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Meaning Correlates of Value Orientations

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Abstract

The purpose was to explore the relations between value orientations and meaning assignment tendencies. The hypotheses were that values would be related to a certain number of meaning variables that would be similar in three cultural groups. The participants were 150 individuals of both genders living in Israel. They are from three cultural communities (50 participants each): Israeli, French, and Russian. They were administered the values inventory PQ IV by Schwartz (1992) and the Meaning Test by Kreitler and Kreitler (1990a). The relations between the values of hedonism, power, and benevolence and the meaning variables were analyzed by correlations. The results showed that there are patterns of meaning variables corresponding to value orientations and that these patterns are unique to each of the value orientation. There were similarities in the major meaning variables across the groups but also differences, mainly in the salience of the constituents in the meaning patterns.

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Values have been shown to play a major role in diverse domains of human behavior in all cultures (Hitlin & Piliavin, 2004; Rohan, 2000). In order to understand these effects, it has often proved helpful to identify sociological and psychological correlates of value orientations, such as gender, education, personality traits, and cognitive tendencies (e.g., Ahn, Kim, & Yong, 2008; De Raad & van Oudenhoven, 2008; Singh, 1994; Struch, Schwartz, & Van der Kloot, 2002; Thumin et al., 1995). Cognitive correlates of values have been considered to be of particular importance because they have long been conceptualized as an integral component of values (Cole & Scribner, 1974; Greenfield, 2005; Hofstede, 1980; Kluckhohn & Strodtbeck, 1961; Nisbett, 2003). In addition, cognitive correlates of values have been considered as playing a role in regard to the impact of culture on behavior. A recent review of the field (Oyserman & Lee, 2008) has reached the conclusion that culture impacts behavior by means of value orientations which are in fact reservoirs of meaning and meaning-making strategies (*ibid*, p. 313). Oyserman et al. argue that behavior occurs in a context that specifies the meaning of the situation. The paper concludes with the following statement: "Our current review supports the perspective that one of the ways in which meaning is organized in context is through the meaning provided by salient and accessible culture ... and that once a particular cultural focus is cued, it is likely to carry with it relevant goals, motives, actions, ways of interpreting information, and processing strategies" (*ibid*, p. 331). This statement highlights the role of meaning as a major component in the bridge between culture – considered in terms of value orientations, manifested for example by individualism and collectivism – and behavior. Most important is the emphasis on the double role of meaning as the carrier of contents, such as goals, motives, and actions, as well as a factor determining ways of interpreting information and processing strategies. This emphasis on the double role of meaning is shared also by the system of meaning applied in this study.

A large body of data shows that meanings of stimuli, ranging from simple objects to abstract concepts, from body to art works, may vary among individuals and in different contexts (e.g., Cohen & Leung, 2009; Jakesch & Leder, 2009). In daily life these differences may be often annoying, but could under given circumstances be overlooked. In science, however, they may cause methodological difficulties and if overlooked may lead to erroneous conclusions. Thus, in personality inventories, differences in the meanings assigned to items or to the whole situation of testing may be one of the reasons for variations in responses that are responsible for measurement errors, differences in correlations between variables in different settings, and instability in reliability indices (e.g., Bollen & Lennox, 1991; Ziegler, Toomela, & Bühner, 2009). The issue of differences in meaning in different cultures becomes particularly poignant in regard to test translations (Solano-Flores, Backhoff, & Contreras-Niño, 2009). In studies on evaluation of sensory qualities (Bartoshuk, Fast, & Snyder, 2005) or preferences for objects in a consumer setting (Horsky, Nelson, & Posavac, 2004) unaccountable differences in meaning were observed to produce unstable results. Differences in meaning also seem to intervene in regard to the often observed gap between attitudes and behavior (Lawton, Conner, & McEachan, 2009) or between knowledge and practice (Büssing, Herbig, & Latzel, 2006). The meanings assigned to the abstract concepts or to questions presented in action-free context seem to differ from those that become relevant in the context of actual behavior (Onwujekwe, Hanson, & Fox-Rushby, 2005).

Values may be expected to be amenable to differences in meaning to no lesser degree than other concepts or consumer objects. In this context it may suffice to mention the example of happiness: though in all 27 countries that were examined, happiness was related to life satisfaction, the meanings of happiness differed between seeking pleasure, engagement, and meaningfulness (Park, Peterson, & Ruch, 2009).

The present study focuses on identifying meaning correlates of value orientations, and on their potentiality for variation in the context of different cultures. It was expected that demonstrating differences in meaning across values and identifying meaning correlates of specific values in participants with different cultural backgrounds would highlight the importance of considering meaning in future studies and would provide a means for controlling some of the variations in responses due to differences in meaning in cross-cultural studies.

The study is anchored in a comprehensive theory of meaning that has been applied extensively in studies of cognition and personality (e.g., Kreitler & Kreitler, 1990a, 1994). The next section presents a brief description of the meaning theory as background for the hypotheses and results.

