, or dominance over people
2. Achievement: Personal success through demonstrating competence
3. Hedonism: Pleasure and sensuous gratification for oneself
4. Stimulation: Excitement, novelty, and challenge
5. Self-direction: Independent thought and action-choosing
6. Universalism: Understanding, appreciation, tolerance
7. Benevolence: Preservation and enhancement of the welfare of people
8. Tradition: Respect and acceptance of the customs and ideas that traditional culture or religion provides to the individual
9. Conformity: Restraint of actions, inclinations likely to upset or harm others and violate social expectations or norms
10. Security: Safety, harmony, and stability of society, of relationships, and of self

Note. Adapted from Bardi and Schwartz (2003).

The most important feature of Schwartz's theory is the structure of dynamic relations among values: "Actions expressive of any value have practical psychological and social consequence that may conflict or be compatible with the pursuit of other values" (Schwartz & Boehnke, 2004, p. 231). Multidimensional scaling (MDS) was the main method used by Schwartz to test the structure of values (e.g., Bardi & Schwartz, 2003). The strength of association between variables was explored by observing the plot of relations among variables, where correlation is inversely related to Euclidean distance between variables.

The resulting overall structure of the relationship between values can be represented in a quasicircumplex structure, which shows the pattern of conflict or compatibility among values with two bipolar motivational dimensions that intersect each other. One dimension opposes *openness to change versus conservation*; the other opposes *self-enhancement versus self-transcendence* (Sagiv & Schwartz, 1995). These two motivational dimensions can be understood in terms of two fundamental problems that need to be solved (Rohan, 2000). The *self-enhancement versus self-transcendence* dimension is related to the conflict between concern for the consequences of one's and others' actions on the self and that for the consequences on others. The dimension *openness to change versus conservation* is related to the

conflict between being motivated to follow one's own intellectual and emotional interests and to preserve the status quo and certainty. Within these two dimensions, 10 categories of values can be identified (see Table 1).

According to Locke (2003), people envisage relations among individuals in terms of two broad dimensions: solidarity and communion (communal values) and status and power (agentic values). According to Horowitz et al. (2006), these dimensions can also be called *affiliation*, which ranges from hostile to friendly behavior (communal values), and *dominance*, which ranges from submissive to dominating behavior (agentic values).

An Evolutionary Approach to Values

According to Schwartz (1996), people's value priorities are viewed in terms of survival in the social environment, as responses to three universal requirements of human existence: satisfying biological needs, allowing social interaction and ensuring group survival, and organization. The evolutionary theory offers an analysis of values considered as universal and selected by evolution because they are functional to the survival of the species or individuals (Bowlby, 1969; Gilbert, 1989; Heard & Lake, 1997; Horne, 2004; Liotti, 1994; Sober & Wilson, 1998; Tomasello, 2008; Van Vugt, Hogan, & Kaiser, 2008).

The varying level of importance attributed to values in various societies over time could be part of a greater process of cultural mediation. Tomasello (2008) argues about a double identity within human development, considering values as the product of a biological motivational heritage and of a cultural-cognitive one, following the same pattern as that of other cognitions. Human cultural groups might have created unique social mechanisms to preserve and foster biological motivations (Horne, 2004; Warneken & Tomasello, 2007), for example, leading and cooperative strategies would evolve to solve social coordination problems (Van Vugt et al., 2008).

According to Hogan and Roberts (2000) and Horowitz et al. (2006), *communion* and *agency* motives constitute fundamental dimensions of meaning that reflect these two principal evolutionary challenges of social adaptation. Communion motives include sociability and belonging, agency motives include autonomy, achievement, and control. Of course, agentic motives may conflict with communal motives.

According to attachment theorists, infant's attachment system is an early manifestation of communion or social motives that increases the child's chances of survival (Horowitz et al., 2006). When an infant has obtained the availability of a caregiver (the goal of the attachment system), it can autonomously explore the environment (Bowlby, 1969) according to agency motives. In the framework of the attachment theory, Schwartz dimensions (a) *self-enhancement versus self-transcendence* express the range of attachment motives (social vs. individual motives) and (b) *openness to change versus conservation* express exploration motives (exploration vs. stability and security motives).

Social motives comprehend *attachment* systems and reciprocal *caregiving*, related, the former to the *affiliation* to the group or to the *need to belong* (Baumeister & Leary, 1995; Heard & Lake, 1997), the latter to all *helping* behaviors (Warneken & Tomasello, 2007). Social motives comprehend also the *cooperation*, present in all the activities based on the formation of a shared goal, in which it is possible to trace back the genesis to the joint attention

since the first year of life (Liotti, 1994; Tomasello, 2008; Warneken & Tomasello, 2007). Individual motives are related to the competition for high ranks and to dominate others. Agonistic motives regulate access to roles, privileges, and resources and are related to values of power and leadership (Gilbert, 2003; Liotti, 1994; Van Vugt et al., 2008).

