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Meaningfulness of Life and Existential Distress

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Abstract

Objectives: Two preliminary studies are described. The objective of Study 1 was to examine the relations between Meaningfulness of Life (MOL) and Existential Distress (ED) in advanced cancer patients. The objective of Study 2 was to examine the feasibility and effects of applying an experimental online intervention for increasing MOL. Hypotheses: (a) MOL and ED would be related negatively; (b) Increasing MOL would be followed by lowered ED.

Methods: In study 1 there were 30 cancer patients with advanced disease and in study 2 - 19 participants: 10 experimental and 9 controls. Two scales were used: meaning based MOL [1,2] referring to aspects of meaning, representing four clusters: actional-dynamic, perceptual-sensory, experiential-cognitive, contextual-situational, and ED [3], which includes 10 items loaded on the factors of emptiness and loneliness. In study 1 the scales were administered only once, in study 2 - before and after the intervention. The intervention consisted in requesting the subjects to select responses to specific questions targeted to enhance their support for particular aspects of MOL.

Results: The findings in study 1 showed that ED and MOL are related negatively and significantly. The emptiness factor is related most highly to the action-dynamic cluster, and the loneliness factor to the experiential-cognitive cluster. The highest scores of MOL are on the impersonal contextual-situational and lowest on the personal experiential-cognitive components. In study 2 the intervention resulted in higher scores in MOL and decrease in ED.

Significance of Results: The findings show that MOL and ED are autonomous constructs, related negatively. The structure of the scales is described and a new MOL scale is presented. It was shown that MOL can be increased by a simple online intervention, which could decrease ED. The findings may promote research with MOL and ED and clinical applications for reducing ED.

Keywords: Cancer; Existential Distress; Meaning; Meaningfulness of Life; Oncology

Study 1

Introduction

Meaningfulness of Life (MOL) is a basic construct in an individual's worldview, playing an important role in one's psychological and spiritual well-being. It is considered as a resource for overcoming hardship, moderating the effects of traumata, facilitating coping with negative events [4], overcoming the fear of death [5] and enhancing the ability to enjoy life [6-8]. Finding one's life meaningless may lower one's psychological well being [9], and cause "existential vacuum" manifested by boredom, depression or aggression [10]. Loss of MOL is a likely determinant of the loss of the will to live [11-13].

Many studies showed that cancer patients score lower than healthy individuals on questionnaires assessing MOL (e.g., [14-16]). A potential results of loss of MOL is increase in existential distress (ED) [17]. Existential Distress (ED) has been often diagnosed in cancer patients, especially in the advanced disease stages [16-18]. It describes a range of phenomena, including deterioration in health, the sense of impending death, helplessness,

and loss of dignity, independence, control over one's life, and hope for improvement. It increases when death seems imminent [19], and in patients who choose euthanasia [20]. ED is often affiliated with questions, such as "Who am I?", "Am I still the same person I have been before the cancer?", "Why has all this befallen me?", "Is this suffering part of my life?" [21-23]. Questions of this kind are often identified as expressing existential concerns but also as manifesting loss of MOL [11, 24-25].

Hence, it seems that MOL and ED share some components. The bond between them formed the core of logotherapy which is based on the assumption that the human need for meaning is one of the strongest drives of human beings [9]. The relations between ED and MOL are unclear. Some investigators consider MOL and ED as components of the same construct [8,26]. Some regard low MOL as a constituent of ED [3,20,27] or as its determinant [9, 28-32]. The study was designed to contribute to clarifying the relation between MOL and ED. Insight into the components and dynamics of the relation between these important constructs is of theoretical importance and may have clinical implications in regard to reducing ED (see Study 2). The present study focuses on the relation between MOL and ED by treating MOL as a construct initially and basically distinct from ED and by applying an innovative approach to the assessment of MOL.