The System of Meaning – its Nature and Functions

Meaning is a set of particular semantic structures representing both cognitive contents and cognitive processes, used for defining, expressing, and communicating conceptions, attitudes, or experiences for a variety of purposes, e.g., identifying inputs, problem solving, comprehension, or communication. Meaning consists of meaning units, which include two components: 'the referent' which is the input, the stimulus, or the subject to which meaning is assigned, and 'the meaning value' which is the cognitive contents designed to express or communicate the meaning of the referent. The following are three examples of meaning units: "table – serves for eating", "bread – is on the table", "bottle – is made of glass". In these meaning units, 'table', 'bread', and 'bottle' are the referents and 'serves for eating', 'is on the table', and 'is made of glass' are the meaning values. Each meaning unit may be characterized in terms of meaning variables of the five following classes: meaning dimensions, which characterize the contents of the meaning values (e.g., location, material), types of relation, which characterize the immediacy of the relation between the referent and the meaning value (e.g., attributive, exemplifying-illustrative, metaphoric-symbolic), forms of relation, which characterize the logical-formal properties of the relation between the referent and the meaning value (e.g., positive, conjunctive, partial), shifts of referent, which characterize the relations of the present referent to the initial input and previous referents (e.g., identical, partial, opposite), and forms of expression, which characterize the media of expression of the referent and/or the meaning value (e.g., verbal, graphic, motional). The meaning system consists of the whole set of the meaning variables. The meaning variables have been defined on the basis of studies with over 30,000 participants in different countries and in regard to a variety of inputs (e.g., Kreitler & Kreitler, 1990a). Appendix 1 presents all the meaning variables with brief descriptions and examples, and Appendix 2 presents an example of meaning responses coded in terms of the meaning system.

Each of the five sets of meaning variables is complete in itself and independent of the other sets. Thus, characterizing a meaning unit involves using one variable from each set. Hence, when we have a group of meaning units characterized in terms of meaning variables and we count the frequencies of meaning variables used in characterizing these meaning units, we get in fact five independent groups of frequencies, namely, one for meaning dimensions, one for types of relation, one for forms of relation, one for shifts of referent, and one for forms of expression. Each of these five groups of frequencies amounts to the same total but consists of different meaning variables.

The description of the components of meaning indicates that it is a complex system, and that its elements are defined in terms of other elements of the system (namely, the system is self-embedded and regressive). These three characteristics reflect the static or structural aspects of the system. They are complemented by three further properties that describe the dynamic aspects of meaning: it is a developing system in the ontogenetic sense; it is a selective system dependent in its structure and functioning on properties of the individual and the input; and it is a dynamic system, whose special characteristics become manifest when it is activated for meaning assignment. The static and dynamic aspects of meaning are complementary and are made possible by the special characteristic of the meaning variables that may function as static contents or as active processes. For example, the meaning dimension "causes and antecedents" may describe a response to a question of the kind "why did X happen?" and may also appear as a process of causal reasoning.

Each individual disposes over a certain selected part of the meaning system, which represents the specific tendencies of that individual to apply the meaning system in information processing. Thus, each individual tends to use specific meaning variables with high frequency and other meaning variables with medium or low frequency. The frequencies with which the

individual tends to use each meaning variable are assessed by means of The Meaning Test and constitute the individual's meaning profile [see Method].

The major and most essential function of meaning is input identification (Kreitler & Kreitler, 1984). It ranges from limited identification in terms of a stimulus for a particular action to highly complex meaning elaborations necessary for acts involving cognitive, emotional, physiological, and behavioral components (Kreitler & Kreitler, 1985). This function is implemented by providing the contents and processes enabling meaning assignment to inputs.

A further function of the meaning system is to provide the cognitive contents and processes necessary for carrying out different cognitive acts. Studies showed that each meaning variable represents a specific set of contents and processes. For example, the meaning dimension Locational Qualities represents the set of contents denoting location (e.g., special, geographic) and the processes involved in dealing cognitively with locations (e.g., identifying, specifying, recalling, transforming). Further studies showed that each type of cognitive act corresponds to a specific pattern of meaning variables that provide a description of the contents and processes involved in its enactment. For example, meaning variables involved in planning include structure, temporal qualities, and causes and antecedents (Kreitler & Kreitler, 1987a). If the individual's meaning profile includes a sufficient proportion of the meaning variables included in the pattern corresponding to the particular cognitive act, that individual will be able to perform well in the particular cognitive act (Kreitler & Kreitler, 1989, 1990a, 1990b, 1994).

A third function of the meaning system is manifested in the domain of personality. A body of research showed that each of over 200 personality traits corresponds to a specific pattern of meaning variables. Again, as in the case of cognitive acts, the pattern of meaning variables may be considered as providing a description of the contents and processes involved in the enactment of the specific trait. For example, the meaning variables in the pattern corresponding to extraversion include high salience of the meaning dimensions of action, sensory qualities, temporal qualities, and belongingness of objects, as well as low salience of the meaning dimensions of internal sensations and cognitive qualities (Kreitler & Kreitler, 1990a). If the individual's meaning profile contains a sufficient proportion of the meaning variables included in the pattern corresponding to the particular personality trait, it is highly likely that the individual scores high on that personality trait.

The same holds in regard to further tendencies in the domain of personality, such as personality dispositions, defense mechanisms, the self, and emotions (Kreitler, 2003; Kreitler & Kreitler, 1987b, 1993).

In sum, the described functions of the meaning system indicate that the meaning system provides the understructure, i.e., the raw materials in terms of contents and processes, for input identification, cognitive functioning, personality tendencies, and emotions. All four functions depend on meaning assignment and reflect the central role of meaning for and within cognition. This has given rise to the psychosemantic conceptualization of cognition as a meaning-processing and meaning-processed system.

Value Orientations and Meanings

The purpose of this study was to explore whether there are patterns of meaning variables corresponding to the value orientations, and to what extent these patterns are distinct or different across three cultures. The system of value orientations selected for the study was the Schwartz system of values because it is comprehensible, has a reliable and validated instrument of assessment, and is applicable in different cultures (Schwartz, 1992, 2005a, 2005b; Schwartz & Bardi, 2001). According to the Schwartz theory, values are cognitive representations grounded in biological needs, interactional requirements for interpersonal coordination, and social demands for group welfare and survival. Values are expected to support social structures and guide behavior. The following ten universal values have been identified: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security.

