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RESEARCH ARTICLE

The Nature and Functions of the Meaningfulness of Life

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ABSTRACT
The paper deals with the construct of the meaningfulness of life. After reviewing major theoretical and methodological approaches a new definition of meaningfulness of life is presented, grounded in the theory of meaning. Five different meaning-based assessment methods of meaningfulness of life are presented, each with a definition, major findings, advantages and disadvantages: the subject's meaning profile, an open-ended examination of the meaning of the meaningfulness of life, overall rating scale of the meaning of the meaningfulness of life, a dimensional questionnaire of the meaningfulness of life, and the four anchors of the meaningfulness of life. The interrelations of the five measures and the manner in which they complement one another in exploring the meaningfulness of life are described. The relations of meaningfulness of life with the individual's cognitive, emotional and personality tendencies are presented. A special section presents findings in a sample of cancer patients. The conclusions concern the nature and the psychological role of meaningfulness of life.

Keywords. Meaningfulness of life, meaning, quality of life, stress, health

The Nature and Functions of the Meaningfulness of Life

Meaningfulness of life: What is it?

A meaningful life is something many people would like to have; fewer people think they have it; and still fewer could define what it is. It is generally considered as a good thing to have or to own, but its nature and functions remain largely a mystery.

The issue of the meaningfulness of life (MOL) has been of central importance in the philosophies and religions of all cultures for many centuries. In recent years there has been a surge of interest in the concept of MOL. But it has turned into a potentially bothering issue on the personal level for an increasing number of people only in the last two or three centuries.[1-2] This may be the result of several trends, such as the rise in the importance of individualism,[3] realization of the imperfect state of the world, and not in the least, the decline of the status of religion as the provider of answers to major questions.[4]

Several approaches have been proposed in the behavioral sciences for dealing with the issue of MOL. Most share the assumptions that MOL is a resource for overcoming hardship, moderating the effects of traumata, facilitating coping, improving one's quality of life, promoting one's mental and physical health,[5-6] and enhancing the ability to enjoy life.[7-9] These concepts have inspired most of the commonly used questionnaires for assessing MOL. [7-11] These scales require the respondents to provide overall evaluations of their MOL by means of items referring to qualities, such as the authenticity, richness, self-actualization, purpose, significance or fulfillment in one's life. Thus, the implication is that the presence of MOL is attended by happiness, good health and satisfaction while its absence brings about depression, low quality of life, and despair. However, it remains unclear how all the good qualities attributed to MOL get translated into daily life and whether they exhaust all that MOL includes. One may wonder how does one get to have the rich, authentic, creative, goal-directed, adventurous, or satisfying life and whether these are actually the major or only qualities that endow life with meaningfulness?

The theoretical frameworks underlying at present the search for MOL are personality, and primarily positive psychology, with an emphasis on self-actualization. However, due to the unclarity and limitations of the answers provided by these approaches to the major questions about the nature and functions of MOL, it seems advisable to try an additional theoretical framework with a different methodology which would expand and deepen the comprehension and assessment of MOL. The suggested framework is cognition, and specifically the approach and methodology of the theory of meaning.[12] Notably, it is evidence-based, it includes a clear methodology that guides its applications, and it enables distinguishing between the general concept of MOL and its varied constituents.

The objective of this paper is to explore the nature and functions of MOL and methodologies for its assessment, by applying the new meaning-based theory and methodology.

The Meaning System

Meaning is the system with a unique function and structure which fulfills a basic role in the organism. The major function of the meaning system includes identification of stimuli and constructs, problem identification and problem solving. Asking oneself what is MOL and whether one has MOL are examples of issues of major importance for the individual that justify the application of the processes and contents of the meaning system.[12,13]

The definition of meaning is based on empirical material collected from thousands of subjects varying in age, gender, cultural background and education, who were requested to communicate to others the interpersonally-shared and personal-subjective meanings of a great number of different inputs using any verbal or non-verbal means of expression they considered adequate. Analysis of this data revealed that the meaning communications consisted of semantic molecules referring to a rich variety of contents in a great number of forms. Each semantic molecule included a subject or referent and some information about it.

Accordingly, meaning was defined as a *referent-cantered pattern of meaning values*. In this definition, referent is the input, the carrier of meaning, which can be a word, an object, a situation, an event, a whole period, or any other input, whereas meaning values are contents assigned to the referent for the purpose of expressing or communicating its meaning. For example, if the referent is 'table', responses such as 'made of wood' or 'is in a room' are three different meaning values. The referent and the meaning value together form a meaning unit, e.g., Table is made of wood.

The meaning unit can be characterized by the following five sets of variables: (a) Meaning Dimensions, which characterize the contents of the meaning values from the point of view of the specific information communicated about the referent, such as the referent's Sensory Qualities (e.g., Grass - green), or Feelings and Emotions it evokes (e.g., Storm – scary; (b) Types of Relation, which characterize the immediacy of the relation between the referent and the meaning value, e.g.,

attributive (e.g., Summer - warm), comparative (e.g., Summer - warmer than spring), or metaphoric (e.g., Love – like spring in your heart); (c) Forms of Relation, which characterize the manner in which the relation between the referent and the meaning value is regulated, e.g., in terms of its validity (positive or negative; e.g., Yoga - is not a religion), or form (e.g., Law - should be obeyed, Money - I wish I had more); (d) Referent Shifts, which characterize the relation between the referent and the presented input or the previous referent, e.g., they may be identical, opposite, partial or unrelated; (e) Forms of Expression, which characterize the forms of expression of the meaning units (e.g., verbal, denotation, graphic) and its directness (e.g., actual gesture or verbal description of gesture)[14] (see Table 1 for a list of all meaning variables).