Hence, a classification of values based on motivational contents may be designed as follows:

- a dimension of security versus exploration values (security and search for comfort vs. values of competence and knowledge, change and novelty)
- a dimension of sociality versus individuality (cooperation, prosociality, and belonging vs. individual values of power, leadership, success, and autonomy).

Values in Adolescence

The study of values acquires a particular importance in adolescence because it is closely related to self-concept and is implied in adolescents' choices (Kasser, 2002; Simpkins & Davis-Kean, 2005). Adolescent reflection on values represents a crucial aspect in identity formation processes (Erikson, 1968; Knafo & Schwartz, 2004; Laghi, D'Alessio, Pallini, & Baiocco, 2009; Sinislaio, 2004). The relative importance that adolescents place on each value type reflects their choices about what they are prepared to give up in exchange for something else (Rohan, 2000).

Values can be considered as cognitive structures (Rohan, 2000). For example, Allport (1961) defined them as "schemata of comprehensibility." According to Knafo and Schwartz (2004), values are abstract criteria useful to select and justify actions and to evaluate people and events—desirable goals that serve as guiding principles in people's lives. The changes in cognitive development in adolescence, what Piaget calls hypothetical deductive thinking (Darmody, 1991; Piaget, 1972/2008), enhance the reflection about values. Through the

second-order cognition ability—thinking about thinking—adolescents become able to manage their cognitive resources and, to a greater extent than children, attribute value to what they do (Kuhn, 2008). Thanks to this new ability of hypothetical deductive thinking, a new space of reflection and a new conceptual freedom from concrete experience have opened to adolescents. Thus, adolescents will have the possibility of considering not only several choice *opportunities* but also the *criteria* according to which they will be able to choose between opportunities, subordinating what is real to what is possible (Piaget, 1972/2008).

The definition of personal values is also implied in the adolescent pursuit of autonomy not in the sense of mere independence but as a perception that one's behavior can be an expression of oneself, one's own initiative, and one's values (Kasser, 2002). Therefore, autonomy implies taking responsibility for one's choices, which in turn presupposes the attribution of value to various experiences (Weiner, 1995).

Several authors have studied the structure of values in adolescence through different methodologies (Hofer & Peetsma, 2005; Knafo & Schwartz, 2004; Pallini, 2008; Schmid, Hofer, Dietz, Reinders, & Fries, 2005; Wach & Gosling, 2004). Some of them are specifically interested in how preference of values in adolescence may vary among and within Western countries (e.g., Hofer & Peetsma, 2005). Other studies have been conducted specifically on adolescent work values (Rottinghaus & Zytowski, 2006; Sinislaio, 2004).

According to Bardi and Schwartz (2003), values influence both choices and behaviors related to them. To pursue values that they see as important for themselves, people can behave in ways that express their values. For example, people pursue hedonistic values by engaging in pleasurable activities. One of most meaningful areas of behavioral choices about values is work. The tradition of studies about values in the vocational domain has examined values through their expression in activities and roles that individuals play in professional life (Sagiv, 2002; Super & Sverko, 1995) and how values are related to occupational choices (Holland, 1996). Meta-analyses have established that

values, personality traits, and vocational interests, which are all potential predictors of job choice and satisfaction, share common relations (Hirschi, 2008).

Regarding the relationship between personality traits and values, *Openness to experience* is related to more stimulation and self-direction; *Agreeableness* to less power and self-enhancement and more universalism and benevolence; *Extraversion* to more openness to change and self-enhancement values (Hirschi, 2008; Parks & Guay, 2009). Another relation that is worthy of study concerns the relation between values and interests, the latter being, according to Wach & Gosling (2004), more narrow and concrete concepts that are related to personal experience than values are. Sagiv (2002) found a relation between conventional interests versus security, conformity, and tradition; enterprising versus achievement and power; social versus benevolence; artistic versus universalism and self-direction; investigative versus universalism, and realistic versus stimulation.

Work-related values are expressions of more general life values (Sinislaio, 2004), but work values mainly refer to career choice issues, whereas basic values refer to people's lives in general. Of course, life values and work values have been found to be significantly related (Hyde & Weathington, 2006).

The main goal of this article is to apply the Schwartz model of life values to work values, thus describing a new measure of work values on adolescence in the evolutionary framework named *Work Values Inventory for Adolescents* (WVI-A). By doing so, we intend to observe the importance attributed by a group of adolescents to certain work values and to analyze the relationships and oppositions between work values, so as to discover both consistency and possible contradictions. The hope is that the results may offer new insights into work values research.

