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# Meaning in Life: An Important Factor for the Psychological Well-Being of Chronically Ill Patients?

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## Abstract

**Purpose—**This study aimed to investigate 2 dimensions of meaning in life—Presence of Meaning (i.e., the perception of your life as significant, purposeful, and valuable) and Search for Meaning (i.e., the strength, intensity, and activity of people's efforts to establish or increase their understanding of the meaning in their lives)—and their role for the well-being of chronically ill patients.

**Research design—**A sample of 481 chronically ill patients ($M$ = 50 years, $SD$ = 7.26) completed measures on meaning in life, life satisfaction, optimism, and acceptance. We hypothesized that Presence of Meaning and Search for Meaning will have specific relations with all 3 aspects of well-being.

**Results—**Cluster analysis was used to examine meaning in life profiles. Results supported 4 distinguishable profiles (*High Presence High Search, Low Presence High Search, High Presence Low Search, and Low Presence Low Search*) with specific patterns in relation to well-being and acceptance. Specifically, the 2 profiles in which meaning is present showed higher levels of well-being and acceptance, whereas the profiles in which meaning is absent are characterized by lower



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levels. Furthermore, the results provided some clarification on the nature of the Search for Meaning process by distinguishing between adaptive (the *High Presence High Search* cluster) and maladaptive (the *Low Presence High Search* cluster) searching for meaning in life.

**Conclusions—**The present study provides an initial glimpse in how meaning in life may be related to the well-being of chronically ill patients and the acceptance of their condition. Clinical implications are discussed.

### Keywords

acceptance; chronic illness; cluster analysis; meaning in life; well-being

## Introduction

Researchers and clinicians are clarifying the factors in constructive coping among chronically ill individuals. Understanding this process is a crucial step toward interventions that stimulate well-being and life quality. Previous research has shown that adaptation to a chronic condition requires individuals to revise one's life goals and expectations, given that serious illness often crosses valued goals and life plans (Pinquart, Silbereisen, & Frohlich, 2009). Such a profound revision of one's life often raises disquieting questions of meaning in life. Meaning in life refers to people's concerns with the core significance and purpose of their personal existence. Indeed, concerns about life's meaning are especially salient for individuals coping with significant medical stressors (Dezutter, 2010; Sherman & Simonton, 2012).

Although several theories have been put forth on the role of meaning in life when coping with severe life stressors (e.g., Frankl, 1963; Janoff-Bulman, 2004; Yalom, 1980), only recently has empirical research explored this domain (for an overview, see Park, 2010). Research in healthy populations showed meaning in life to be an important factor in optimal functioning. Meaning in life, for example, has been positively associated with psychological well-being in healthy adolescents (Brassai, Piko, & Steger, 2011) and adults (Steger, Kawabata, Shimai, & Otake, 2008; Zika & Chamberlain, 1992). Furthermore, meaning in life seemed to be inversely related to depression (e.g., Debats, 1996; Mascaro & Rosen, 2005). Recently, there is some evidence that those who find meaning in life may be better able to cope with medical challenges. In a sample of individuals living with spinal cord injury, meaning in life was related with higher psychological well-being (DeRoon-Cassini et al., 2009). Similarly, cancer patients with higher meaning in life reported improved quality-of-life (Sherman, Simonton, Latif, & Bracy, 2010), higher well-being (Park, Edmondson, Fenster, & Blank, 2008), and lower levels of depressive symptoms and fatigue (Yanez et al., 2009).

## Presence of Meaning and Search for Meaning

Although preliminary evidence shows that meaning in life may influence health, current research is often limited by conceptual concerns (Sherman & Simonton, 2012; Sherman et al., 2010). The multidimensional character of the concept resulted in a multitude of research tapping into different aspects of the construct (for a review, see Morgan & Farsides, 2009).

Steger and colleagues made a successful attempt to remedy this lack of conceptual clarity by distinguishing between two components of meaning in life (Steger, Frazier, Oishi, & Kaler, 2006).

The first aspect, *Presence of Meaning*, indicates whether individuals perceive their lives as significant and purposeful. The term refers to the comprehension of oneself and the surrounding world, including the understanding of how one fits into the world (King, Hicks, Krull, & Del Gaiso, 2006; Steger, Kashdan, Sullivan, & Lorentz, 2008). The second aspect, *Search for Meaning*, refers to the strength, intensity, and activity of people's efforts to establish or increase their understanding of the meaning and purpose of their lives ("how can I make my life more meaningful?"; Steger, Kashdan et al., 2008). In sum, whereas the Presence of Meaning dimension implies some kind of outcome, the Search for Meaning dimension refers to an active and process-oriented factor.