Table 1: Major Variables of the Meaning System: The Meaning Variables

MEANING DIMENSIONS		FORMS OF RELATION	
Dim. 1	Contextual Allocation	FR 1	Propositional (1a: Positive; 1b: Negative)
Dim. 2	Range of Inclusion (2a: Sub-classes; 2b: Parts)	FR 2	Partial (2a: Positive; 2b: Negative)
Dim. 3	Function, Purpose and Role	FR 3	Universal (3a: Positive; 3b: Negative)
Dim. 4	Actions and Potentialities for Actions (4a: by referent; 4b: to referent)	FR 4	Conjunctive (4a: Positive; 4b: Negative)
Dim. 5	Manner of Occurrence and Operation	FR 5	Disjunctive (5a: Positive; 5b: Negative)
Dim. 6	Antecedents and Causes	FR 6	Normative (6a: Positive; 6b: Negative)
Dim. 7	Consequences and Results	FR 7	Questioning (7a: Positive; 7b: Negative)
Dim. 8	Domain of Application (8a: as subject; 8b: as object)	FR 8	Desired, wished (8a: Positive; 8b: Negative)
Dim. 9	Material	SHIFTS IN REFERENT[b]	
Dim. 10	Structure	SR 1	Identical
Dim. 11	State and Possible change in it	SR 2	Opposite
Dim. 12	Weight and Mass	SR 3	Partial
Dim. 13	Size and Dimensionality	SR 4	Modified by addition
Dim. 14	Quantity and Number	SR 5	Previous meaning value
Dim. 15	Locational Qualities	SR 6	Association
Dim. 16	Temporal Qualities	SR 7	Unrelated
Dim. 17	Possessions (17a) and Belongingness (17b)	SR 8	Verbal label
Dim. 18	Development	SR 9	Grammatical variation
Dim. 19	Sensory Qualities[c] (19a: of referent; 19b: by referent)	SR 10	Previous meaning values combined
Dim. 20	Feelings and Emotions (20a: evoked by referent; 20b: felt by referent)	SR 11	Superordinate
Dim. 21	Judgments and Evaluations (21a: about referent; 21b: by referent)	SR 12	Synonym (12a: in original language; 12b: translated in another language; 12c: label in another medium; 12d a different formulation for the same referent on the same level)
Dim. 22	Cognitive Qualities (22a: evoked by referent; 22b: of referent)	SR 13	Replacement by implicit meaning value
TYPES OF RELATION[a]		FORMS OF EXPRESSION	
TR 1	Attributive (1a: Qualities to substance; 1b: Actions to agent)	FE 1	Verbal (1a: Actual enactment; 1b: Verbally described; 1c: Using available materials)
TR 2	Comparative (2a: Similarity; 2b: Difference; 2c: Complementariness; 2d: Relationality)	FE 2	Graphic (2a: Actual enactment; 2b: Verbally described; 2c: Using available materials)

TR 3	Exemplifying-Illustrative (3a: Exemplifying instance; 3b: Exemplifying situation; 3c: Exemplifying scene)	FE 3	Motoric (3a: Actual enactment; 3b: Verbally described; 3c: Using available materials)
TR 4	Metaphoric-Symbolic (4a: Interpretation; 4b: Metaphor; 4c: Symbol)	FE4	Sounds and Tones (4a: Actual enactment; 4b: Verbally described; 4c: Using available materials)
		FE 5	Sensory (5a: Actual enactment; 5b: Verbally described; 5c: Using available materials)
		FE6	Denotative (6a: Actual enactment; 6b: Verbally described; 6c: Using available materials)
		FE 7	Visual media (7a: Actual production; 7b Verbally described; 7c: Using available materials)

[a] Modes of meaning: Lexical mode: TR1+TR2; Personal mode: TR3+TR4

[b] Close SR: 1+3+9+12 Medium SR: 2+4+5+6+10+11 Distant SR: 7+8+13

[c]This meaning dimension includes a listing of subcategories of the different senses/sensations: [for special purposes they may also be grouped into "external sensations" and "internal sensations"] e.g., color, form, taste, sound, smell, pain, humidity and various internal sensations.

The meaning system may be applied for analysing any communication or expression of meaning, regardless of whether it has been produced with the intention of expressing meaning or not. In assessing meaning communications, the material is first reduced to meaning units, and then each unit is coded on one meaning dimension, one type of relation, one form of relation, one referent shift and one form of expression. For example, when the referent is “Life” and the meaning value is "is short", the coding on meaning dimensions is Temporal Qualities, on Types of Relation – attributive, on Forms of Relation - positive, on Referent Shifts - identical to input, and on Forms of Expression - verbal. The analysis is done by a computer program.[17]

Any meaning variable represents a certain domain of contents as well as a process involved in handling different applications of that kind of contents. For example, the meaning dimension Locational Qualities may represent locations, addresses, sites of different kinds, as well as the cognitive processes of ordering or evaluating or memorizing places, looking for adequate locations for hiding items or searching for misplaced objects.[15-16]

Different Meaning-based Tools for Assessing the Meaningfulness of Life

The meaning system may be used for generating different kinds of assessment tools. The following five tools were applied in various studies for assessing diverse aspects of MOL. Each may contribute insight into a different aspect of MOL. Combining these different insights may be expected to provide a comprehensive image of MOL, based on a common theoretical basis, and multiple applications whose results could complement each other.

(a)The meaning profile of the individual. Each individual disposes over a certain 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 higher frequency and other meaning variables with medium or low frequency. The profile represents the set of all meaning variables that characterize a specific individual, each variable with its particular frequency.

The meaning profile is based on the analysis of the responses of the individual to the Meaning Test. The *Meaning Test* was developed for assessing individuals' tendencies to use the different meaning variables. It includes 11 standard stimuli (e.g., street, ocean), which have been chosen and pretested so that together they enable using in the responses all meaning variables in the meaning system. There exist three parallel independent sets of this test. The standard instructions require to communicate the interpersonally-shared and personal meanings of these stimuli to someone of one’s own choice who does not know the meanings, in as many forms and using any means of expression that seem adequate. Coding the responses in terms of the meaning variables yields the *subject's meaning profile* which summarizes the frequency with which the subject used each of the meaning variables.