Method

Preliminary Stages

We constructed the instrument of interest (WVI-A) in a series of steps that include (a) defining the construct, (b) designing the

scale, (c) pilot testing of the scale, (d) administering the scale and purifying the measure, and (e) collecting evidence about construct validity.

The WVI-A is theoretically founded on Schwartz's perspective and on the reflections offered to us by evolutionary psychology. Starting from theoretical perspectives and research on this topic previously reviewed, we define work values as a multidimensional construct comprising six different values categories.

The first category, *conservation*, relate to security–stability and maintenance of a homeostatic equilibrium and physiological well-being, defined with the term *comfort*, which would be part of the Herzberg's (1966) "work hygiene" factors (Sinislaio, 2004); for example, "I want a job that would allow me to work in a comfortable environment."

The second category, *exploration*, consists of two subcategories—the search for change and novelty and the search for knowledge and competence (e.g., "I want a job that would allow me to experiment novelties").

The third category, *individuality*, encompasses values such as power and autonomy (e.g., "I want a job that would allow me to be important").

The fourth category, *sociability*, involves values of cooperation, prosociality, and belonging (e.g., "I want a job that would allow me to take care of others").

We consider also two other categories: *hedonistic* values (e.g., "I want a job that would allow me to live moments of excitement") and *self-actualization* (e.g., "I want a job that would allow me to say what I think").

A pool of 90 items was generated based on theoretically driven logic and past literature identifying a set of professional experiences, the preference level of which implies the importance of the corresponding values. To refine our definition of the construct before actually developing the items for the scale, we carried out interviews and discussions with some experts in the target field (university researchers and professors in developmental psychology and education). All items were subjected to the judgment of experts. A total of six university researchers were identified as experts

in career development and counseling. The experts were, on average, experienced in career guidance and counseling with a mean of 7 years in educational setting ($SD = 0.67$) and an average of 6.4 years in the Faculty of Psychology as researchers in career guidance ($SD = 1.33$). As in most prior studies (D'Alessio, Laghi, & Baiocco, 2009), we used a 5-point Likert-type scale, with response options from 1 = *very false* to 5 = *very true*. The experts were given the definition of the proposed construct and were asked to identify (a) the ambiguity in the wording of the items and (b) the incompatibility between an item and the dimension it was supposed to measure. The selection procedure, the first step in item reduction involved the exclusion of items that covered similar themes (10 items). A total of 80 items were selected and categorized into one of the six dimensions. Experts judged these remaining items from 1 (*least wrong*) to 5 (*most wrong*). The Kuder–Richardson coefficient of reliability of the judgment scores provided by the experts was .92, thus indicating sufficiently high level of agreement among them.

We administered the 80-item scale to a group of 17- to 19-year-old adolescents ($N = 100$) to further refine the item selection by eliminating items with redundancy and comprehension problems. During this phase, we carried out some interviews and discussions with adolescents and eliminated three items that showed conceptual ambiguity to at least 5% of adolescents. The remaining 77 items were then retained to assess six different motivational topics, each corresponding to a particular value (see the appendix).

Sample and Procedures

The sample consisted of 339 students, 66.1% of whom were girls and 33.9% were boys. High schools in Italy represent distinct educational and occupational fields and contain five grade levels. The sample included two groups of Italian students. In the first group, the students attended the last 2 years of commercial and teacher training in upper-secondary schools, with their age ranging from 17 to 19 years (18.2% males and 81.8% females). In the second group,

the students were enrolled in science-focused schools, with their age ranging from 17 to 19 years (44.6% males and 55.4% females).

Participation in the study was obtained through an informed consent procedure that required active consent from both students and parents. The questionnaires were administered in the classroom during a regular class period. The questionnaires took approximately 30 minutes to complete. Instructions stated that the questionnaires were voluntary and that responses were anonymous and confidential. All students responded to the same questionnaire packet. The measures were administered in counterbalanced order to each group of subjects.

Measures

Work Values Inventory for Adolescents. The WVI-A was used to assess work values. In its final version, the WVI-A has 77 items, on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*very much so*), that assess six different topics, each corresponding to a particular value: conservation, exploration, individuality, sociability, hedonistic values, and self-actualization.