There are many assessment tools of MOL, most notable of which are the Life Regard Index [33], the Life Attitude Profile-Revised [34], Meaning in Life Questionnaire [8], Sense of Coherence scale [35], Purpose in Life test [7], Purpose in Life Scale [6] and Meaning in Life Questionnaire [36]. Most scales share the following characteristics. First, they are based on a positive conception of MOL, describing it as a rich, interesting, authentic, creative, energetic, purposeful, adventurous, or satisfying life. Second, they use overall evaluations by the individuals of their MOL, i.e., the extent to which it is rich, satisfying, etc., without specifying particular domains of MOL. However, considering the domains of MOL may shed light on the components of MOL and may highlight new venues for helpful interventions. The new meaning-based questionnaire of MOL (called MMOL) [1] is grounded theoretically in the cognitive theory of meaning developed by Kreitler [37]. The major assumptions that led to its production were first, that as a measure of meaningfulness MOL should be best based on a theory of meaning; and secondly, that there may be many varied aspects or domains of life that may provide sources for meaningfulness for different individuals. As noted, assessing these different domains may promote understanding of MOL and enable potential interventions.

Accordingly, the MMOL includes items that refer to the basic content categories of meaning (called Meaning Dimensions) which are used by individuals to express or communicate meanings of any kind of stimuli. The meaning categories have been identified on the basis of a rich body of data that included meaning responses of several thousands of subjects in different countries and cultures, differing in age, education, profession and gender, who were asked to communicate the meaning of a variety of referents differing in abstraction, and content spheres (e.g. human, animal, plant, nature, or artificial/synthetic). Examples of the meaning categories are the action of the referent, its sensory features, time and space qualities, emotional aspects, development and possessions. Meaning categories of this kind represent basic cognitive processes applied in any kind of cognitive operation (e.g., problem solving, decision making), as well as cognitive aspects of personality tendencies or traits and communications of meanings of all kinds [38,39]. Items in the MMOL refer for example to doing things and being active or to having emotional experiences (see Appendix 1 for the MMOL). The items define four clusters: items focused on sensory-perceptual aspects, actional-dynamic aspects, experiential-cognitive aspects and contextual-situational.

Previous studies showed that in healthy adults (30-50 years old) as well as in cancer patients the number of items checked as contibuting a lot or moderately was correlated positively with the overall rating of one's MOL (.71-.74, p<.01). This supports the validity of the MOL. There are differences in the number of checked items with different kinds of instructions: highest number of items was checked when the instructions called for items that could contribute to one's MOL (10.4), followed by the number of items 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 those items that should contribute (4.5) [1,2].

Further, the number of domains checked as contributing a lot or moderatly to one's MOL was correlated positively with the overall score of Quality of Life (QOL) as well as with the scores for the three clusters of QOL scales, denoting the subject's emotional state, functional state and physical state. The highest correlation was obtained for MMOL with the cluster of emotional state, the lowest with the cluster of physical state scales. Notably, significant correlations were found in a sample of healthy individuals between the domains checked in one's MMOL and the degree of decrease in one's QOL caused by temporary or prolonged difficulties in that domain as reported by the subjects. For example, impairment in walking lowered one's QOL especially for a person who checked in one's MMOL actions as contributing a lot. Similarly, losing objects or money lowered one's QOL especially for a person who checked in one's MMOL possessions as contributing a lot, and rejection/criticism by others lowered one's QOL especially for a person who checked evaluation as contributing a lot [40].

Concerning the relation between MMOL and meaning it is to be noted that the items checked in the MMOL refer to contents that are different from those the individuals mention when asked about the meanings of life (there is overlap only in 5-10%). On the other

hand, 71%-74% of the items checked in the MMOL correspond to meaning dimensions used by the subject with high frequency in the Meaning Test [41]. The finding indicates that MOL is grounded in one's world of meanings.