The expectation that value orientations would have meaning correlates was based on previous studies, which showed that various conceptions, ranging from planning to life, and time may be characterized in terms of meaning variables of the system of meaning (Kreitler, 1999; Kreitler & Kreitler, 1985b, 1986, 1987a, 1987b). In this study, the focus was on the cognitive processes indexed by the meaning variables correlated with value orientations rather than on contents that may characterize the meanings per se attributed to the values. The expectations were that meaning correlates that are specific to each of the studied value orientations would be found, and that there would be similarities between the meaning correlates of the value orientations across cultures because of the findings about the universality of the value orientations and their structure.

The study was designed to explore the domain of the relations between value orientations and meanings as a first phase of a larger cross-cultural project. The major question of interest at this stage was to what extent the meaning correlates of values in participants with different cultural backgrounds would be different or similar.

Method

Participants

The participants were 150 undergraduates of both genders from three cultural backgrounds: Israeli, French, and Russian. Each group comprised 50 individuals. The criterion for defining cultural background was that both the participant and his/her parents were born in the named country. Thus, the participants of the Israeli group and their parents were native Israelis, whereas the participants of the French and Russian groups were Israeli citizens but have immigrated into Israel from France or Russia, respectively. The number of men and women was equal in each group ($n = 25$). The means of age were 23.5, 25.2 and 21.1 in the three groups, respectively. The mean number of years in Israel was 5.3 for the French participants and 6.4 for the Russian participants.

Tools

The participants were administered two tests: the Schwartz inventory of values PQ IV and the Meaning test. The PQ IV includes 40 items, referring to ten values (three to six items per value), with six response alternatives assigned to each item. In each item, the respondent is asked to state to which extent he or she resembles someone with particular goals and aspirations (values). Following the instructions for scoring, first the MRAT was computed (the individual's total score on all values divided by the number of items); then, the scores of all items for an individual were centered around that individual's MRAT; finally, scores for the ten values were computed by taking the means of the centered items.

For the purpose of the present study the following three value orientations were chosen: hedonism, power, and benevolence. Hedonism is defined as relating to organismic needs and the pleasure associated with satisfying them. Power is defined as relating to social status and prestige, control or dominance over people and resources. Benevolence is defined as relating to the need for affiliation, concern for others, and preserving relations within the family and other primary groups. These three values were chosen because they are dissimilar as assessed in terms of two criteria: they are not adjacent in the value circumplex, which presents the theoretical model of relations among the ten motivational types of value; they represent three distinct dimensional poles of the values, i.e., openness to change, self enhancement, and self transcendence, respectively (Schwartz, 2006). Hence, the three values may be expected to provide an approximation of an overall image of the Schwartz system of values.

The Meaning Test (Kreitler & Kreitler, 1990a) consists of eleven standard stimulus words (street, bicycle, art, etc.). The respondents are requested to communicate to someone of their choice (who understands language etc. but not the meaning of the specific stimuli) the interpersonally-shared and personal-subjective meanings of the eleven stimuli, using any means of communication they consider adequate (write, draw, describe drawings or objects, etc.). The

Meaning Test was coded by experimenters who did not know the hypothesis. First, the narrative was turned into response units, each of which was characterized in terms of one of the five sets of meaning variables; then, the frequencies of the use of each meaning variable were computed across all units; finally, the frequencies were turned into proportions out of the total number of unit responses for the individual. These proportions yielded the meaning profiles of each individual participant. The reliability of coding across two different coders was satisfactory (correlation coefficients for two coders for the different meaning variables ranged from $r = .76$ to $r = .92$). These reliability indices compare well with those obtained in other studies, and demonstrate that the coding is based on clear objective criteria which have recently enabled the standardization of the coding in terms of a computer program¹.

Procedure

The tests were administered in Hebrew, Russian or French, in line with the cultural background of the participants. The order of administration was random. The administration was done in small groups on the university grounds. The study was approved by the local Helsinki committee.

Results

Since there were no significant differences between the genders in any of the three groups in the variables of the PQ IV and the Meaning Test, all the data were analyzed together. The scores of the PQ IV and of the Meaning test were analyzed by correlations.

The data were first analyzed in each cultural group separately, in order to identify the meaning variables correlated with the scores of each value. The significant correlations constitute the pattern of meaning variables corresponding to the value orientation. In the second phase, the results were compared across groups for each value orientation separately.

Table 1

Significant Correlations Between The Three Value Orientations And The Meaning Variables In The Three Cultural Groups

Value	Meaning Variables	Significant Correlations		
		Israeli sample	French sample	Russian sample
<i>Hedonism</i>	Dim. Feelings & emotions	.42**	.83***	.56***
	Dim. Locational qualities	.36**	.42**	
	Dim. Sensory qualities	.34*	.78***	.63***
	Dim. Judgments & evaluations	-.35*		-.40**
	TR. Exemplifying-illustrative	.52***	.74***	.37**
	Ref. Shifts to close referents	.45***	.51***	.43**
<i>Power</i>	Dim. Actions & potentialities for action	.75***	.56***	.38**
	Dim. Function, purpose & role	.61***	.82***	.56***
	Dim. Results & consequences		.41**	.36**
	Dim. State & possible changes in it	.44**	.75***	.67***
	Dim. Possessions & belongingness	.58***	.52***	.66***
	Dim. Judgments & evaluations	.37**	.76***	.42**
	TR. Comparative	.39**		.48***
<i>Benevolence</i>	Dim. Function, purpose & role		-.35*	-.38**
	Dim. Causes & antecedents	.36**	.42**	
	Dim. Domain of application	.69***	.34*	.37**
	Dim. Feelings & emotions	.47***	.38**	.43**
	Dim. Cognitive qualities	.72***	.70***	.65***
	Dim. Judgments & evaluations	.62***	.64***	.43**
	TR. Attributive	.39**	.42**	.40**
	FR. Normative	.47***	.45***	
	FR. Conjunctive	.39**	.38**	.43**