Portrait Values Questionnaire. The Portrait Values Questionnaire (PVQ; Schwartz et al., 2001) is composed of 40 items designed to measure the 10 value dimensions, namely, self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence, and universalism. Participants had to respond to each item on a 6-point Likert-type scale ranging from 1 (*not like me*) to 6 (*very much like me*). The questionnaire was administered in two versions, one for female and one for male students. The versions were identical except for the words that indicated gender of the respondents. The internal consistency reliabilities, estimated by the Cronbach's coefficient alpha (α), were .60 for benevolence, .71 for universalism, .62 for self-direction, .73 for stimulation, .74 for hedonism, .76 for achievement, .70 for power, .69 for security, .74 for conformity, and .71 for tradition. Reliability and validity of the instrument in its Italian version have been shown to be satisfactory (Capanna, Vecchione, & Schwartz, 2005).

Data Analysis

The structure of relations among values was investigated by an MDS technique. MDS is a method for representing proximity measurements (similarities, correlations, etc.) between pairs of objects (units, variables, etc.) in a low-dimensional space (usually two or three dimensions). When proximities are correlations between items of a psychological test, the method can provide a graphical display in which items are represented as points that are closer the more positively the corresponding items are correlated. The graphical display of the correlations makes it easier to detect and analyze psychological structures in the data. This approach was already considered in previous analyses of values (e.g., Bardi & Schwartz, 2003; Elizur, Borg, Hunt, & Beck, 1991; Schwartz & Bilsky, 1990).

The purpose of the data analysis was to verify whether the structure of relations among values hypothesized by the questionnaire scales and subscales was consistent with the observed data matrices (validity assessment) and shared by both groups (stability assessment). Typically, this task is addressed by researchers via a two-step strategy. In the first step, value indexes are computed by averaging the ratings of the items that represent each value, and the correlation matrices among these indexes are analyzed separately for each group by MDS techniques to assess the scale validity. In the second step, a comparative analysis of the results across the groups is performed to assess stability (e.g., correlation or congruence coefficients).

In this study, we have preferred to adopt a one-step strategy by performing a joint analysis of the two (77×77) item-correlation matrices by a three-way MDS model named weighted Euclidean model (e.g., Borg & Groenen, 2005; Bove & Di Ciaccio, 1994; Bove & Rocci, 1997). The model approximates item correlations by distances in low-dimensional Euclidean spaces. A common configuration of points (e.g., a plane) representing item correlations is postulated and computed by the model. Then, for each matrix, a set of nonnegative dimension

coefficients (or weights) is provided, through which specific group configurations are obtained, stretching or shrinking each common dimension. When the model fits the data adequately and the dimension weights are similar across the groups, the assumption of a common structure of relations is met. In this case, as will be described in the next sections, a regional interpretation can be performed for the common configuration by following a facet theory approach (e.g., Shye & Elizur, 1994), and the MDS results allow to verify if scales and subscales classification is reflected in corresponding regions of the representation space.

The adopted one-step procedure allows to analyze scale validity and scale stability within the same model, controlling for both aspects with only one goodness-of-fit function (named *Stress-I*). The relationships of each item with all the scales (and subscales) are also considered to provide additional feedback for scale refinement. The analysis of group weights can point out cluster structures, eventually calling for separate analyses of different sets of groups. Different from two-way MDS models, the weighted Euclidean models are *rotationally unique*. This last property of the model encourages practitioners to *interpret dimensions*, adding further insights into data analysis. After using the weighted Euclidean model, value structure internal consistency reliability was estimated by computing Cronbach's alpha for each scale and subscale. Finally, Pearson correlation coefficients were calculated to assess the relationship between work values and life values, assessed by the Schwartz Portrait Values Questionnaire.

Results

Scale Analysis

The analysis of the two (77×77) item-correlation matrices by the weighted Euclidean model provided an adequate value of the goodness-of-fit function ($\text{Stress-I} = 0.26$), considered the large set of points. The dimension weights were very similar for the two groups (for the first two dimensions: 0.53 and 0.42

were the weights for commercial and teachers' training schools' students; 0.51 and 0.45 were the weights for science-focused schools' students, respectively).

These results allow us to adopt the common configuration provided by the model as a common structure of relation among values. The relationships between the 77 items defining the common structure are mapped on the plane depicted in Figure 1.

The interpersonal space is organized around two orthogonal dimensions and six regions identified by items having the same value scale labels. According to our hypothesis, it is possible to characterize as *bipolar* the two dimensions of the plane in Figure 1: the first is defined as *individuality versus sociality* and the second as *conservation versus exploration*.

The work values structure found is consistent with the proposed theoretical model, with the addition of two more topics: *hedonistic values* (as in Schwartz basic value classification) and *self-actualization*, in terms of identity and self-realization.

Four regions (C, E, I, S) are delimited by rays emanating from a common origin and cutting the plane into sectors (*circumplex* of regions) and two regions (A and H) are in a central position.