Empirical studies on meaning in life and medical stressors focus predominantly on the component of Presence of Meaning (e.g., Sherman et al., 2010; DeRoon-Cassini et al., 2009) with limited attention toward the dimension of Search for Meaning (Cohen & Cairns, 2012). Available research, however, has found unique correlates associated with these two components, suggesting that both play a distinct role in individual's psychological functioning. More specifically, Presence of Meaning has been found to be positively associated with psychological well-being, whereas the associations between Search for Meaning and psychosocial functioning are less clear (Steger, 2012). Further, meaning in life research is often conducted within a variable-centered perspective, focusing on Presence of Meaning *or* Search for Meaning, but not on how these variables relate to each other (Magnusson, 1985).

A person-oriented approach can complement the existing variable-oriented literature by identifying naturally occurring patterns among variables (Bergman & Magnusson, 1997; Scholte, van Lieshout, de Wit, & van Aken, 2005). Two recent studies in healthy populations highlight the need to study the within-person interaction between Search for Meaning and Presence of Meaning by demonstrating that searching for meaning has distinct consequences for individuals who have high levels of presence of meaning compared to those individuals having low levels of presence of meaning (Cohen & Cairns, 2012; Dezutter et al., 2013). Both studies showed that if individuals both experience meaning and search for it, presence of meaning seems to buffer for the negative impact of searching for meaning. These studies focus on healthy individuals' well-being, but it is unknown how these meaning in life dimensions interact among chronically ill patients for whom topics regarding life meaningfulness are probably more salient and may have greater impact on mental and physical health.

## Current Study

The present study focused on Searching and Presence of meaning in life as factors that might affect psychological well-being of chronically ill patients, and we opted for a person-oriented approach (i.e., cluster analysis). Because of the lack of prior research on meaning in life typologies in chronically ill patients, our research was largely exploratory to provide the

basis for future hypothesis-driven research. However, based on one previous study clustering Presence of Meaning and Search for Meaning in a healthy population (Dezutter et al., 2013), we expected at least four clusters to emerge: a) a cluster consisting of patients who experience high levels of meaning without searching for meaning (*High Presence Low Search*); (b) a cluster with the opposite profile—consisting of patients who report low levels of meaning and who are searching for meaning (*Low Presence High Search*); (c) a cluster consisting of patients high on search for meaning and high on presence of meaning (*High Presence High Search*); and (d) a cluster consisting of patients low on both search for meaning and presence of meaning (*Low Presence Low Search*).

Based on earlier research pointing to the benevolent role of experiencing meaning in life, we anticipated that clusters characterized by higher levels of Presence of Meaning would be characterized by greater levels of well-being (e.g., Yanez et al., 2009) whereas the opposite was expected for clusters characterized by lower levels of Presence of Meaning. Furthermore, we hypothesized that high levels of Search for Meaning, combined with low levels of Presence of Meaning might indicate a stressful search, as reflected in lower levels of well-being. On the other hand, high levels of Search for Meaning combined with high levels of Presence might indicate an adaptive search (Frankl, 1963), as reflected in higher levels of well-being (graphical overview in Table 1).

## Method

### Participants

The study was conducted by the Interdisciplinary Center Church and Society (Hekking & Vandewiele, 2011)[1] and requested by the Dutch National Health Service division of Patient Care (Ziekenzorg CM). Participants were registered in the database of the Dutch National Health Service as chronically ill persons and received an official “chronic disease” diagnosis by a medical doctor of the National Institute for Health and Disability Insurance (RIZIV). The RIZIV follows the guidelines of the World Health Organization and describes chronic diseases as diseases of long duration, namely longer than 6 months, and with a slow progression. Most frequent chronic diseases in Belgium are low back pain, arthritis, neck pain, and chronic headaches (Paulus, Van Den Heede, & Mertens, 2012). Because of privacy reasons, researchers were not allowed to have access to diagnosis information.