Note. * $p < .05$ ** $p < .01$; *** $p < .001$ Dim. = Meaning dimension, TR = Types of relation, FR = Forms of relation, Ref. = referent

Table 1 presents the significant correlations of the value scores with the scores of the meaning variables. The findings show that each of the three value orientations is correlated with several meaning variables. The number ranges from six (for hedonism) to nine (for benevolence). The meaning variables are largely unique for each value orientation. The meaning variables correlated with hedonism indicate that those who score high on hedonism tend to assign meanings in terms of feelings and emotions as well as the various sensory qualities, minimize the use of judgments and evaluations, characteristically focus on the present inputs without deviating too much from them, and favor dwelling on concrete exemplifying instances and situations.

The meaning variables that are correlated with power indicate that those who score high on power are those who characteristically focus on judgments and evaluations, tend to assign meanings in terms of actions and functions, and are likely to note possessions in particular, as well as to note the state of things and their belongingness.

The meaning variables correlated with benevolence indicate that those who score high on benevolence tend to assign meanings in terms of feelings and emotions, cognitive qualities, judgments and evaluations, and characteristically focus on who or what is involved in the situation. In addition, they tend to consider the normative aspect (i.e., what should or should not be or be done) and to combine contents, thoughts, and information.

Notably, the described cognitive tendencies are based on findings of correlations of values with meaning variables that appear in all three cultural groups. In addition, in the case of each value orientation, there are some tendencies that appear to be related to the value only in two of

the cultural groups. The latter are, however, fewer in number than the tendencies that are related to the value score in all three groups.

The fact that the majority of the meaning variables were related to the value score in all three cultural groups indicates that basically the patterns of meaning variables corresponding to the value score are similar for the Israeli, French, and Russian participants in this study. Yet, in addition to this observation, one may analyze the differences between the cultural groups in terms of the correlation coefficients themselves. Thus, in regard to hedonism the meaning variables most salient in the Israeli group were the exemplifying-illustrative type of relation and referent shifts close to the input, whereas in the French group the most salient meaning variables were sensory qualities and feelings and emotions, and in the Russian group these same meaning dimensions in reversed order. Accordingly, the focus in the Israeli group is on the concrete approach which is rather a matter of cognitive style, whereas the focus in the French and Russian groups is on two specific categories of contents that emphasize sensory and emotional experiences.

Concerning the value of power, there are differences between all three groups in the salient meaning variables which, in all cases, refer to content categories. In the Israeli group, the emphasis is on actions and functions, in the French group on functionality and evaluations, and in the Russian group on possessions and state. Thus, the value of power is attained in the Israeli group in terms of activities, in the French group in terms of judgments and evaluations and in the Russian group in terms of differences in possessions and status.

Concerning benevolence, there are fewer differences between the groups, which share all the emphasis on cognitive qualities. In addition to this tendency to focus on cognitive aspects (e.g., memories, thoughts), there is evidence for concern in the Israeli group of who or what is involved in the situation; in the French group there is the tendency to emphasize judgments and evaluations; and in the Russian group there is the tendency to emphasize feelings and emotions.

Discussion

The findings provided answers to several questions that have motivated the study. One question was whether there are patterns of meaning variables corresponding to the value orientations. When we consider the significant correlations between the value orientations and the meaning variables as constituting the pattern of meaning variables corresponding to the value orientation, the answer is positive. The results show that for each value orientation there is a pattern of meaning variables corresponding to it. Further, the patterns of meaning variables corresponding to the three value orientations are distinct so that each value orientation corresponds to a unique pattern of meaning variables.

A similar methodology has been applied in exploring the patterns of meaning variables corresponding to personality traits (Kreitler & Kreitler, 1990a). The formal features characterizing the patterns corresponding to traits were based on analyzing over 350 patterns of traits. These features include the number of meaning variables in the pattern, the proportion of meaning dimensions, and types of relation in the pattern, or the number of negatively correlated variables. Comparing the patterns corresponding to values with those corresponding to personality traits indicates unambiguously that the patterns corresponding to values do not resemble those corresponding to personality traits.

The patterns of meaning variables corresponding to value orientations highlight cognitive and emotional tendencies of high scorers of the different values. Further, the importance of the meaning variables corresponding to the value orientations is that they indicate processes whereby the value orientations function, for example, by means of focusing on emotions, by emphasizing status differences, by concern for who or what is involved in a situation, by adopting a concrete approach focused on the here-and-now, etc.

Another question was whether the patterns of meaning variables corresponding to the value orientations in the three cultural contexts differ. It may be noted that the differences may

be reflected in the nature of the meaning variables corresponding to the same value orientation in the three cultural contexts and in the correlation coefficients themselves.

The findings showed that there were similarities in the major meaning variables across the groups, but also differences. The similarities consisted in the fact that the major constituents of the meaning patterns corresponding to the value orientations in the three cultural contexts are identical. This finding supports Schwartz's thesis that the value orientations of the value survey are universal. However, the differences between the meaning patterns of the value orientations consist in the salience of the constituents of the value orientations. Thus, the findings suggest the benefit of going beyond similarities on the surface. Even when value scores are similar in different cultural groups, it may be advisable to explore the underlying structure of meanings, which may differ.