Keeping in mind that correlations are inversely proportional to distances, the diagram of Figure 1 supports the validity of our hypothesis about the six value scales. In fact, items are usually more highly correlated with items inside the same region than with items positioned outside, and each scale corresponds to one region only.

The opposite position of *individuality* and *sociality* horizontally, and of *conservation* and *exploration* vertically, confirms our expectations that individuals giving high scores to value items in one region tend to give low scores to items in the opposite region, and vice versa, similar to Schwartz's model of basic values.

The two central regions that were identified were named *self-actualization* (A) and *hedonism* (H), aspects that seem central to the adolescents. The central position of the items in regions A and H indicates that these items

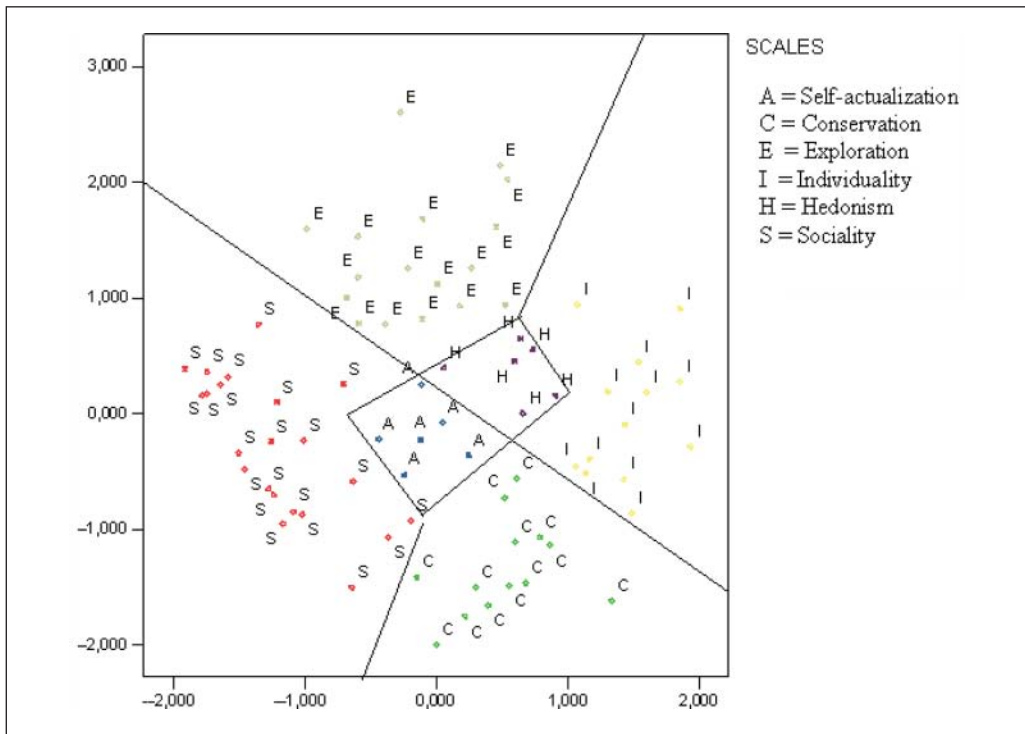


Figure 1. Regional partitioning of 77 work value items for the analysis of scale validity

are correlated with at least some of the items in every other region. This attributes a particular role to *self-actualization* and *hedonism*, which seems to share some aspects with all other values. The first region (A) is situated in close proximity to *conservation* (C), because it is related to a sense of self-continuity, whereas *hedonism* (H) borders with *exploration*.

Subscales Analysis and Reliability

Figure 2 shows that the *conservation* pole includes both items about *security* (CS) and *comfort* (CC). The opposite pole, *exploration*, comprehends the search for *novelty and change* (EN) and the search for *knowledge and competence* (EK). The pole of *individuality* comprises *power* (IP) and *autonomy* (IA), whereas the other pole is defined by values of *cooperation* (SC), *prosociality* (SP), and *belonging* (SB).

Cronbach’s alpha coefficients (Table 2) being higher than .8 in most of the cases indicate an

adequate internal consistency reliability for each scale and subscale.

Regarding the four regions, it was found that (a) within the region of *conservation*, *comfort* values are in close proximity to *individuality* values; (b) within the region of *exploration*, *change and novelty* borders with *autonomy*, whereas *competence and knowledge* borders with *cooperation*; (c) within the region of *individuality*, *autonomy* is close to *change and novelty*, whereas *power* is close to *comfort*; and (d) within the region of *sociality*, *cooperation* borders with *prosociality* and *belonging*, which are thus represented as compatible values, but *belonging* is close to *conservation*, whereas *cooperation* is close to the subregion of *knowledge and competence* (in the diagram, *cooperation* includes *prosociality*).