One thousand five hundred six randomly selected chronic ill patients received an invitation to fill out an enclosed questionnaire. Randomization was performed by inviting every tenth person in the Ziekenzorg CM database for collaboration in the study. Five hundred twenty-eight patients consented (response rate 29%), and 481 usable questionnaires were obtained. Anonymity was guaranteed, and the Board of the Ziekenzorg CM and of IKKS reviewed and approved the study. The sample consisted of 481 patients diagnosed by the RIZIV as patients with a chronic disease. Demographically, the sample was 68% women and mean age was 50 years (*SD* = 7.26, range 26 – 65). Average duration of the chronic condition was

[1]The full report of this study can be found (in Dutch) on the website of the IK-KS: www.ik-ks.org.

12 years (*SD* = 10.70, range 1 – 59). Sociodemographic information and description of disability can be found in Table 2.

## Instruments

**Meaning in life—**Participants rated the 10 items of the *Meaning in Life Questionnaire* (MLQ, Steger, Frazier, Oishi, & Kaler, 2006) on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). One subscale taps into Presence of Meaning (Cronbach's alpha = .84, e.g., *I understand my life's meaning*) and one into Search for Meaning (Cronbach's alpha = .85, e.g., *I am always looking to find my life's purpose*).

**Life satisfaction—**The Satisfaction with Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985) is a short, 5-item instrument designed to measure global cognitive judgments of one's life. Participants rated the items on a 5-point scale ranging from 1 = *strongly disagree* to 7 = *strongly agree* (e.g., *If I could live my life over, I would change almost nothing*). Cronbach's alpha for this sample was .86.

**Acceptance—**Acceptance of chronic disease is measured with a single item (*I have accepted my chronic disease*) rated on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

**Optimism—**Optimism is measured with a single item (*I have a positive outlook in life*) rated on a 5-point scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

## Data Analysis

Correlational analyses (SPSS 19.0) were performed to test the relationships between the study variables. Confirmatory factor analysis (Mplus 6, Muthén & Muthén, 2010) is performed to test the presence of a higher order latent 'well-being' factor based on the manifest scores of life satisfaction, acceptance, and optimism. Cluster analysis (SPSS 19.0) is performed to investigate natural occurring profiles of the meaning in life dimensions. Cluster analyses were conducted on the dimensions of Presence of Meaning and Search for Meaning. Scores were standardized in *z* scores within the total sample, and only standardized scores were used for cluster analyses. In the first step, a hierarchical cluster analysis was carried out using Ward's method and squared Euclidian distances (Steinley & Brusco, 2007). In the second step, the cluster centers from this hierarchical analysis were used as nonrandom starting points in a noniterative *k*-means clustering procedure (Breckenridge, 2000). This two-step procedure remedies one of the major shortcoming of the hierarchical method, namely that once a case is clustered, it cannot be reassigned to another cluster at a subsequent stage. *k*-means clustering, however, minimizes within-cluster variability and maximizes between-cluster variability, allowing reassignments to “better fitting” clusters and thus optimizing cluster membership (Gore, 2000).

Finally, multivariate analyses (SPSS 19.0) were performed to test for cluster differences in well-being.

# Results

## Preliminary Analyses

All correlations among the study variables are presented in Table 3. Age and illness duration were unrelated to the study variables, except for a negative significant correlation between age and satisfaction in life ($r = -.19$, $p < .001$). In line with previous research, Presence of Meaning and Search for Meaning were negatively related ($r = -.25$, $p < .001$), and Presence of Meaning was strongly positively related with feelings of optimism, acceptance and life satisfaction. Search for Meaning was negatively related with all three aspects. As expected, correlations among life satisfaction, acceptance, and feelings of optimism were positive.

To determine how life satisfaction, acceptance, and feelings of optimism were related, a Confirmatory Factor Analysis was conducted using Mplus 6.0 (Muthén & Muthén, 2010). A first model with the five items of life satisfaction, the optimism item and the acceptance item representing one latent factor indicated an adequate fit, $\chi^2(14) = 39.61$, $p < .001$, RMSEA = .06, SRMR = .02, CFI = .98 (Hu & Bentler, 1999). However, the path from acceptance to the latent factor was not significant ($\beta = -.001$, $p = .82$). Therefore, a second model is tested without acceptance resulting in an optimal fit, $\chi^2(9) = 24.29$, $p < .01$, RMSEA = .06, SRMR = .02, CFI = .99, with all paths significant at $p < .001$. A composite well-being score was computed including both life satisfaction and feelings of optimism. Acceptance is treated as an additional factor besides well-being.