Some limitations of the study need to be noted. The major limitation is that the three studied samples may not represent absolutely distinct cultural groups with three different meaning systems. The French and Russian immigrants to Israel share a common Jewish cultural background and in addition may be assumed to have made some kind of adaptation to the Israeli culture after immigration. Another obvious limitation is the small number of participants in the study. These limitations restrict the possibility of drawing conclusions about the meaning correlates of the values in the cultural backgrounds of the participants. Nevertheless, it seems justified to conclude that this preliminary study demonstrates the usefulness and adequacy of meaning analysis for exploring in future studies the matrices of meaning variables characteristic of value orientations in different cultures.

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Appendix 1

The meaning variables of the meaning system (Kreitler & Kreitler, 1990).

Meaning Dimensions (Dim)

Meaning dimensions characterize the contents used for expressing the referent's meaning

1. **Contextual allocation:** Relating the referent to a superordinate, more inclusive concept; embedding it in a category, structure, a system of relations, or a more general context; God – belongs to religion; to go – it is a verb; Chair – a piece of furniture.
2. **Range of inclusion:** Specifying what the referent includes.
 - 2a. **Subgroups:** specifies different types or kinds or groups of the referent; e.g., Art – painting, sculpture; Feeling – love, anger; Child – John, Peter.
 - 2b. **Parts:** specifies components, parts or elements of the referent that comprise it wholly or partly; e.g. Friendship – includes love, trust, and mutual help; Body – hands and feet.
3. **Function, purpose or role:** specifies what the referent serves for, or for what it can be used, things that it does which are commonly considered as functions; e.g. Telephone – serves for transmitting messages; Person X – is a pilot; Table – is used for writing.
4. **Actions and potentialities for action:** describes actions that the referent does or can do, which are, however, not considered as functions of the referent.
 - 4a. **Actions that the referent does or can do,** e.g., Animal – walks and sleeps;
 - 4b. **Actions that are done to the referent or can be done with or to the referent,** e.g., Sea – people swim in it.
5. **Manner of occurrence or operation:** describes fully or partly how the referent acts, functions or occurs, including stages, phases, means, tools, organs, etc. involved in the action or occurrence of the referent or enabling them; e.g., Waking – you lift one leg etc; Democracy – the names of candidates are publicized and so on.
6. **Antecedents and causes:** describes antecedent circumstances or conditions, causes – direct or indirect, necessary or sufficient, for the existence or occurrence or activity of the referent; e.g., Anger – when you think about the success of your enemy.
7. **Consequences and results:** describes the outcomes that result directly or indirectly, intentionally or unintentionally from the referent's existence or occurrence or activity, or take place after the referent but do not reflect its function, including implications; e.g., Rain – everything gets wet; Love – parting and sadness.
8. **Domain of application:** to what or to whom the referent refers, for what or whom it is relevant.
 - 8a. **Subjects to which the referent refers or for whom it is relevant:** Specifies items or domains that are affected by the referent, are in interaction with it, or use it in some form; Beautiful – refers to the weather or to a woman; Car – driven by people.
 - 8b. **Direct or indirect object of the referent:** specifies items or domains in regard to which or with which the referent acts or occurs or on which it acts; e.g., Revolution – in society, in the arts; To eat – fruit, fish; To create – a piece of art, a friendship.
9. **Material:** the material or materials, the stuff of which the referent is made or of which it consists; e.g., Sea – is made of water; Love – is made of desire and worries.
10. **Structure:** The referent's structure, the interrelations among the components that make up the referent, its organization or complexity; e.g., Cupboard – there is some cover on the top, doors in front, etc; School – a headmaster on the top who is in charge and under him or her teachers responsible for teaching different subject matters etc.
11. **State and possible changes in it:** specifies the actual, potential or possible state of the referent, including state of the material (solid, liquid, gaseous, etc.), health (sick, healthy, etc.), clarity (fuzzy, sharp), strength, weakness, existence, freedom or slavery, dependence, sanity, drunkenness, limitations, etc; e.g., Glass – can be broken; Water – may evaporate; A person – tired or alert.
12. **Weight and mass:** specifies the weight of the referent or its mass in specific units or in terms of an estimate; e.g., Car – its weight is XX; Laptop – is not too heavy.

13. **Size and dimensionality:** specifies the referent's size (in terms of actual units or estimate), its number of dimensions (for example, 2-dimensional or 3-dimensional) and their size; e.g., Hole – deep; Dwarf – smaller in height than most people.

14. **Quantity and number:** specifies the number of the referent, its quantity, its quantifiable frequency (“how many times”...), how much of it exists; e.g., Human being – a billion only in China.

15. **Locational qualities:** specifies locational and spatial qualities of the referent, where it is to be found under usual or special conditions, its location, its address, in relative or absolute terms; e.g., Sun – in the tail of the Milky Way; Tel-Aviv – on the sea shore, south of... in the center of... ; Abraham – lives close to...

16. **Temporal qualities:** specifies the time when the referent existed or exists in relative or absolute terms, date, duration of occurrence or existence, age, period in which referent functioned or functions or will function or occur, whether the referent is young or old, new or old, short-lived or eternal; e.g., Love – forever.

17. **Possessions and belongingness:** specifies to whom or to what the referent belongs, what belongs to the referent in material or other terms, excluding parts or components of the referent.