For the coding, the responses are first divided into meaning units, each of which includes a referent and one meaning value. Then, the meaning unit is characterized in terms of the five sets of meaning variables, i.e., one meaning dimension, one type of relation, one form of relation, one referent shift, and one form of expression. Finally, the frequencies of the meaning variables of each set of meaning variables in the responses are summarized.

Thus, the subject's meaning profile includes meaning variables from the five sets described above. In order to neutralize the effect of the sheer number of responses, the raw frequencies of the responses are turned into proportions of the total number of responses. The coding of the meaning units can be done manually but it is usually done by means of a computer program[17] which includes also all coding instructions.

Thus, the individual's meaning profile represents the domains of content available to the subject. Hence, it includes the contents and processes that are applied in identifying inputs, comprehending situations and issues, performing cognitive acts including decision making, problem solving, learning and creativity, as well as in responding in terms of different personality traits and emotional tendencies. Each act is based on applying specific meaning variables and its performance is a function of the existence of these meaning variables in the individual's meaning profile.[12-14]

Moreover, the meaning variables salient in a specific case may affect the characteristics of the enacted action. For example, emphasis on the interpersonally-shared meaning variables (e.g., attributive and comparative types of relation) contributes to supporting objective approaches while emphasis on the personal-subjective meaning variables (e.g., examples, metaphors) contributes to communicating private and subjective expressions.[18]

The advantages of the meaning profile in the present context are that it represents the total reservoir of contents and processes that characterize the individual's thinking, attitudes, personality and emotions. Thus, it provides also the means and tools for conceptualizing and handling the issues involved in identifying and generating MOL in general and one's own MOL specifically. Even without having any information about the particular meaning variables an individual used for conceptualizing the MOL, it can be assumed with high probability that these variables exist in one's meaning profile

The disadvantage of the meaning profile is that it does not specify what the individual's MOL consists of. Thus, without information about the particular meaning variables applied in conceptualizing MOL, the correspondence between the meaning variables supporting the MOL and those that exist in the individual's meaning profile cannot be checked.

(b) ***The open-ended examination of the meanings of MOL***. The examination of meaning may take the form of simply using MOL as referent for meaning communication. The setup and the instruction are identical to those used in the standard meaning test, except for the difference in the input (or stimuli) for the meaning communication. In order to get the specific meaning of MOL it was compared with the meaning assigned to 'life. The two referents were presented separately.[19-20] The number of subjects who responded to both referents was 50. Out of these subjects, 45 responded also to the Meaning Test, which provided information about their meaning profile.

The major themes that were presented for the meaning of 'life' with a frequency of over 50% were: [each theme is followed by the meaning dimension characterizing it, see Table 1 for the notation]: The usual duration of life (Dim. 16), who or what has or does not have life (Dim. 8a), the development of life and its origins (Dim. 18), the conditions under which life thrives (Dim. 6), kinds or types of life (TR 2a), manifestations of life (Dim. 4a), where life can be found (Dim. 15).

The major themes presented for the MOL with a frequency above 50% were: doing something good for others (Dim. 4a, Dim. 21a), being a good person (Dim. 21a), being conscious of being alive (Dim. 22b), being creative (Dim. 2b), having children (Dim. 3, Dim. 8b), having feelings (Dim. 20b), and thinking about oneself (Dim. 22b, Dim. 8b). In over 50% of the responses there was a shift from MOL in general to My MOL.

Comparing the meanings of MOL and 'life'. Comparing the themes of the meanings of MOL and 'life' show that the meanings differ. One major difference is that the meaning of MOL includes more meanings based on the personal-subjective mode, namely, it has more examples of one's personal memories, one's wishes, emotions, cognitions and evaluations. In contrast, the meaning of 'life' includes more references to actions and descriptive objective features, expressed more in terms of the interpersonally-shared mode of meaning.

Notably, the meaning of MOL includes several of the themes that are used in the major tools for assessing MOL, such as authentic and purposeful life. In terms of contents, only 13% of the themes in the meaning of 'life' were shared with those in the meaning of MOL.[21] In sum, the meanings of MOL and of 'life' cannot be used interchangeably.

Comparing the meanings of 'life' and of MOL with the subjects' meaning profiles. The meaning of MOL

shared 34% of the meaning variables with those of the individual's meaning profile (mainly the meaning variables of domain of application, causes, range of inclusion, and the exemplifying-demonstrative types of relation). The meaning of 'life' shared 25% of the meaning variables with those of the individual's meaning profile (mainly the meaning variables of temporal qualities, actions, location and domain of application).

In sum, the meanings of both MOL and 'life' show similarities with the individual's meaning profile, which implies that the meanings of both referents are basically grounded in the individual's sphere of meaning, the meaning of MOL more than that of 'life'.

Advantages. Advantages of the open-ended type of exploration are that it is focused on specific referents. Thus, it may be expected to reveal the components of the understructures of the examined referents and enables identifying the specific meanings of MOL and examining the differences between the meanings of MOL and other referents, as 'life' as well as the relation of these meanings to the general meaning profile of the subjects. The resulting image is complete and rich, based on all meaning variables in the system of meaning. The method allows the participants to express completely and fully their own meanings of the examined referent, referring to the basic meaning variables with all the finer nuances.

Disadvantages. A major disadvantage of this approach is that since it is open-ended, it requires the participant to produce actively a response, verbally or nonverbally, to generate it and to communicate it. It requires the investigator to code the response in terms of the meaning variables. Although this task can in principle be done also in a computerized form, for the program to be in a functional state a large number of responses to the relevant referents should be available. Further, repeating assessments may be difficult because changes in presenting the specific referents are limited and the participants often recall their previous responses to the originally used referents.