## Cluster Analysis on Meaning in Life

Cluster analyses were conducted on the dimensions of Presence of Meaning and Search for Meaning. A 4-cluster solution was retained based on explanatory power (change in $\eta^2$; Milligan & Cooper, 1985, Calinski-Harabasz index, CH; Steinley, 2006), parsimony, and interpretability. The explained variance in Presence of Meaning and Search for Meaning increased by 44% when moving from 2 to 3 clusters, by 20% when moving from 3 to 4 clusters, by 8% when moving from 4 to 5 clusters, and by 13% when moving from 5 to 6 clusters. However, inspection of the 6-cluster solution revealed that two clusters were virtually identical to one another, dropping a 6-cluster solution as a good fitting solution. Furthermore, the 2-cluster solution explained less than half of variability in both the meaning in life dimensions (21% in Presence of Meaning, 49% in Search for Meaning), dropping a 2-cluster solution as a good fitting solution. The proportions of the variance explained by the cluster solution ($\eta^2$) seem to level off after a 4-cluster solution (.56 for the 3-cluster solution, .66 for the 4-cluster solution, .71 for the 5-cluster solution). This is confirmed by the CH index which was highest for the 4-cluster solution when the 6-cluster solution is not taken into account (CH index respectively 254.88 for the 2-cluster solution, 315.62 for the 3-cluster solution, 316.87 for the 4-cluster solution, 287.15 for the 5-cluster solution and 326.34 for the 6 cluster solution). Taking these several decision criteria into account, we concluded that a 4-cluster solution provided the best fit to the data.

Figure 1 presents the final cluster solution, with *z* scores plotted on the *y* axis. Because the clusters were defined using *z* scores for the total sample, the cluster's mean *z* scores indicate how far that cluster deviates from the total sample mean score and from the means of the

other four clusters (Scholte et al., 2005). The distances, in standard-deviation units, among the clusters' means (and between each cluster mean and the total sample mean, which is standardized to zero) may be interpreted as an index of effect size. Analogous to Cohen's *d*, 0.2 *SD* represents a small effect, 0.5 *SD* represents a moderate effect, and 0.8 *SD* represents a large effect. The clusters that we found were characterized by z-scores reflecting moderate to strong deviations from the overall sample mean, suggesting that the four clusters differed considerably in terms of their scores on Presence of Meaning and Search for Meaning. Cluster 1 (24% of the sample) was labeled *Low Presence Low Search* and consisted of individuals low on both Presence of Meaning and Search for Meaning. Cluster 2 (17% of the sample) was labeled *Low Presence High Search* and consisted of individuals low on Presence of Meaning and high on Search for Meaning. Cluster 3 (38% of the sample) was labeled *High Presence High Search* and consisted of individuals high on both Presence of Meaning and Search for Meaning. Finally, cluster 4 (21%) was labeled *High Presence Low Search* and consisted of individuals high on Presence of Meaning but low on Search of Meaning.

## Cluster Differences

We conducted a chi-square analysis to examine the extent to which the clusters differed on several sociodemographic variables. No significant differences were found for gender, $\chi^2(3) = 6.02$, $p = .11$, Cramér's $V = .11$, educational level, $\chi^2(9) = 6.81$, $p = .66$, Cramér's $V = .07$, marital status, $\chi^2(l2) = 10.37$, $p = .58$, Cramér's $V = .09$, and current employment status, $\chi^2(15) = 24.55$, $p = .06$, Cramér's $V = .13$. In addition, clusters did not differ with respect to mean age, as indicated by a univariate analysis of variance (ANOVA), $F(3, 461) = 2.01$, $p = .11$, $\acute{\eta}^2 = .01$. Furthermore, cluster differences were examined for illness-related factors. No differences were found for illness duration (ANOVA), $F(3, 423) = 0.54$, $p = .65$, if = .00, or for in-house mobility (ANOVA), $F(3, 463) = 0.30$, $p = .83$, $\acute{\eta}^2 = .00$. Regarding out-house mobility, significant differences were found (ANOVA), $F(3, 463) = 3.47$, $p = .02$, $\acute{\eta}^2 = .02$, indicating that patients in the *Low Presence High Search* cluster have more impaired out-house mobility in comparison with the other clusters. A significant chi-square-test, $\chi^2(12) = 26.66$, $p < .01$, Cramér's $V = .14$, revealed that patients who seldom or never went out of their house because of their illness were overrepresented in the *Low Presence High Search* cluster and underrepresented in the *High Presence High Search* cluster.