The contents, structure and correlates of the MMOL imply that it may be related to ED and that the particular components of MMOL may be helpful in shedding light on the nature of ED. Accordingly, the objective of the study was to examine in an exploratory manner the relations between MMOL and ED in advanced cancer patients in order to gain insight about the underlying determinants of ED. The major hypothesis was that MMOL and ED would be correlated negatively.

Method

Participants: The participants in the study were 30 cancer patients of both genders (19 women and 11 men) ranging in age from 42 to 71 years, in advanced stages of the disease, with different diagnoses.

Tools: The two tools administered to the participants were the MMOL (38 items) and the ED scale [3], (10 items), translated forward and backwards into Hebrew. In the present study the reliabilities of the scales in terms of Cronbach's alpha were .72 and .74, respectively.

Procedure: The two questionnaires were administered together in random order to patients recruited for a variety of studies. All participants signed the consent form for participation. Five patients who responded only to a part of the items were excluded from the sample.

Results

A factor analysis of the 10 items of the ED scale showed that it included two factors: the first accounting for 34.5% of the variance with loadings above .40 of the five items denoting loneliness (see items 1-5 on the original scale), and the second accounting for 22.5% of the variance with loadings above .39 of the five items denoting emptiness and worthlessness (items 6-10 on the original scale). Together they accounted for 57% of the variance. The first factor was labelled Loneliness, the second Emptiness.

Comparing the means of the scores in the two scales between the genders yielded no significant results. Neither did a comparison of younger versus older participants (cutting point the median 60 years). Therefore, all the sample was analyzed together.

Table 1: Means and Sds of the scores on the MMOL and the Existential Distress scale and correlation coefficients between the MMOL scores and the ED scores

Scale	Mean	Sd	Correlation with ED total	Correlation with ED Emptiness	Correlation with ED Loneliness
MMOL total score	98.7	3.1	-.47**	-. 44*	-.46**
MMOL Perceptual-Sensory	25.5	7.4	-.38*	-.37*	-.36*
MMOL Actional-Dynamic	23.4	5.8	-.37*	-.45*	-0.35
MMOL Experiential-Cognitive	17.3	4.4	-.42*	-0.22	-.47**
MMOL Contextual-Situational	32.5	8.9	-0.31	-.39*	-0.24
Existential Distress total score	26.3	7.2	---	---	---
Existential Distress Emptiness factor	11.3	4,2	---	---	---
Existential Distress Loneliness factor	14.7	5.6	---	---	---

*p<.05 **p<.01

Range of MMOL scores 38-152; range of Existential Distress scores 4-40. For the items of MMOL and of the clusters of MMOL see Appendix 1

(Table 1) presents the means and Sds of the scores on the ED and MMOL scales and their components. In addition, it shows the correlations between the two scales and their components. The relevant findings are that the correlation between the total scores of MMOL and of ED is negative and significant. It suggests that 22% of the variance in these scales is common to both. Further, the four clusters of the MMOL are correlated negatively with the total ED score (significant except for the contextual-situational cluster), and the two factors of the ED are correlated negatively and significantly with the total MMOL score. Additionally, also the correlations between the four clusters of the MMOL and the two factors of the ED are negative and significant except for the Loneliness factor with the clusters of actional-dynamic and contextual-situational, and the Emptiness factor with the experiential-cognitive cluster. These three latter correlations are negative but not significant.

Analyzing the correlational findings suggested three conclusions. First, ED total tends to be low when MMOL is high. Second, the Emptiness factor of ED is related negatively to three MMOL clusters, i.e., the actional-dynamic, sensory-perceptual, and the contextual-situational, whereby the relation with the first is the closest. Third, the Loneliness factor is related negatively only to two of the MMOL clusters, the experiential-cognitive and the sensory-perceptual, more to the former than to the latter.

Discussion

The major result of this preliminary study was that MMOL and ED are correlated negatively. This finding provides support for the major hypothesis of the study. The result suggests the conclusion that a low score on MMOL and a high score on ED feed each other. Since ED is a kind of emotionally-based evaluation of oneself while MMOL is a more abstract cognitively-based construct, it seems theoretically more plausible to assume that low MMOL is the factor that acts as one determinant of ED, rather than that ED enhances a low MMOL score.