(c) ***Overall rating scale of the meaning of MOL***. An overall rating of MOL on a single rating scale which runs from 1 (none or very low) to 7 (very high) is an independent assessment method. The introducing question is: Please rate the overall meaningfulness of your life on the following scale from 1 to 7.

In a sample of healthy undergraduates (n=74), the mean rating was 7.3 (SD=1.2). In cancer patients, prior to diagnosis the mean was 6.7, and following it 5.2. [19-20]

Correlations with other variables. The overall rating of MOL was correlated positively and significantly with the number of items checked as constituting one's MOL in the dimensional questionnaire of MOL (see next section) ($r=.71$, $p<.001$).

Advantages. The overall rating of one's MOL is an easy tool for the participants. It is easily understood and evokes a fast response. It is also easy for the investigators because it can be readily evaluated and used in statistical frameworks. Further, it can be administered to the same samples on repeated occasions for testing reliability and the impact of different conditions and manipulations, as well as in large samples, facilitating comparison of findings.

Disadvantages. The overall rating scale is not highly informative in the sense that it is not very clear what the specific numbers in the scale represent. It is not evident what each scale point represents and whether it represents the same thing for different people or for the same person on different occasions. It is likely that the differences between adjacent scale points may not be equal or comparable (e.g., the difference between 4 and 5 may not equal to the difference between 6 and 7). This may affect the reliability of the scale and of the responses.

(d) ***The dimensional questionnaire of MOL***. A dimensional questionnaire is a close-ended meaning questionnaire focused on one specific referent, that does not change in the course of the questionnaire, and includes responses in the different meaning dimensions of the meaning system, one item per each meaning dimension. The response options require checking the degree to which the item communicates adequately one's meaning of the referent, a lot to not at all, scored as 4, 3, 2, and 1, respectively (Appendix 1 presents an example).

Formats of the questionnaire. There are different ways of presenting the items. One way is to present in each item only the title of the meaning dimension that refers to the referent. Another way is to add to the title of the meaning dimension several examples merely for illustration. A third way is to present only examples of the meaning dimension without mentioning its title. A fourth way is to present the items non-verbally by small drawings or icons.

Instructions that may be used in the dimensional questionnaire. The dimensional questionnaire of MOL can be used with different kinds of instructions that emphasize different aspects of the meaning and role of MOL. The major ones that have been used up to now refer to (a) What contributes to meaningfulness in one's life? (b) What could contribute to meaningfulness in one's life? (c) What should contribute to meaningfulness in one's life? And (d) What one would like to contribute to meaningfulness in one's life? Additionally, a specific instruction asked about the extent to which each of

the presented items exists in one's life at present. Each instruction is accompanied by responses which require evaluating the extent to which it applies, e.g., the extent to which the described item contributes to MOL in one's life or the extent to which one would like it to contribute to MOL in one's life.

Any one of these instructions can be used for the questionnaire, sequentially, one at a time, in any order, as chosen by the investigator or therapist. There is no need to use all instructions or a specific number in a given study. The standard instruction is considered as the mentioned one which requires focusing on the aspects that exist at present.

The advantage of the specific four mentioned instructions (a-d) is that they have a theoretical basis which is that they represent the four types of beliefs defining the motivational disposition in the framework of the cognitive orientation theory. [23-25] The four instructions represent beliefs about self, general beliefs about reality, beliefs about norms and beliefs about goals and wishes. Thus, using all four kinds of instructions provides a comprehensive view of the major forces in the individual's motivational sphere concerning the MOL. It supplies the basis for hypotheses about the kind of behaviors that the individual is likely and able to undertake for attaining or enhancing one's MOL. By the same token, it implies which kinds of belief are too weak to support behaviors for enhancing one's MOL.

However, any other kind of instruction may be applied regarding the dimensional questionnaire, for example, one may ask about things which have played an important role in one's life in the past, things that are often used by others, or things one considers as important.

Scores of the questionnaire. There are two major kinds of scores that are used regarding the dimensional questionnaire. One is a sum total of the responses provided by the subject, whereby the response that expresses a highest support is scored as 4 (e.g., contributes a lot), and the one that expresses the lowest support is scored as 1. This score provides information about the total state of the individual's MOL. It may be divided by the number of items in the questionnaire so as to neutralize the impact of the number of items that may differ to some extent in different questionnaires. Assuming that the number of items is 30, the range of the score would be 22-88, or in terms of the mean 1-4.

Another common scoring method is based on the number of items or domains that were scored as 4 or 3, i.e., were checked as existing or desirable etc. in the two highest degrees. This score provides information about the domains that contribute most to the subject's MOL as well as about the structure of the subject's MOL. When the number of domains that got high scores is relatively low it implies that the MOL is based on a selected specific limited number of domains; but when it is high, the MOL of that individual is spread over a large number of different domains and is not focused on a specific content.

Some findings: About the dimensional questionnaire. In different samples the reliability coefficients of the dimensional questionnaire were in the range of .78-.85.[22]

As noted, there was one score representing the degree to which each of the domains in the questionnaire may contribute to one's MOL and another score representing the degree to which each of these domains existed in one's life. The majority of domains checked as existing (mean=6.5, Sd=2.4) formed part of those checked as contributing to MOL (Mean=6.9, Sd=3.5). The two measures were almost identical.[21]

Notably, the sheer number of domains checked by the individual as contributing highly (scores 3 or 4) to one's MOL, is related to one' level of stress. In healthy individuals this score correlated significantly with high stress vulnerability. The possible reason may be that these individuals tend to be on guard to maintain many domains contributing to their MOL as well as to be continuously alert so as to identify domains with potential value for their MOL.[26-27]

The different number of domains checked in response to the four basic instructions (see above) was examined in a study with 90 university students in a variety of faculties, in the age range 23 to 29, including an equal number of men and women.[25] The four instructions were administered in random order in regard to the same dimensional MOL questionnaire. The means of the total number of domains for the four different instructions ranged from the 10.4 to 4.5 different domains. The highest number of domains was checked when the instructions called for items that could contribute to one's MOL (10.4), followed by the number of items that one would like to contribute to one's MOL (7.8), the items that contribute to one's MOL (6.9), and the number of items that should contribute (4.5).