Opposite locations, which would imply negative correlations, can express conflicting values—the pursuit of *security–stability* opposes *change and novelty*, whereas the pursuit of

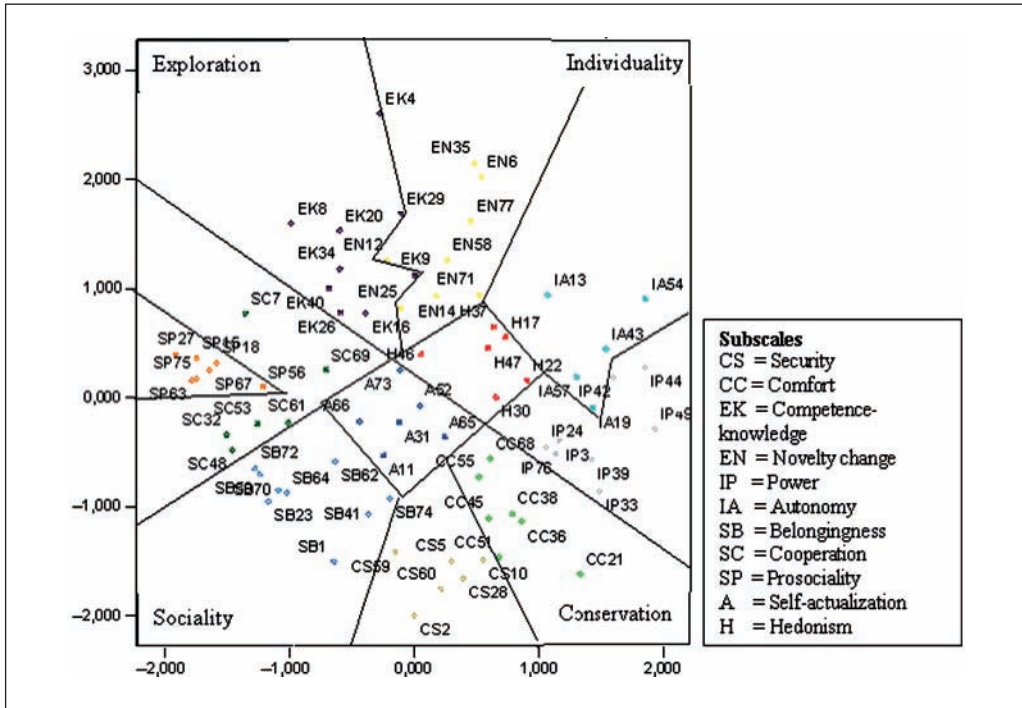


Figure 2. Regional partitioning of 77 work value items for the analysis of subscale validity

Table 2. Reliability Analysis of Value Scales and Subscales in the Two Groups of Students

	No. of Items	Cronbach's α	
		Group 1	Group 2
Scales			
Self-actualization	6	.77	.70
Conservation	13	.88	.85
Exploration	17	.86	.86
Hedonism	6	.87	.82
Individuality	13	.88	.87
Sociality	22	.84	.92
Subscales			
Security	7	.81	.76
Comfort	6	.72	.75
Competence and knowledge	9	.80	.82
Novelty and change	8	.80	.76
Hedonism	6	.87	.82
Autonomy	5	.68	.71
Power	8	.86	.86
Belongingness	9	.84	.86
Cooperation	6	.78	.77
Prosociality	7	.61	.92

Note. Group 1 = Commercial and teachers' training schools' students; Group 2 = Science-focused schools' students.

Table 3. Intercorrelations of the Value Dimensions With the WVI-A and the PVQ Value Domains

	Self- Actualization	Conservation	Exploration	Individuality	Hedonism	Sociality
PVQ						
Conformity	0.06	0.14*	0.06	-0.03	0.06	0.24*
Tradition	0.07	0.06	0.01	-0.15*	0.04	0.39*
Benevolence	0.10	0.02	0.12	-0.08	0.11	0.49*
Universalism	0.20*	0.05	0.26*	-0.03	0.16*	0.33*
Self-Direction	0.22*	0.18*	0.34*	0.28*	0.28*	0.09
Stimulation	0.21*	0.24*	0.41*	0.28*	0.41*	0.10
Hedonism	0.30*	0.35*	0.31*	0.31*	0.46*	0.09
Achievement	0.14*	0.17*	0.29*	0.45*	0.29*	-0.05
Power	0.02	0.26*	0.16*	0.41*	0.16*	-0.08
Security	0.10	0.28*	0.14*	0.15*	0.15*	0.10

Note. WVI-A = Work Values Inventory for Adolescents; PVQ = Portrait Values Questionnaire.