Further, the findings show that not only the total scores of MMOL and ED are correlated significantly, but also five of the eight correlations between the MMOL clusters and the two ED factors are significant. Hence, the relation between MMOL and ED can be considered as a pervasive one.

Notably, of the four MMOL clusters the lowest score is on the experiential-cognitive one, and the highest on the contextual-situational one. This suggests that the cancer patients in the sample anchor their MOL relatively most on the impersonal contextual-situational components and least on the personal experiential-cognitive components. A pattern of this kind could lead to high ED.

A closer inspection of the findings suggests special contributions of particular MMOL clusters to ED factors. It appears that the Emptiness factor of ED is related particularly to the actional-dynamic cluster and the Loneliness factor of ED to the experiential-cognitive cluster. The implication in regard to emptiness is that a low score on the actional-dynamic components of MMOL may enhance one's sense of emptiness and worthlessness, possibly because of the awareness that one is not active and does nothing. The implication in regard to loneliness is that a low score on the experiential-cognitive components of MMOL may promote one's sense of loneliness because overlooking the emotional-experiential aspects could enhance the conclusion that one is basically alone, without anyone who can provide support, understanding, or consideration.

A note is required in regard to the finding that in the present study two factors (accounting for 57% of the variance) were identified in the ED scale whereas in the original publication of ED [3] only one factor (accounting for 51% of the variance) was found. The samples in both studies were small and therefore inadequate for actual factor analysis (20 subjects in the original study, 30 in ours). One possible reason for the difference in findings may depend on the composition of the sample (all females in the original study and mixed genders in the present study). Another reason may be the procedure of administering the scale which in the original study was based more on interviewing and in the present study on responding to printed scales. Be it as it may, the present study is preliminary and needs to be repeated with a larger sample, adequately defined in terms of cancer diagnoses and stages, and relevant demographic variables.

Study 2

Introduction

Over the years different interventions for reducing ED in cancer patients have been presented (e.g., [42]. Most of them target cancer patients in the palliative stage and are designed to increase their well-being by reducing or resolving different existential concerns. The meaning-centered psychotherapy [43-45] is the best known and most successful of these interventions [46]. Other interventions are the dignity therapy [23], supportive-expressive group psychotherapy [47], "the healing journey" [48], "re-creating your life" [49], cognitive-existential therapy [50], meaning making intervention [51], and cognitive-existential intervention [52]. The interventions share several characteristics. They use psychotherapeutic means, mainly verbal discussions; they consist of several consecutive sessions; they are often based on group psychotherapy; they are basically cognitive; and they focus on issues of meaning of life which consist mainly in finding meaning in the adversities of the patients' life. Despite differences in criteria, reviews show that most of the interventions are at least to some degree efficacious in helping cancer patients in the palliative stage.

The present study was inspired by the generally positive results of the mentioned interventions. The main objective of Study 2 was to examine the feasibility of applying in cancer patients an online systematic intervention for increasing specific aspects of MOL in order to decrease thereby ED. The intervention is based on changing ED through a change in MMOL because MMOL is a structured and well defined construct, at least in terms of its definition and assessment in the present study. The new intervention resembles the mentioned ones in being cognitive and in being focused on meaning. However, it differs from the other interventions in being completely online, in depending exclusively on enhancing aspects of meaning in general rather than in regard to cancer, and in not depending on sequential sessions but only on activation by the patient at will for a few minutes.

The hypothesis was that following the intervention there would be an increase in the MMOL scores and a decrease in the ED scores in the experimental group.

Method

Participants: The subjects were 19 cancer patients, 10 of whom served as experimental subjects, and 9 as control subjects. They were of both genders, in the age range of 45 to 70 years, with different diagnoses, all in stages II-IV. Five subjects participated also in Study 1.