Findings: Relations between the dimensional questionnaire and other variables. Previous studies showed that in healthy adults (30-50 years old) the total score in the dimensional MOL questionnaire as well as the score based on the number of domains checked as contributing a lot or moderately (scores 4 or 3) to MOL were correlated positively with the *overall rating of one's MOL* (r=.55-.60, and r=.71-.74, p <.001, respectively). This supports the validity of the score of both measures of MOL. [19,28]

The relations between the dimensional MOL questionnaire and the *meanings of 'life'* were examined in a sample of healthy adults which included 230 participants of both genders (130 women, 100 men), in the age range 27-54 years, who responded to the online address. Comparing the responses showed that the contents of the items checked in the dimensional questionnaire differed from those the individuals mentioned when asked about the meanings of 'life' (there is overlap only in 10%).[22]

Another study was devoted to examining the relations between the dimensional MOL questionnaire and the *individual's meaning profile* based on the responses to the meaning test.[16] The first and basic comparison was done between the content of the responses selected in the dimensional questionnaire and the meaning dimensions used in the individual's meaning profile. Even without considering the relative frequencies of the responses in the two frameworks the correspondence was high. Comparing the content of the responses in both questionnaires showed that 74% of the items checked in the dimensional MOL questionnaire corresponded to the meaning dimensions used in the meaning profile.

In order to identify more specifically the characteristic responses of individuals in their meaning test, two groups of subjects were studied: 91 students in the age range of 20-31 and 122 adults in the age range of 35-67. The subjects responded to both the dimensional MOL questionnaire and to the Meaning Test. The high and low scorers on the dimensional questionnaire were compared in regard to their meaning profiles based on the Meaning Test. The high scorers on the dimensional MOL differed from the low scorers in using in the Meaning Test more the meaning dimensions of action, feelings and emotions, causes, results, contextual allocation, judgments and evaluations; the attributive type of relation complemented by the exemplifying-demonstrative one to a medium degree, and the comparative and metaphoric-symbolic only to a low degree; the complex forms of relation but not the negative ones; the verbal form of expression; and mainly the present inputs without deviating too much into the associative distant referent shifts.

The relation between MOL and the individual's meaning profile provides also the groundwork for the relation between MOL and personality traits. Personality traits were shown to be in fact patterns of meaning assignment tendencies. [29-31] The components for personality traits are available in the individual's meaning profile.

The relations of the dimensional MOL questionnaire with *quality of life* (QOL) were examined in several studies.[16,19,20,22,32] QOL was assessed by the multidimensional QOL inventory for adults,[33] which includes 20 items referring to different domains, such as positive emotions, negative emotions, stress, basic needs, mastery and independence, social functioning, and cognitive functioning, defining three major factors: positive emotions, negative emotions and everyday functioning (reliability = .87). The subject was required to check the frequency of occurrence of each item (very often, often, sometimes, rarely). The responses were summed across all items, as well as in terms of the three factors.

The score of the dimensional MOL questionnaire was correlated positively with the total score of QOL ($r=.39$, $p<.001$), as well as with each of the three factors: positive emotions, negative emotions and functioning ($r=.31$, $-24.,.28$, respectively), as well as with other clusters of the scales, i.e., emotional state, functional state and physical state.

A particular aspect of the emotional state is existential despair which in a cancer sample was found to be correlated negatively with the score of the dimensional MOL questionnaire ($r=-.47$, $p<.001$). [42] The two scales shared 22% of the variance.

Exploring the relations between MOL and QOL sheds light on an additional unexpected aspect of the possible impact of MOL. In examining the underlying motivations for QOL an experimental survey along the lines of a conventional questionnaire of 'strengths and difficulties' was prepared. [34,35] In a sample of healthy individuals significant correlations were found between the domains checked in one's dimensional MOL questionnaire and the degree of decrease in one's QOL caused by temporary or prolonged difficulties in the domains reported by the subjects. For example, losing objects or money lowered one's QOL especially for a person scoring in MOL high in possessions; rejection or criticism by others lowered one's QOL especially for a person scoring in MOL high in evaluation, and living in a small apartment lowered one's QOL especially for a person scoring high in location. Findings of this kind imply that MOL defines the domains whose maintenance is important for upholding one's QOL. Observations of this kind provide a theoretical basis for a better understanding of the impact of MOL on QOL.

Since meaning in life has been found to be related with better physical and mental health, [36-38] the relations of the dimensional MOL questionnaire were examined also with the individual's *psychological immunity in regard to physical diseases*.

The immunity was assessed by the Cognitive Orientation of Health (COH) questionnaire that provided scores on four types of beliefs – about oneself, about reality, about rules and norms, and about goals and wishes. In each belief type there were 30 items, assessing themes identified in pretests as underlying one's psychological immunity, e.g., coping with stress, relations with others, attitudes to oneself. The questionnaire's validity was supported by studies which showed that the scores of COH predicted significantly disease occurrence, course of disease, recovery from disease, and reactions to treatments and side-effects, for example, in regard to cardiological diseases, breast cancer, lymphoma, and the flu. [39-41] Examining the relations between MOL and COH yielded only low correlations (.25,.13,.14 with beliefs about self, $p<.01$, norm beliefs, $p<.05$ and goal beliefs $p<.05$, respectively). Further analyses showed that the relations between MOL and COH are mediated indirectly by means of QOL.[22]

Advantages of the dimensional MOL. The dimensional MOL questionnaire is a comprehensive assessment tool that represents all the meaning dimensions, i.e., the content domains that are the major components of the meaning system and play a basic role concerning MOL. It is simple and easy for administration, because it is comprehensible, and conforms to the conventional format of questionnaires. It may be administered repeatedly and also to large samples. It enables freedom in phrasing and presenting the items, and hence may be adjusted for respondents of different kinds and all ages, including children. Since the questionnaire is focused on a single referent, the results can be readily compared across different referents and a great variety of research themes.