* $p < .01$, two-tailed.

comfort opposes knowledge and competence values. On the other hand, belonging opposes autonomy, whereas power opposes cooperation.

Relationship Between Work Values and Life Values

The correlations of all variables were calculated to examine the relations between work values and life values (Table 3). The magnitudes of these correlations can be defined as small or medium (Rosnow & Rosenthal, 1996). At the .05 (or lower) level of statistical significance, (a) self-actualization was related to universalism, self-direction, stimulation, hedonism, and achievement; (b) conservation was related to conformity, self-direction, stimulation, hedonism, achievement, power, and security; (c) exploration was related to universalism, self-direction, stimulation, hedonism, and achievement; (d) individuality was related to tradition (negative correlation), self-direction, stimulation, hedonism, achievement, and power; (e) hedonism was related to the PVQ's dimension that evaluated the same construct, universalism, self-direction, stimulation, achievement, power, and security; and (f) sociality was significantly related to conformity, tradition, benevolence, and universalism.

Discussion

The structure of relationships between values was investigated by a three-way MDS method that made it possible to represent work values on a regional partitioning, similar to what Schwartz identified to describe basic values. Other work values structures based on facet theory were also considered by Borg and Staufienbiel (1993) and Elizur and Sagie (1999). An important advantage of the one-step procedure used in this study is that it allows to analyze scale validity and scale stability within the same model. Some conclusions based on the results follow next.

First, a particular role play, *self-actualization* and *hedonism*, that seems to share some aspects with all the other values. The central position of hedonistic values and values related to self-actualization show that they are highly distinctive among adolescents (Schmid et al., 2005; Sinislaio, 2004). The pursuit of hedonism, conceived mostly as seeking sensation (Arnett, 1996), and the definition of identity are two central issues in adolescence. *Self-actualization* is implied in adolescents' processes of self-confirmation and identity formation, whereas *hedonism* is related to the concept of sensation seeking, a typical problem in adolescence (Arnett, 1996). Other authors

on adolescence have found development in the time from “survival values” toward values of self-expression and well-being (Hofer & Peetsma, 2005; Inglehart, 1997). *Hedonism* (H) borders with *exploration*, both involving processes in which strong emotions are sought.

Second, the possibility to identify compatibilities and oppositions between work values was shown. In accordance with what Schwartz suggests, conservation values are opposed to values of exploration. This study clearly shows that the pursuit of security–stability goes in an opposite direction than that of change and novelty, whereas the pursuit of comfort is opposite to knowledge and competence values. On the other hand, social values are opposed to individual values (belonging is opposite to autonomy). Belonging implies the building of emotional bonds, whereas autonomy implies freedom from these bonds (Baumeister & Leary, 1995). Cooperation most strongly opposes values of power, with the latter implying the pursuit of individual goals, whereas cooperation implies the pursuit of shared goals (Tomasello, 2008).

Third, important results about *social* values were found: within the social region, values of belonging appear to be highly compatible with those of stability and security. *Belonging* implies a pursuit of “fixed points” and supportive environment. According to Heard and Lake (1997), *belonging* can be considered in direct continuity with attachment to caregivers, and the social group represents a secure base, as the caregivers were in infancy (Bowlby, 1988; Heard & Lake, 1997). *Cooperation* includes the *prosociality*, with the latter implying both the understanding of another person and the disposition to form a shared goal (Warneken & Tomasello, 2007). However this dimension also implies the moral choice that others’ safety should become the shared goal. *Cooperation* is also in close proximity to the subregion of *knowledge and competence*, since both concepts imply an openness to experience (McCrae et al., 2000). Cooperation implies a capacity for the social sharing of meanings, which is an aspect of epistemic motivations. Motivational

goals of openness to new ideas and experiences are highly compatible with cooperation (Roccas, Sagiv, Schwartz, & Knafo, 2002). The pursuit of knowledge implies the desire for culturally transmitted, shared meanings, and so is similar to an interpersonal dimension (Tomasello, 2008). Also in the Schwartz model (Fontaine et al., 2008), items about curiosity and creativity are highly related to both items about *open mindedness* and *true friendship*.

Last, in the individual region, *autonomy* is in close proximity to *change and novelty*, with both being related to absence of stable bonds. *Individuality* values are also in close proximity to *comfort* values, so attention to personal well-being is related to individual values.

Limitations and Further Research

A limitation of this study is the small size of the groups, which does not allow generalizing these results to the overall Italian adolescent population and would require further research with larger samples. Larger samples are also needed to further investigate the targeted validity and stability by using confirmatory factor analysis.