Tools. The two questionnaires that were used were the same used in Study 1: The MMOL (38 items) and the ED scale [3]. They were administered twice, with a two-week interval.

Procedure: Subjects were addressed personally and were asked to participate in an experimental study designed to examine a new intervention procedure. All signed the consent form for participation. The three phases of the study were first, responding to the questionnaires, then responding to presented questions designed to serve as a MOL intervention, and finally responding again to the two questionnaires. The whole study was performed online. The following procedure was followed in the experimental group: First, in the course of two minutes, the items of the MMOL were presented in the form of four groups, in random order, labeled as sensory-perceptual aspects, actional-dynamic aspects, experiential-cognitive aspects and contextual-situational aspects. For each group only 5 items were shown, which were those that in previous studies most subjects (patients or healthy) checked most often as contributing a lot or moderately to MOL. The instruction was "simply look at the items and read them". Then, one of the four groups was presented separately and the subject was asked to select one item of the presented group. In regard to the selected item, the subject was asked to check Yes or No for each of 3 stated reasons for the choice, and to answer the following 3 questions: Have you ever done something that exemplifies this item or has it ever happened in your life in some form? Yes/no; Is it possible that something that exemplifies this item would happen or you could do it in your life now? Yes/no; If you did something that exemplifies this item or it showed up in your life now, would you enjoy it? Yes/no. All answers were given by clicking the response out of the presented alternatives. The same procedure was repeated in regard to the four groups, presented each separately in random order. Each Yes response was scored as 1, and each No response as zero. Thus, the responses for the intervention ranged from zero to 24. In the control group only the four groups of items were presented, with the instruction "simply look at the items and read them". The subjects were contacted each separately over a period of 4 months. The subjects were interviewed after the study about their views concerning the procedure. Only 6 provided responses.

Results

(Table 2) presents the means and Sds of the experimental and control groups prior to the intervention and following it. The means of the two groups in MMOL and in ED prior to the intervention are highly similar. But following the intervention, there is evidence for the expected difference in the experimental group: the scores of MMOL increase and the scores in ED decrease. The changes in the experimental group are small: the increase in MMOL is of 2.45% and the decrease in ED is 5.08%. Yet, the changes are significant by paired t-test. In the control group none of the changes between pre and post intervention are significant. The interviewees after the study expressed their overall satisfaction with the simplicity and clarity of the procedure. Their specific suggestions were to apply it in regard to more items and to provide more freedom of choice of items without enforcing choice in the framework of specific groups of items.

Discussion

The results provide support for the hypothesis. The observed changes were in line with the expectations although they were small. Yet, in view of the brevity and simplicity of the intervention, the results may be interpreted as indicating that the intervention is operable and has the potential of serving as a useful intervention for increasing MMOL and decreasing ED. This conclusion is supported also by the views of the interviewees about the procedure. Their specific suggestions concerning expanding the number of addressed items and broadening the freedom of choice will be applied in future developments of the intervention. Future research should be based on a larger sample defined in terms of standard medical and demographic characteristics.

Table 2: Means and Sds of the MMOL and ED scales in the pre- and post-intervention stages of Study 2.

Scale	MMOL Mean	MMOL Sd	ED: Mean	ED: Sd
Pre-Intervention: Experimental subjects	88.78	7.15	27.15	3.14
Pre-Intervention: Control subjects	88.96	7.65	27.65	2.85
Post-Intervention: Experimental subjects	90.96	6.48	25.77	2.88
Post-Intervention: Control subjects	88.99	9.01	27.24	3.23
Paired t-test: MMOL experimental	t=2.216* The mean of Pre-minus the mean of Post = -2.180 95% confidence interval of this difference: -4.405 to 0.045			
Paired t-test: MMOL control	t=0.01 The mean of Pre-minus Post =-0.030 95% confidence interval of this difference: -7.885 to 7.825			
Paired t-test: ED experimental	t=3.584** The mean of Pre-minus Post =1.380 95% confidence interval of this difference: 0.450 to 2.310			