Disadvantages of the dimensional MOL questionnaire. The only evident disadvantage of this tool is its restriction to the use of content domains that correspond exclusively to meaning dimensions. Meaning dimensions are an important component of the meaning system but only one component. Hence, it provides important information about MOL but probably not all possible or important or useful information.

(e) ***The four anchors of MOL***. The assessment approach of the four anchors of MOL represents a modified and shortened version of the dimensional MOL questionnaire. It consists of the four following clusters of meaning dimensions that resulted from factor analyses of the dimensional MOL in different samples:

1. The actional-dynamic cluster, based on the meaning dimensions: Actions and potentialities for action: active (Dim. 4a), actions and potentialities for actions: passive (Dim. 4b), function, purpose and role (Dim. 3), manner of occurrence and operation (Dim. 5), development (Dim. 18).
2. The perceptual-sensory cluster, based on the meaning dimensions: Sensory qualities: attributed (Dim. 19a), sensory qualities: perceived (Dim. 19b) [both in general form or in specific references, e.g., color, form, taste, sound, smell, pain, humidity and various internal sensations), weight and mass (Dim. 12), size and dimensionality (Dim. 13), material (Dim. 9), structure (Dim. 10), state (Dim. 11), locational qualities (Dim. 15), range of inclusion: parts (Dim. 2b).
3. The experiential-cognitive cluster, based on the meaning dimensions: Judgments and evaluations: about referent (Dim. 21a), judgments and evaluations: by referent (Dim. 21b), cognitive qualities: about referent (Dim. 22a), cognitive qualities by referent (Dim. 22b), feelings and emotions: about referent (Dim. 20a), feelings and emotions: experienced by referent (Dim. 20b).
4. The contextual-situational cluster, based on the meaning dimensions: temporal qualities (Dim. 16), antecedents and causes (Dim. 6), consequences and results (Dim. 7), domain of application: subject (Dim. 8a), domain of application: object (Dim. 8b), quantity and number (Dim. 14), possessions (Dim. 17a), belongingness (Dim. 17b), contextual allocation (Dim. 1), range of inclusion: subclasses (Dim. 2a).

The items of the questionnaire of the four MOL anchors may be presented in two formats. According to one format, the dimensional MOL questionnaire is presented in its standard form, and the items of the four anchors are inserted in it in random order. The scores for the four anchors may then be computed separately.[22] According to second format, the items of the four MOL anchors are presented in a clustered form, i.e., the items of each anchor are presented together in a sequence, sometimes with a title that characterizes their content.

The scores of the four clusters are computed as in the case of the dimensional MOL, i.e., in terms of the sum of the responses to all the items in the cluster, or in terms of the number of items in the cluster that were scored as 4 and 3, i.e., were considered as most preferred. However, the number of items included in the four clusters differs: it is 5, 9, 6 and 10 for the clusters of the actional-dynamic, perceptual-sensory, experiential-cognitive and contextual-situational, respectively. Therefore, in order to neutralize the impact of the differences in the number of items, it is advisable to compute means of the responses (see Table 2).

Table 2: Means, standard deviations and t-tests results for the four anchors of MOL in two age groups of teenagers

The variable	Group	Means	Standard deviation	t-test values
General MOL	Eighth grade	3.3315	.33583	3.461***
	Eleventh grade	3.2046	.15490	
Actional -dynamic	Eighth grade	3.2601	.38726	3.144***
	Eleventh grade	3.1061	.31145	
Perceptual-sensory	Eighth grade	3.4388	.44093	-.829
	Eleventh grade	3.4782	.25026	
Experiential-cognitive	Eighth grade	3.3125	.42183	4.824***
	Eleventh grade	3.0705	.23005	
Contextual-situational	Eighth grade	3.2933	.42013	3.562***
	Eleventh grade	3.1161	.27757	

Note. The number of participants in the eighth grade was 106, in the eleventh grade 101
*** p <.001

Findings referring to the four anchors. As mentioned, the four clusters were defined on the basis of repeated factor analyses, i.e. [22,42]. Each cluster has satisfactory reliability (in the range of .63-.72), which is however lower than for the whole dimensional MOL questionnaire (.78-.85 in different samples).

In a study with an adult sample (n=230, including both genders, in the age range 27-54 years), the means for the four anchors were as follows: M=5.2 (Sd=0.9), M=2.4 (Sd=0.3), M=4.6 (Sd=1.4), and M=3.3 (Sd=0.5) for the actional, perceptual, experiential and contextual clusters, respectively.

Table 2 presents the mean scores of the four clusters in two younger age groups: in the eighth and eleventh grades (Kreitler, Ben-Atar, & Badarnee, unpublished data, 2022, submitted). The table shows that the means of the four clusters differ in the two age groups, except for the cluster of perceptual-sensory which implies that the external sensory qualities are of equal attractiveness for the eighth and eleventh age groups. In regard to the other three clusters the means in the younger age group are significantly higher than the means in the older subjects, which may indicate that the findings reflect to some extent the results of elaboration and choice on the part of the older subjects.

On the whole, the scores of the three clusters (all except the perceptual) are higher in the younger age group than in the older age group. But the differences between these three clusters in the younger age group are not significant. Neither are the differences between these clusters significant in the older group. The only exception is the perceptual-sensory cluster which has in both groups a higher mean than the other clusters. These findings imply that at least for children between the eighth and eleventh grades the actional, experiential, and contextual clusters are equally attractive, although slightly more so for the younger than for the older group. However, the perceptual-sensory cluster is most preferred in both groups, not surprisingly considering the variety of stimulation, concreteness and manipulativeness it offers.