Further research would also allow analyzing items positioned between subregions, thus expressing different values at the same time. For example, the item “I want a job that would allow me to stimulate my curiosity” implies both a search for knowledge and novelty. Also, the item “I want a job that would allow me to depend on nobody” expresses autonomy, but it also implies an agonistic vision in which subordination ties are refused.

Cross-cultural studies could establish differences in value structures among adolescents across different cultures. MDS makes it possible to identify value fluctuations specific to the population studied, not so much between value categories as between the pattern of relations between values. For example, values of knowledge and values of self-actualization could have different relations across different cultures.

It is useful to offer a new instrument for assessment of values in adolescence because adolescents, with varying levels of awareness, express behavioral choices relevant to particular values. However, adolescents are frequently

unaware of their values and their choice criteria. On the other hand, awareness of one's own choice criteria is deeply interrelated with the ability to take on responsibilities in choosing (Weiner, 1995).

Appendix

List of Items and Corresponding Values Scales and Subscales

	I want a job that would allow me . . .	Scale	Subscale
73.	To say what I think	A	A
31.	To gain know-how	A	A
65.	To be good	A	A
11.	To feel content	A	A
52.	To feel satisfied	A	A
66.	To be what I am	A	A
21.	To have an established career	C	CC
36.	To work in a comfortable environment	C	CC
38.	To have a comfortable schedule	C	CC
45.	To have economic stability	C	CC
51.	To work in a sufficiently clean and tidy environment	C	CC
55.	To have some time outside my job	C	CC
68.	To have the time to have a hobby	C	CC
2.	To have stability	C	CS
5.	To have an assured future	C	CS
10.	To be sure not to lose my job	C	CS
28.	To have a stable salary	C	CS
59.	To stay in an organized working situation	C	CS
60.	Not to be under pressure	C	CS
4.	To keep studying	E	EK
8.	To keep learning	E	EK
9.	To feel realized	E	EK
16.	To use my abilities	E	EK
20.	To grow intellectually	E	EK
26.	To gain competences	E	EK
29.	To follow my inclination	E	EK
34.	To deepen my knowledge	E	EK
40.	To satisfy my wish of knowledge	E	EK
6.	To live through the changes	E	EN
12.	To experiment novelties	E	EN
14.	To feel interest	E	EN
25.	To stimulate my curiosity	E	EN
35.	To change activity and places	E	EN
58.	To try a variety of experiences	E	EN
71.	To advance my career	E	EN
77.	To always experiment new places and activities	E	EN
37.	To feel vivid emotions	H	H
47.	To make my life exciting	H	H

(continued)

Appendix (continued)

	I want a job that would allow me . . .	Scale	Subscale
17.	To live moments of excitement	H	H
22.	To have moments of euphoria	H	H
30.	To have fun	H	H
46.	To live every moment with enthusiasm	H	H
13.	To choose how to do my job	I	IA
19.	To depend on nobody	I	IA
43.	To do my job by myself	I	IA
54.	To work individually	I	IA
57.	To choose my schedule	I	IA
3.	To be important	I	IP
24.	To succeed	I	IP
33.	To become rich	I	IP
39.	To be in charge	I	IP
42.	Not to have arranged rules	I	IP
44.	To manage other's work	I	IP
49.	To decide what others have to do	I	IP
76.	To make a prestigious career	I	IP
1.	To have friendly relationships with my colleagues	S	SB
23.	To feel a group's spirit	S	SB
41.	To have peaceful work relationships	S	SB
50.	To be proud of the quality of working together	S	SB
62.	To feel on the same wavelength with my work group	S	SB
64.	To trust in other's help	S	SB
70.	To be part of a group	S	SB
72.	To do a team work	S	SB
74.	To always have somebody to turn to	S	SB
61.	To have human interactions	S	SC
7.	To work with others to reach a result	S	SC
32.	To share objectives with others	S	SC
48.	To cooperate with others	S	SC
53.	To share my ideas with others	S	SC
69.	To be able to communicate	S	SC
15.	To take care of others	S	SP
18.	To be useful to others	S	SP
27.	To get involved in community services	S	SP
75.	To help people	S	SP
56.	To be in solidarity	S	SP
63.	To be socially useful	S	SP
67.	To contribute to others' well-being	S	SP

Note. A = self-actualization; C = conservation; E = exploration; I = individuality; H = hedonism; S = sociality; CS = security; CC = comfort; EK = competence and knowledge; EN = novelty and change; IP = power; IA = autonomy; SB = belongingness; SC = cooperation; SP = prosociality.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interests with respect to the authorship and/or publication of this article.

Funding

The author(s) received no financial support for the research and/or authorship of this article.

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