Paired t-test: ED control	t=0.286 The mean of Pre-minus Post =0.411 95% confidence interval of this difference: -2.633 to 3.455
*p<.05 **p<.01	

General Discussion

The two described studies bring into focus two constructs that are of high relevance for cancer patients in the different phases of their disease. Cancer patients have been reported to suffer from ED and may struggle with maintaining their MOL in view of the crises and difficulties they undergo. Study 1 indicates that the two phenomena are related and may be assessed as autonomous constructs. The study showed that ED includes two factors -a sense of emptiness and of loneliness. The meaning-based assessment of MOL included items referring to four clusters - actional-dynamic, experiential-cognitive, perceptual-sensory and contextual-situational. The fact that all correlations between the two ED factors and the four MMOL clusters were negative and in 5 cases also significant indicates that the negative relation between ED and MMOL is reliable and pervasive.

The negative correlation between ED and MMOL has two implications. First, ED and MOL are not part of one phenomenon as was suggested by some (e.g., [8]), but can be considered as separate constructs. The significant correlation between ED and MOL indicates that they share some of the variance but the amount of the shared variance is only 22.01% which does not justify identifying the two constructs. Second, Study 2 showed that one of the constructs, specifically ED, can be affected by changing the other. Our intervention focused on changing MMOL because it seemed to be more practical and easier to manipulate than changing ED directly. Finally, a special advantage of the MMOL intervention is that it is grounded in an empirically based and comprehensive theory of meaning, which defines its scope and goals for the investigator and the patients.

Concerning the intervention procedure, Study 2 showed that it is operable and possible. Further, as an online intervention, it is simple, brief, and cheap. It can be applied by the patient at will. After a brief demonstration, the patient can use it on his/her own repeatedly, also in regard to items that have not been trained originally. Therefore, it is suggested to include it in the set of existing interventions for reducing patients' ED by enhancing their MOL. Future research will be devoted to improving the MMOL intervention by extending it, adapting it to needs of different patients, and using the information reflected in different scores of the responses to the intervention. Additionally, the studies demonstrate the usefulness, applicability and significance of the MMOL as a new and valid measure of MOL, whose special contribution is that it provides clinically significant information about the components of MOL in terms of a comprehensive approach to meaning.

The limitations of the studies reside foremost in the small samples. This reflects the basic approach that the studies were meant to be exploratory and provide preliminary findings that could serve as basis first, for examining the relations of ED and MMOL in larger samples, well defined in terms of diagnoses, disease stages, treatments, and the basic demographic characteristics; and secondly, for developing the intervention for enhancing MMOL in cancer patients. Further limitations are that only one tool was used for each construct without examining the correlations with other tools. Similarly, Study 2 did not include any provision for comparing the application of the MMOL intervention to other interventions for reducing ED.

Disclosures

There are no disclosures relevant in regard to the two reported studies.

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Appendix 1

The Meaning-based Scale of the Meaningfulness of life

Some people may feel that their life is very meaningful, others may feel that it is less meaningful. There are many things that can enhance the feeling that life is meaningful. To what extent each of the following **contributes to your personal feeling that your life is meaningful**? Please answer without considering whether they exist in reality or are attainable in reality.