17a. **What belongs to the referent, what the referent owns or possesses;** e.g., Mr. X – he is rich, he owns the estate.

17b. **To whom the referent belongs or could belong;** e.g., Ring – it belonged to my mother.

18. **Development:** specifies the ontogenetic or phylogenetic development of the referent or any part of it, the personal history of the referent, its evolution, how it turned into what it did, what will become of it in the future; e.g., Mail – in the past it was done by means of pigeons, in the future only by computers.

19. **Sensory qualities:** specifies sensations and sensory experiences or data that characterize the referent or describe it as well as those it experiences and perceives.

19a. **Sensory qualities characterizing the referent;** e.g., Tomato – is round and red.

19b. **Sensory qualities that the referent experiences or can experience;** e.g., Cat – is able to perceive colors.

Variables 19a or 19b may be further specified in terms of the following categories: General visual, Light & brightness, Color, Form & shape, Gustatory or taste qualities, Auditory or sound qualities, Olfactory or smell qualities, Tactual-kinesthetic, Temperature, Humidity, Skin sensations, Internal sensations, Pain.

20. **Feelings and emotions:** specifies feelings and emotions felt, experienced, evoked or perceived in oneself or others.

20a. **Feelings and emotions evoked by referent:** Feelings and emotions that may be felt in regard to the referent, with the referent, or evoked by it; e.g., Monster – scares people; Brightness – I like brightness; Sea – makes people happy.

20b. **Feelings and emotions experienced by referent:** Feelings and emotions that the referent experiences or can experience; e.g., Mother – loves her children.

Variables 20a or 20b may be further specified as Positive emotions and Negative emotions.

21. **Judgments and evaluations:** specifies judgments, evaluations, attitudes, and beliefs in regard to the referent and those held by the referent.

21a. **Judgments and evaluations about the referent:** specifies judgments, evaluations, attitudes, opinions and beliefs in regard to the referent, or held by others about the referent; e.g., The law – important; Sins – despicable.

21b. **Judgments and evaluations by the referent:** specifies judgments, evaluations, attitudes, opinions and beliefs held or expressed by the referent in regard to any object or state or event; e.g., Jo – believes in God, assumes he/she is inferior to others.

22. **Cognitive acts and qualities:** specifies cognitive actions or qualities evoked by the referent or characterizing it or done by it.

22a. **Cognitive acts and qualities evoked by the referent:** specifies cognitive acts and qualities evoked by the referent or in regard to it; e.g., Sea – provides inspiration; Bicycle – reminds me of my childhood; Bible – it is difficult to understand.

22b. **Cognitive acts and qualities by the referent:** specifies cognitive acts and qualities characterizing the referent or done by it; e.g., Jo – has poor memory; Tina – her reasoning is stronger than her intuition.

Types of Relation (TR)

Characterize the directness of the relationship between the referent and the meaning value in the meaning unit, i.e., the degree to which elements other than the original referent are involved in the expression of meaning, e.g., other referents.

1. **Attributive**: the assigned contents (meaning value) relate to the referent directly, as a quality or action, without implying to what degree the contents are characteristic of the referent.

1a. **Qualities to substance**: the meaning value relates to the referent as a property or quality; e.g., House – tall, Bicycle – inexpensive.

1b. **Actions to agent**: the meaning value relates to the referent as an action, or as something that the referent does or what is done with it/toward it, so that the referent is in the role of “agent”, “performer of action”, the “subject of an action” or the “object of an action”; e.g., Telephone – rings; Bicycle – you ride on them.

2. **Comparative**: the assigned contents (meaning value) relate to the referent indirectly, by means of the intervention or intermediation of another meaning value or referent, regardless of whether words such as “like” or “different from” are used, and whether the characteristic is stated explicitly that serves as the basis of the comparison. The compared referents or meaning values are on the same level of abstraction or concreteness, i.e., both are abstract, or both are concrete.

2a. **Similarity**: the comparative intermediation is based on similarity, including relations of identity, equality, synonymy, likeness, or sameness of different degrees; e.g., Sea – like ocean; Bad – like evil; Wisdom – resembles justice because both are rare.

2b. **Difference**: the comparative intermediation is based on difference, including relations of polarity, contrast, lack of similarity, dissimilarity, opposition, bipolarity, unlikeness, or antonyms of different degrees; e.g., Sea – unlike a puddle; Friendship – the opposite of hostility.

2c. **Complementariness**: the comparative intermediation is based on a complementary relation, made possible by interaction, a transaction or matching in structure of different degrees, so that the complementing referents or meaning values may potentially form together some kind of a unit; e.g., Father – is the parent of a son and the son is the child of a father.

2d. **Relationality**: the comparative intermediation is based on relationality to other referents or meaning values that are more or less than the referent in some characteristic. Relationality may refer explicitly or implicitly to some scale or continuum; e.g., Genius – cleverer than others; To create – to produce something that is most original.

3. **Exemplifying-illustrative**: the contents relate to the referent as an example or illustration. It may be concrete or abstract, regardless of the abstraction level of the referent. The exemplifying component may or may not be presented explicitly or with prepositions or other phrases emphasizing the exemplifying relation.

3a. **Exemplifying instance**: the meaning value relates to a specific item, such as a person, an object, an event or situation that exemplify the referent or some aspect of it, mostly without further elaboration; e.g., Wisdom – Einstein; Evil – war; Emotions – anger.

3b. **Exemplifying situation**: the meaning value presents a specific static situation or image that exemplifies or illustrates the referent or some aspect of it. The presented examples mostly include some elaboration, but do not include any dynamic or actional elements; e.g., Motherhood – a child sitting on his mother’s lap looking at her.