Two separate ANOVAs were conducted with cluster membership as independent or fixed variable and the composite well-being variable, and acceptance of chronic disease, as dependent variables. The univariate *F* values, $\acute{\eta}^2$, and multiple pairwise combinations conducted using the Tukey's Honestly Significant Difference (HSD) test, are displayed in Table 4. The clusters were associated with a unique profile in terms of the well-being of chronically ill patients and their acceptance of the disease. Effect sizes for all variables were large (more than 13.9% of variance explained; Cohen, 1988).[2]

[2]Additional nonparametric analyses are performed taking into account the ordinal character of the variables. Results confirmed the earlier analyses and showed a significant association between optimism and cluster solution, $\chi^2(12) = 130{,}67$, $p < .001$; $\tau = .18$, $p < .05$, as well as a significant association between acceptance and cluster solution, $\chi^2(12) = 79{,}34$, $p < .001$; $\tau = .09$, $p < .05$.

Individuals in the *High Presence Low Search* cluster exhibited the highest levels of well-being and acceptance to chronic disease in comparison to patients in other clusters. Individuals in the *High Presence High Search* cluster were characterized by a similar profile of the *High Presence Low Search* cluster except for somewhat lower scores on well-being and acceptance. The *Low Presence High Search* cluster seemed to be the most poorly adapted group, resulting in very low levels of well-being and acceptance. Individuals in the *Low Presence Low Search* cluster showed a similar pattern of maladaptation, although they reported somewhat higher levels of well-being and acceptance but significantly lower than the *High Presence High Search* cluster and the *High Presence Low Search* cluster.

## Discussion

The present study identified for the first time how distinct dimensions of meaning in life integrate in distinctive profiles in chronically ill patients. Four clusters were found, each characterized by their own unique profile scores on Presence of Meaning and Search for Meaning as well as with specific associations to adaptation. Results of our study affirmed earlier findings that experiencing meaning in life is a potent predictor of high well-being in patients with a chronic disease (Sherman & Simonton, 2012; Yanez et al., 2009). However, our study revealed new insights into the interplay between Presence of Meaning and Searching for Meaning and the effect on patient outcomes.

In line with two recent studies focusing on this interplay in a healthy population (Cohen & Cairns, 2012; Dezutter et al., 2013), a distinction could be made between an adaptive and a maladaptive search. In our sample of chronically ill patients, patients in the *Low Presence High Search* profile show very low levels of well-being and acceptance, which can be indicative of a stressful search for meaning without experiencing meaning in life. This stressful search might hinder the coping process resulting in less optimal psychological well-being. Moreover, especially patients who are highly disabled (not able to go outside) are represented in this maladaptive profile.

When searching for meaning is combined with experiencing meaning, the detrimental effect of searching seems reduced. Patients in the *High Presence High Search* profile seems to exhibit a healthy search reflected in high levels of well-being and acceptance. Patients with low levels of Search for Meaning coupled with low levels of Presence of Meaning also showed lower levels of well-being, however, the pattern is not so detrimental as for the *Low Presence High Search* profile. This is similar to the findings of Cohen and Cairns (2012) in healthy adults revealing that individuals who reported low levels on Presence of Meaning appeared to be more satisfied if they do not search for meaning. In sum, our findings seem to indicate that patients who experience high levels of meaning in life have higher levels of well-being compared with those patients who experience low levels of meaning. Furthermore, the person-oriented clustering technique seems to distinguish between a stressful search (when no meaning is experienced: *Low Presence High Search*) resulting in low well-being and a less stressful search (when meaning is experienced: *High Presence High Search*) resulting in higher well-being.