The four clusters were correlated significantly with the total score of the dimensional MOL questionnaire: the correlations were .26, .13, .31. and .45 for the actional, perceptual, experiential and contextual anchors, respectively (all p<.001, except .13 p<.05).[22]

The four clusters are not intercorrelated in most samples, except for samples of young subjects (ages 12-14) in which 2 or 3 of the 6 possible intercorrelations turn out significant. This implies that in younger ages the distinctions between the four clusters may not have reached clarity for the subjects, possibly for lack of elaboration and interest. Thus, the subjects may not have yet become aware of the specific aspects of MOL that are important for them personally.

In order to assess the number of the four anchors on which the individuals tend to focus, the scores of the subjects on each of the four anchors were computed. Each subject's score was compared with the means of the anchors. The subject's score was evaluated as +1 when it was above the mean of the anchor; otherwise, it was evaluated as 0. The mean number of anchors in which healthy subjects scored above the means of the anchors was 2.1 (SD=0.3). This indicates that most of the subjects focused on about two of the four anchors. These were usually the actional-dynamic and the contextual-situational anchors, while the other two anchors fulfilled rather a secondary auxiliary role.

Findings concerning the relation of the four clusters with other variables. The relation between the four anchors of MOL and the individual's profile of meaning variables was examined in a study in which the participants were administered both the meaning test and the dimensional MOL which included also the scores for the four anchors.[16] The levels of responses in the four anchors were compared for the subjects who scored high (i.e., had at least 25% of the profile's variables) and those who scored low on the

meaning profile (i.e., had less than 25% of the profile's variables). The comparisons showed that the high scorers on the meaning profile had high scores on the actional-dynamic and on the contextual-situational anchors, medium scores on the experiential-cognitive anchor and low scores on the perceptual-sensory anchor. These results indicate a close correspondence between the meaning profile and the four anchors which express a similar approach to reality.

Examining the relations between the four anchors and the subjects' QOL showed that all four anchors were correlated significantly with the total QOL score (all $p<.001$, except for the perceptual anchor, $p<.05$). In addition, the perceptual-sensory and contextual-situational anchors were correlated with all factors of QOL (with the factors of functioning and negative emotions, $p<.001$, and less so with positive emotions, $p<.05$); and the experiential-cognitive anchor with positive emotions ($p<.001$), negatively with negative emotions ($p<.001$), but not at all with the factor of functioning.[22]

Examining the relation between the four anchors and the subjects' scores on the test of psychological immunity for physical diseases (COH) showed differential relations with the four types of beliefs which constitute the components of the COH. The actional-dynamic anchor was correlated highly with beliefs about goals but lowly with beliefs about self and general beliefs; the perceptual-sensory anchor was correlated lowly with general beliefs and norm beliefs; the experiential-cognitive anchor was correlated highly with beliefs about self and beliefs about goals, but lowly with norm beliefs; the contextual-situational anchor was correlated highly with beliefs about self and general beliefs but lowly with norm beliefs. In sum, the relation between the four anchors and the motivational factors for physical immunity was based mainly on two anchors: first, on the relation of beliefs about self with the experiential-cognitive anchor, and secondly, on the relation between beliefs about goals with the actional-dynamic and the experiential-cognitive anchors. These findings imply the potential contribution to one's health of focusing, on the one hand, on self-reported health and especially on attention to one's internal sensations, and, on the other hand, on specific selected action plans promoting health. Notably, norm beliefs are related only weakly with the motivational factors for health.[22]

MOL in the sphere of cancer. Cancer is a particularly challenging theme in regard to MOL because they are considered to be interrelated in complex and even contradictory ways[43]. On the one hand, cancer is assumed to affect MOL negatively. On the other hand, MOL is considered as a cure for the depression and despair likely to be evoked by cancer.[44-46]

It was of particular interest to examine different aspects of MOL in samples of cancer patients in order to test the stability of the major findings and their interrelations under challenging conditions.

The subjects in the study were 52 cancer patients [age: M=56, Sd=6.7, both genders] with different diagnoses, undergoing chemotherapeutic treatment.[19,21] They were administered the overall rating of their MOL, the dimensional MOL questionnaire the QOL questionnaire, and the meaning test. Comparing the findings in the cancer sample with those in a comparable sample of healthy individuals showed no significant differences in the overall rating of MOL (cancer: M=3.9, SD=1.1; healthy: M=4.9, SD=1.6); in the mean of scores of the preferred domains on the dimensional MOL questionnaire (cancer: M=5.9, SD=2.2; healthy: M=6.5, SD=2.4); in the correlation between the dimensional MOL and the overall rating of MOL (cancer: $r=.65$, $p<.001$; healthy: $r=.71$, $p<.001$); correlation between the dimensional MOL questionnaire and the overall QOL questionnaire (cancer: $r=.55$, $p<.001$; healthy: $r=.55$-$.66$, $p<.001$); degree of matching between the dimensional MOL questionnaire and one's meaning profile (cancer: 64%, healthy: 71-74%); the mean number of the four meaning anchors on which there was high score (cancer: M=1.6, SD=0.2; healthy: M=2.1, SD=0.3).

The findings in which cancer patients differed from the healthy subjects referred mainly to the nature of the preferred meaning anchors and the characteristics of the meaning assignment tendencies as manifested in the meaning test. Thus, the cancer patients preferred the experiential-cognitive cluster, complemented by the perceptual-sensory one, while the healthy subjects focused primarily on the actional-dynamic cluster and on the contextual-situational one.