3c. **Exemplifying scene**: the meaning value presents a specific scene with actional, dynamic, or dramatic elements that serve to exemplify the referent or some aspect of it. The presented examples are sometimes small narratives or stories; e.g., Longing – a man runs and runs and runs to the home of his beloved.

4. **Metaphoric-symbolic**: the assigned contents relate to the referent indirectly, through the intermediation of another meaning value from a content domain that is not assigned to the referent conventionally, and is mostly on a different abstraction level.

4a. **Interpretation**: the meaning value relates to the referent as an interpretation, addresses non-conventional aspects of the referent, and mostly uncovers a deeper unexpected significance of the referent; e.g., Happiness – what does not exist in what we have.

4b. **Conventional metaphor**: the meaning value relates to the referent in terms of a metaphor that is a conventional phrase in language; e.g., To scream – blow off some steam.

4c. **Original metaphor**: the meaning value relates to the referent in terms of an original metaphor, namely, the meaning value derives from a content domain that is not related conventionally to the referent and is on a different level of abstraction than the referent; e.g., Loneliness – a single shell on the enormous beach.

4d. **Symbol**: the meaning value relates to the referent in terms of a complex metaphor which includes contrasting features and their resolution or combination on the level of the image; e.g., Love – fire that produces and destroys.

Types of Relation may be further grouped into two Modes of Meaning: (a) **Interpersonally-shared, lexical (TR1+TR2)** which is used mainly for expressing lexical and conventional meanings and fulfills a major role in daily interpersonal communication; and (b) **Personal-subjective (TR3+TR4)** which is used mainly for expressing personal-subjective meanings, emotions and experiences, and fulfills a major role in subjective expressions of one's inner world, and in art.

Forms of Relation (FR)

Forms of relation characterize the relation of the meaning value and the referent from the point of view of formal and logical characteristics.

1. **Propositional relation**: specifies explicitly or implicitly that the meaning value is related to the referent. The relation may be expressed directly or by means of prepositions and other connectives, such as “is a”. In **1a. Propositional positive**, the relation is positive (e.g., Book – interesting), in **1b. Propositional negative**, the relation is negative (e.g., Book – not in the library).

2. **Partial relation**: The relation of the meaning value to the referent is characterized by limited generality; it is subject to restrictions or reservations to some extent. In **2a. Partial positive**, the relation is partial and positive (e.g., Apple – sometimes red), in **2b. Partial negative**, it is partial and negative (e.g., Sea – not always calm).

3. **Universal relation**: The relation of the meaning value to the referent is described explicitly as general, comprehensive, absolute, and unconditional. In **3a. Universal positive**, the relation is universal and positive (e.g., Life – always wonderful), in **3b. Universal negative**, it is universal and negative (e.g., To take – never without giving).

4. **Conjunctive relation**: Two or more meaning values are related to the referent and both are presented as essential for expressing the meaning of the referent. In **4a. Conjunctive positive**, the meaning values are related to the referent conjunctively and positively (e.g., Life – both wonderful and difficult), in **4b. Conjunctive negative**, they are related conjunctively and negatively (e.g., Life – neither enjoyable nor worthwhile).

5. **Disjunctive relation**: Two or more meaning values are presented in regard to the referent but only one of them is presented as adequate or essential, including exclusive disjunction and inclusive disjunction. In **5a. Disjunctive positive**, only one of the positively presented meaning values is adequate (e.g., Life – either it is full of fun or it is boring), in **5b. Disjunctive negative**, of the positive and negative meaning values presented, only the positive is adequate (e.g., Yoga – it is not a religion but a philosophy).

6. **Normative relation**: The meaning value is related to the referent in terms of the required, the necessary, the prescribed, morally or otherwise, as contrasted with the factual, descriptive or the way things actually are. In **6a. Normative positive**, the relation is normative and positive (e.g., Crime – needs to be punished), in **6b. Normative negative**, the relation is normative and negative (e.g., Theft – should never be allowed).

7. **Questioning relation**: The meaning value is related to the referent in terms of a question, addressed to others, or to oneself or in general, as a kind of wondering. In **7a. Questioning positive**, the relation is questioning and positive (e.g., Friendship – is it more like love or affection?), in **7b. Questioning negative**, the relation is questioning and negative (e.g., To create – is it not playing God?)

8. **Desired relation**: The meaning value is related to the referent in terms of a desired, wished for relation rather than in terms of a descriptive or factual relation. In **8a. Desired positive**, the relation is desired and positive (e.g. Money – desired object by many people), in **8b. Desired negative**, the relation is desired and negative (e.g. Disease – hopefully I will never get it).

Shifts in Referent (SR)

Reference shifts represent changes in the referent that may occur in the course of the meaning assignment process. The changes are evaluated in reference to the original input and/or the preceding referents in the chain of responses.