## Clinical Implications

The present findings provide empirical evidence on the importance of experiencing meaning in life to maintain high levels of well-being when confronted with a chronic illness. If presence of meaning is a psychological resource for patients, health care providers should monitor whether patients experience and/or maintain feelings of meaningfulness and coherence. Special attention should be paid to the patients in the clusters characterized by a lack of experiencing meaning. A considerable portion of chronically ill patients in our sample find it difficult to experience meaning in life and seem stuck in a maladaptive search or do not attempt to search at all. Such patients might need clinical help tailored to their needs focusing on finding and obtaining meaning in life amid major health-related adversity. Our findings affirm the need and the importance for developing interventions on meaning that facilitate positive outcomes after the onset of disability in line with the meaning making intervention for cancer patients (MMI; Henry et al., 2010) or the meaning-centered group psychotherapy in palliative care (Breitbart et al., 2010). The routine monitoring of patients' meaning-related concerns, therefore, can signal patients' decreases in meaning and increases in searches, indicating the need for a referral to psychotherapy.

The relevance of meaning in life in general patient care and treatment programs has been emphasized by some scholars (e.g., Sulmasy, 2002; Wong, 2012), but these topics are still often neglected within medical practice. The current time pressure in medical care as well as the predominant focus on biological and physiological processes might hamper this discussion in a medical setting. Furthermore, health professionals might also feel inadequate to handle existential topics and questions on personal existence (Yalom, 1980). However, the present findings should encourage clinicians to consider the adaptive as well as maladaptive aspects of meaning in life dimensions and their important role in the coping processes of chronically ill patients.

## Limitations/Future Directions

The present results should be interpreted in light of some limitations. First, some factors, such as interest in the study topic or degree of disability, might have influenced the composition of the sample and thus affected the results. Because cluster analysis is a data-driven procedure, the nature of the sample is of paramount importance and limits the generalizations that can be drawn. Hence, replication of the current findings in other samples of chronically ill patients would be encouraged.

Second, the sample was heterogeneous regarding disease-type. Research in the field of positive psychology and health has shown that type of disease might influence the results (Aspinwall & Tedeschi, 2010). For example, the relationship between positive phenomena and cancer outcomes is less clear than for heart disease. Although this study provides an excellent first step into understanding how a chronic illness population experiences meaning and searching in life, future studies could focus on distinct diseases, as well as on different stages of disease.

Third, the cross-sectional design limits conclusions regarding the directionality of the relationships between meaning in life and adaptation. Well-being may stimulate, as well as

be stimulated by, the presence of, or search for, meaning. Hence, longitudinal studies are necessary to clarify the direction of the relations between meaning and adaptation. In addition, our study did not shed light on *how* meaning in life might impact on well-being. Future studies need to investigate possible underlying cognitive-emotional processes which might explain the link between meaning in life and better well-being.

A final limitation is the use of questionnaires. Although questionnaires are appropriate to gather information about subjective and internal concepts such as meaning in life, the sole reliance on self-report measures may have led to an overestimation of some of the correlations among variables due to shared method variance. Additionally, the use of single items for the measurement of some of the indicators can be a limitation. The present findings might be followed up by narrative or mixed-method studies in order to obtain more detailed information on the experiences of meaning and the search for meaning in individuals' lives.

### Conclusion

Despite these limitations, the present study provides an initial glimpse into the complex relationship between Presence of Meaning and Search for Meaning, and how these constructs may play a role in the psychological well-being of individuals confronted with chronic medical stressors. The present findings underscore the importance of Presence of Meaning and they distinguish between a stressful, maladaptive search (*the Low Presence High Search* cluster) and a benevolent, adaptive search for meaning (the *High Presence High Search* cluster). However, further research in this field is necessary to replicate the clustering solution in distinct samples and to further clarify the role of meaning in the context of medical stressors, coping, and well-being.

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### Impact and Implications

- The present study identifies for the first time how distinct dimensions of meaning in life integrate in distinctive profiles in chronically ill patients.
- The study confirms that specific meaning in life profiles are related with specific aspects of the well-being of patients.
- Treatment providers should pay attention to how their patients experience meaning in their life. If patients are struggling with finding meaning of life, this should be a topic of psychotherapy to enhance treatment outcomes and quality of life.