	Contributes a lot	Contributes moderately	Contributes a little	Contributes very little or nothing
1. To be active, to do things, to perform things				
2.To get help, to be given things by others, to have others arrange things for me				
3.To feel that I belong to something or someone				
4.To develop, to be in a state of development, to feel that I develop, that my life develops				
5.To be able to think, to understand, to imagine, to analyze, to solve problems; to have a good memory				
6.To have a body with good proportions and dimensions				
7.To deal with things of which there are many, whose quantity is large				
8.To live in a place I like - country, location, home				
9.To be esteemed, that others will entertain good thoughts about me; that others will value me and my work				
10.To always have enough time for everything, not to be pressured by time; to know that I will get to an advanced age				
11.To own many things, to have possessions, to feel that many things belong to me; to have money				
12.To feel that I have a task or purpose in life, that my work has a goal; to have a profession, a career				
13.To know what are the causes for my behavior and for the things that I do				
14.To be aware of the things that are affected by me, of the things and the people with whom I am in contact; to be in contact with e.g. people, animals, nature				

15.To have always the right kind of bodily weight				
16.To have many emotional experiences, to react emotionally to people and things, to learn to know many new emotions, to be able to feel deeply about things				
17. That there would be results or effects to what I do or say				
18.To be in contact with people, to have people around me most of the time				
19.To belong to a certain nation, to a certain community, to a certain group, gender, organization, team; to feel that I am part of a family				
20.To have a variegated life, a life of different kinds				
21.That my life would include different distinct domains				
22.To be aware of how things happen, of the manner in which life occurs, of the involved processes				
23.That different materials would fulfill a certain role in my life, for example, water, air, metals and crystals, cotton and wool				
24.That my life would have a certain structure; that my life would be a continuum of events interrelated in some form; that my life would be organized				
25.That there would be changes in my life				
26.That there would be many things I would want				
27. To evoke in other people emotions like love or longing, sometimes even fear or anger; to be loved				
28.To have certain opinions and beliefs, to believe in certain things				
29.To be a source of inspiration for others, to evoke in them thinking or understanding				
30. To look well, to be physically beautiful, handsome				
31.To be healthy, to be in a good physical state				
32.To learn to know many tastes, that my food would taste well' to be able to taste things with an interesting taste				
33.To have interesting and exciting physical sensations				
34.To be able to listen a lot to music that I like				
35. Not to feel pain of any kind				
36.To be exposed in my environment to colors and forms that I like				
37.That my life would be stable, based on routine				
38. To have a skin and hair in good colors				
Note: There is another set of instructions which focuses on checking in regard to each item to what extent it exists in one's life at present. The response alternatives are: Exists a lot, exists to some extent, almost does not exist, does not exist at all. The instruction about existence is diagnostic for the present situation; the instruction about contribution is essential for intervention and therapy.				

Scoring:

Method A: Sum all the responses: contribute a lot=4, contribute moderately=3,

contribute a little =2, does not contribute at all=1.

Interpretation: The whole range is from 38 to 152. The score of 95 is the median.

38-66: low meaningfulness of life

67-95: medium low meaningfulness of life

96-123: medium high meaningfulness of life

123-152: high meaningfulness of life

Method B: Count the number of items to which the subject responded with scores of

3 or 4. These are the aspects which the subject considers as constituting his/her

meaningfulness of life. The median number is 19.

A score above 19=very high meaningfulness of life

A score between 11 and 18= medium meaningfulness of life

A score 0 - 10=low meaningfulness of life

Method C: Based on the contents of the meaningfulness of life.

There are four clusters:

Cluster 1: Represents the actional-dynamic aspects.

It includes items no. 1,2,4, 12,22, 25 [Total 6 items]

Cluster 2: Represents the experiential-cognitive aspects.

It includes items no. 5,9,16,26-29 [Total 7 items]

Cluster 3: Represents the perceptual-sensory aspects.

It includes items no. 6,7,15,23, 30, 32-36, 38 [Total 11 items]

Cluster 4: Represents the contextual-stuational aspects. [Total 14 items]

It includes items no. 3, 8, 10, 11, 13,14, 17, 18, 19, 20, 21, 24, 31, 37 Count how many items in each cluster the subject marked as 3 or 4. The higher the number the more important is that cluster for the subject's meaningfulness of life. Examine the dispersion of the items marked as 3 or 4 in the four clusters. Examine the preferences of the subject for the different clusters.

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