1. **Identical:** The referent is identical to the original or preceding input.
2. **Opposite:** The referent is the opposite or reversal of the input; e.g., the input was "Life" and the referent is "Death".
3. **Partial:** The referent is a part or a sub-category of the input; e.g., the input was "Car" and the referent is "Toyota" or "a tire".
4. **Modified by addition:** The referent is the input modified by addition of some meaning value to it; e.g., the input was "Friendship" and the referent is "True friendship".
5. **Previous meaning value:** The referent is a previous meaning value; e.g., the input was "Highway" and the response to the input was "It is for cars of all kinds": "Cars" was the meaning value for "Highways" but is also the referent for "of all kinds".
6. **Association:** The referent is a different referent from the previous one or from the input but is related to them by association and is on the same level; e.g., The input was "Telephone" and the referent is "Fax", or the input "Table" is replaced by "Chair".
7. **Unrelated:** The present referent is not related in any obvious way to the input or to the previous referent; e.g., the input was "Telephone" and the referent is "Cow".
8. **Verbal label:** The referent is the previous referent or the input considered as a label, namely, relating to linguistic or vocal aspects of the input in terms of phonetic, morphological, or syntactic features; e.g., The input was "Apple" and the referent is "The noun apple" or "Rattle".
9. **Grammatical variation:** The referent is the input or the previous referent with some grammatical modification, such as a change in the verb conjugation, in the syntactic class (e.g., from verb to adverb), tense, modality, etc.; e.g., the input "To take" was replaced by "Taking" or "Took".
10. **Previous meaning values combined:** The referent is a combination of two or more meaning values that have occurred earlier in the chain of responses; e.g., the input was "Art" and meaning values produced earlier were "Spanish art", "Italian art", and "Greek art", which may be integrated at some point into the new referent "Art of the Mediterranean countries".
11. **Superordinate:** The referent is a superordinate concept or a superordinate, more inclusive system that includes the input; e.g., the input was "Piano" and the referent is "Musical instruments".
12. **Synonym:** The referent is a synonym or another word or phrase with similar or identical meaning to the input.
- 12a. **In the original language:** The referent is a synonym of the input in the original language; e.g., the input was "Closed" and the referent is "Shut".
- 12b. **Translated into another language:** The referent is a word in another language that could be considered as a translation of the input with a highly similar meaning; e.g., the input was "Woman" and the referent is "Frau" (= woman, in German).
- 12c. **Label in another medium:** The referent is a label in a medium other than that of the original input; e.g., the input was a picture or image, and the referent is some label assigned to the image descriptive of it.
- 12d. **A different formulation of the same referent on the same level:** The referent is a rephrasing of the original input in the form of a phrase or words that are not synonyms but are on the same level as the input; e.g., the input was "Botany" and the referent is "Plant science".
13. **Replacement by implicit meaning value:** The referent is a replacement of the original input through its meaning value that has, however, not been explicitly produced earlier; e.g., the input was "Piano" and the response was "Music produces calm". Thus, the referent "Music" replaced "Piano", as a meaning value assigned implicitly to "piano".

The Referent Shifts may be grouped in terms of the following categories, reflecting their relative distance from the input: Close shifts (Nos. 1, 3, 9, 12), Medium shifts (Nos. 2, 4, 5, 6, 10, 11), and Distant shifts (Nos. 7, 8, 13).

Forms of Expression (FE)

This set of variables characterizes the mode of expression, especially the major modes used in expressing and communicating meanings.

1. **Verbal**: The meaning is expressed verbally: **1a. Actual direct enactment**; **1b. Verbal description of verbal response** (e.g., “I would explain to him/her...”); **1c. Using available verbal materials** (e.g., for “Love” Elizabeth Browning’s poem on love).
2. **Visual, graphic**: The meaning is expressed visually, in the form of images presented by figural, graphic, photographic, and other visual means: **2a. Actual visual material** (e.g., expressing meaning by drawing); **2b. Verbal description of visual response** (e.g., I could show a picture of...”); **2c. Using available visual materials** (e.g., using a photograph).
3. **Motoric-motional**: The meaning is expressed by using movements, acts, gestures, hand movements, and facial expressions: **3a. Actual enactment of movements, acts etc.**; **3b. Verbal description of motoric-motional response** (e.g., “It is possible to enact...”); **3c. Using available materials of motoric expressions** (e.g., using available materials of motoric expressions, such as photographs of movements).
4. **Auditory (vocal, tonal)**: The meaning is expressed by using tones (musical or other), voice (of humans, animals etc.), noises and any other auditory means: **4a. Actual production of auditory materials (voice, tones, etc.)**; **4b. Verbal description of auditory response**; **4c. Using available auditory materials** (e.g., using available vocal and auditory materials, like music and voice recordings).
5. **Denotative**: The meaning is expressed by pointing to actual objects, situations, etc.: **5a. Actual presentation of object, situation, etc.**; **5b. Verbal description of denotative response** (e.g., for “bicycle” – I would show a real bicycle), **5c. Using available materials referring to objects or situations etc.**

Appendix 2

An example of the coding of responses in the Meaning Test

Stimulus: Street; **Subject's response:** In a city, it is noisy and dirty, always interesting. Streets are sometimes dangerous for people.

Input	Referent	Meaning value	Referent shift	Meaning dimension	Type of relation	Form of relation	Form of expression
Street	Street	In a city	Identical to input	Locational qualities	Attributive: Qualities to substance	Propositional positive	Verbal: Actual direct enactment
	Street	It is noisy	Identical to input	Sensory qualities characterizing the referent	Attributive: Qualities to substance	Propositional positive	Verbal: Actual direct enactment
	Street	and dirty	Identical to input	State	Attributive: Qualities to substance	Conjunctive positive	Verbal: Actual direct enactment
	Street	Always interesting	Identical to input	Cognitive qualities evoked by referent	Attributive: Qualities to substance	Universal positive	Verbal: Actual direct enactment
	Streets	Are sometimes dangerous	Grammatical variation	Judgments & evaluations about the referent	Attributive: Qualities to substance	Partial positive	Verbal: Actual direct enactment
	Are dangerous	For people	Previous meaning value	Domain of application: direct or indirect object	Attributive: Qualities to substance	Propositional positive	Verbal: Actual direct enactment