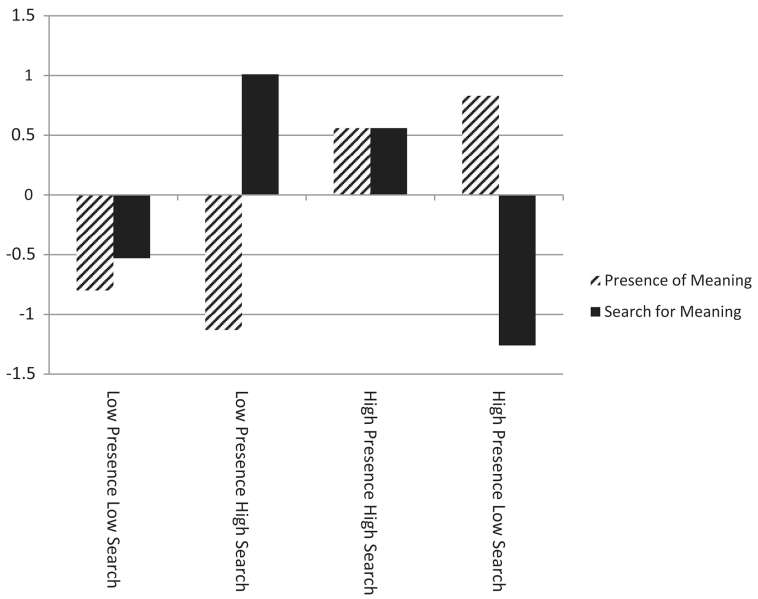


**Figure 1.**
*z* scores for Presence of Meaning and Search for Meaning for the four clusters.[3]

[3]The figure shows the *z* scores of both Presence of Meaning as well as Search for Meaning for the four clusters derived by the cluster analysis.

## Table 1
### Theoretical Overview of the Formulated Hypotheses

| Expected cluster | Expected wellbeing |
|---|---|
| High Presence High Search | High to Moderate |
| High Presence Low Search | High |
| Low Presence High Search | Low |
| Low Presence Low Search | Low to Moderate |

## Table 2
**Background Characteristics of the Study Group (Sample *n* = 481)**

| Variable | Percentage |
|---|---|
| Age | *M* = 50 (*SD* = 7.26) |
| Gender | 68% women |
| In-house mobility (use of wheelchair, impaired bed mobility) | |
| Severe impaired | 30% |
| Little impaired | 67% |
| Out-house mobility | |
| Not possible | 12% |
| Only possible with assistance | 31% |
| No assistance needed | 54% |
| Frequency of physical treatment | |
| Daily | 9% |
| Several times a week | 25% |
| Several times a month | 36% |
| Less than once a month | 26% |
| Employment state | |
| Working | 13% |
| Retired | 5% |
| Disability | 61% |
| Volunteering | 6% |
| Educational level | |
| Primary school | 11% |
| Secondary school | 56% |
| Higher education | 33% |
| Marital status | |
| Single | 21% |
| Married | 52% |
| Cohabited | 7% |
| Widowed | 1% |
| Divorced | 19% |
| Religious affiliation | |
| Catholic | 29% |
| Believer without church affiliation | 45% |
| Atheist/humanistic | 9% |
| No philosophy of life | 15% |
| Muslim | 1% |
| Jewish | 1% |
| Other (wicca, zen, steiner, …) | 13% |

Table 3

**Correlations Among the Study Variables**

| Variable | Presence of meaning | Search for meaning | Optimism | Acceptance | Life satisfaction |
|---|---|---|---|---|---|
| Presence of meaning | | −.25* | .63* | .39* | .56* |
| Search for meaning | | | −.23* | −.20* | −.22* |
| Optimism | | | | .44* | .54* |
| Acceptance | | | | | .42* |
| Life satisfaction | | | | | |

* $p < .001$.

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**Table 4**

**Univariate ANOVAs and Post Hoc Cluster Comparisons Based on Tukey HSD Tests for Well-Being and Acceptance**

| | Low Presence Low Search (*n* = 113) | High Presence Low Search (*n* = 102) | Low Presence High Search (*n* = 84) | High Presence High Search (*n* = 182) | *F*(3, 467) | $\eta^2$ |
|---|---|---|---|---|---|---|
| Well-being | 2.42[a] [0.82] | 3.44[b] [0.80] | 2.1 l[c] [0.74] | 3.11[d] [0.85] | 5.70** | .27 |
| Acceptance | 2.96[a] [1.33] | 3.86[b] [1.15] | 2.52[ac] [1.16] | 3.59[bd] [1.13] | 26.06** | .14 |

*Note*. A cluster mean is significantly different from another mean if they do not share the same (combination of) superscripts. Standard deviations are noted between brackets.

* $p < .01$.

** $p < .001$.