The major characteristic tendencies of cancer patients according to their meaning profile were the meaning dimensions of time, place, sensory qualities, cognitive qualities, domain of application: subject and object; the exemplifying-demonstrative and metaphoric-symbolic types of relation; referent shifts to close inputs and distant ones, marked by associations; the use of nonverbal forms of expression. In sum, cancer patients preferred the personal-subjective mode of meaning and focused on the concrete aspects. This contrasted with the more balanced meaning profile of the healthy subjects which was marked by preference for the use of the interpersonally-shared mode of meaning, focused

more on actions and on an abstract approach (see above).

Another set of findings relates to the relation between MOL and existential distress.[42] The participants were 30 cancer patients of both genders, 42 to 71 years old, in different stages of the disease, with different diagnoses. They were administered the dimensional MOL questionnaire and the existential distress scale, [47] which included two factors: 'loneliness' accounting for 34.5% of the variance, and 'emptiness' accounting for 22.5% of the variance.

The findings show that the total scores of the dimensional MOL questionnaire and the total score as well as the scores of the two factors of the existential distress scale were negatively correlated ($r=-.47$, $-.44$, $-.46$, respectively, $p<.01$). Additionally, also five of the eight correlations between the four anchor scores and the two existential distress factors were significant. Notably, the emptiness factor was related negatively particularly with the actional-dynamic cluster, which implies that withdrawing from action may enhance one's sense of worthlessness; in contrast, the emptiness factor was related negatively particularly with the emotional-cognitive cluster, which implies that overlooking the emotional-experiential aspects may enhance one's sense of being alone, without anyone who can provide support, understanding, or consideration.

In sum, the findings in the cancer patients indicate that the basic results concerning the different MOL assessment tools stay stable in the cancer samples.[19,48] This supports the validity of the measures and the findings. The major differences between the cancer patients and healthy subjects concern content aspects which reflect specific tendencies of cancer patients coping with serious health and life difficulties. These are manifested especially in the contents of the preferred clusters of the four anchors and in the meaning profile.

Major Conclusions about the Meaningfulness of Life

The presented findings concerning the MOL support several general conclusions about MOL. A major one is that meaningfulness of life is meaning. As such, it is an act of finding, detecting, or assigning meaning to one's life.

The close relation of MOL with meaning has important theoretical and methodological implications. Theoretically it indicates that MOL is closely related to the individual's general world of meanings – which is the repository of tools one uses in making sense of everything, including oneself, for thinking, feeling and acting. In addition, it suggests that similarly to other psychologically basic constructs, MOL is involved continuously in the process of elaboration, generation and adaptation to the changing vistas of the internal and external environments.

The grounding of MOL in meaning may shed light on the relations of MOL with different personality traits and emotional tendencies. Major among these are personality traits since they are in fact patterns of meaning assignment tendencies.[14,26,27] This implies that the individual's meaning profile includes the components for defining the specific personality traits of the individual.

The described findings showed that MOL is related to emotional tendencies. These include QOL, its components – the scales of positive emotions and negative emotions, and existential distress. As expected, MOL is related negatively to the negative emotions, including existential distress, and is related positively to positive emotions and the overall QOL. Notably, MOL is related to stress too, not only on the basis of personality and emotional tendences but also due to the structure of MOL itself. When it is overly loaded the individual may experience the need to maintain the different components of MOL which may be attended by increased stress.

Since meaning is essentially a cognitive construct, it is to be expected that MOL would be characterized by specific cognitive tendencies. These were manifested in the meaning profiles of individuals who differed in their degrees of MOL. The high scorers on MOL tended to focus on reality, on interpersonally-shared meanings, on meaning dimensions supporting the actional-dynamic approach and on contextual features of the situation, complemented by emphases on experiential-cognitive and sensory aspects. They manifested a goal-directed, orderly, systematic and complex thinking, without shifting too far from the present inputs.

Beyond the mentioned theoretical advantages of the grounding of MOL in meaning, there are also methodological benefits, which are mainly the options of devising assessment tools focused on different aspects of MOL. These include primarily the overall rating of MOL, themes that constitute the content of MOL, and differently phrased scales for assessing the components of MOL, in terms of meanings. Notably, these different measures are reliable, valid, flexible in phrasing and presentation, adaptable for samples of different kinds and ages, may be administered repeatedly, and can be easily related to different variables that may be of interest. Most importantly, they are general measures of MOL and at the same time highly individual, content-based tools. They also enable diagnosing the specific

aspects in which an individual's MOL is weak and deficient or in need of modification and elaboration. The replication of the findings concerning MOL in a sample of cancer patients provides evidence for the validity of the meaning-based approach to MOL. Future studies need to be devoted to extending the administration of the tools to further samples differing in demographic, diagnostic and cultural features.

A further research venue that is being developed focuses on interventions designed to test methods of elaborating MOL so that it could be mobilized for serving the variety of psychological needs of individuals of all kinds.

Appendix 1. A Questionnaire about the Meaningfulness of Life [sample of items]

Different people have different attitudes about the meaningfulness of their life. Some may feel that their life is very meaningful whereas others may feel that it is less meaningful. There are different things that could affect the feeling that one's life is meaningful. To what extent does each of the following things exist in your life at present?

Items	Exists a lot	Exists to some extent	Exists a little	Does not exist at all
To be active, to do things, to perform things				
Getting help, being given things by others, having others arrange things for me				
Feeling that I belong to something or someone				
To be in contact with people, that there would often be people in my vicinity				
Developing, being in a state of development, feeling that I develop, that my life develops				
Being able to think, to understand, to imagine, to analyze, to solve problems; having a good memory				
Having a body with good proportions and dimensions				
Dealing with things of which there are many, whose quantity is large				
Living in a place I like – country, location, home				
To be appreciated by others, that others would have a good opinion about me and my work				
To always have enough time for everything, not to be pressured in time, to know that I will each an advanced age				
To be a property owner, to feel I own many things, that I have possessions				
To feel that I have role in life, that my work or studies have a purpose				
To experience many emotional experiences, to react emotionally to people and situations, to learn to know many new emotions and feelings				

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