

Antonovsky's Sense of Coherence in psychosomatic patients - a contribution to construct validation

Antonovsky's Sense of Coherence bei psychosomatischen Patienten - ein Beitrag zur Konstruktvalidität

Abstract

Objective: The objective of the present study is to contribute towards the validation of the SOC (Sense of Coherence) construct on the basis of data from psychosomatic patients.

Method: The study included a total of 1403 patients treated as out-patients or in consultations in the Clinic for Psychosomatic Medicine at the Charité University of Medicine, Berlin, between July 2002 and October 2005. Correlations were tested between the sense of coherence (SOC-L9), sociodemographic variables and the following psychometric instruments: Patient Health Questionnaire (PHQ), Brief COPE, Questionnaire on Self-Efficacy, Optimism and Pessimism (SWOP-K9) and Perceived Stress Questionnaire (PSQ-20).

Results: Associations were found between sense of coherence and age, but not with gender. In addition, high sense of coherence was correlated with high self-efficacy, optimism, subjective physical well-being and favourable coping strategies as well as with low perceived stress.

Conclusion: The results contribute to the validation of the SOC construct. Future investigations should include longitudinal studies of the precise association between sense of coherence and other psychological variables.

Keywords: Sense of coherence, salutogenesis, psychosomatic patients, construct validation

Zusammenfassung

Zielsetzung: Ziel der vorliegenden Studie ist es, anhand der Daten von psychosomatischen Patienten einen Beitrag zur Konstruktvalidität des SOC (Sense of Coherence) zu leisten.

Methode: In die Untersuchung wurden insgesamt n=1403 Patienten einbezogen, die in der Medizinischen Klinik mit Schwerpunkt Psychosomatik der Charité-Universitätsmedizin Berlin in der Zeit vom Juli 2002 bis Oktober 2005 poliklinisch oder konsiliarisch behandelt wurden. Es wurden Zusammenhänge zwischen dem Kohärenzempfinden (SOC-L9) und soziodemographischen Variablen sowie Korrelationen mit folgenden psychometrischen Instrumenten überprüft: Patient Health Questionnaire (PHQ), Brief-COPE, Fragebogen zu Selbstwirksamkeit, Optimismus und Pessimismus (SWOP-K9) und Perceived Stress Questionnaire (PSQ-20).

Ergebnisse: Es zeigten sich Zusammenhänge zwischen dem Kohärenzempfinden und Alter, nicht aber mit dem Geschlecht. Außerdem ist ein hohes Kohärenzempfinden mit höherer Selbstwirksamkeit, mehr Optimismus, günstigeren Copingstrategien, stärkerem subjektiven physischen Wohlbefinden und weniger subjektiv wahrgenommener Stressbelastung assoziiert.

Fazit: Die Ergebnisse leisten einen Beitrag zur Konstruktvalidität. In weiteren Studien sollten längsschnittlich die genauen Wirkungszusammenhänge von Kohärenzempfinden mit anderen psychologischen Variablen untersucht werden.

Nina Zirke¹

Gabriele Schmid¹

B. Mazurek²

Burghard F. Klapp¹

Martina Rauchfuss¹

1 Charité Centre for Internal Medicine and Dermatology - Clinic for Psychosomatic Medicine, Charité University Medicine, Berlin, Germany

2 ENT - Clinic, Tinnitus Centre, Charité University Medicine, Berlin, Germany

Schlüsselwörter: Sense of Coherence, Salutogenese, psychosomatische Patienten, Konstruktvalidität

Introduction

Psychological and physical stress factors are regarded as risk factors for many psychosomatic diseases. It may, nevertheless, be questioned why not everyone exposed to this psychological or physical stress falls ill. What are the conditions responsible for the maintenance or recovery of health? Lazarus [1], [2] proposed the transactional stress model for the manner in which individuals cope with stress or stressful experiences. This model distinguishes between two evaluation processes. The primary evaluation is the evaluation of the situation as challenge, threat or irrelevance in relation to the well-being of the individual. The secondary evaluation covers the individual's personal and social resources, i.e. his possibilities of coping with the stressful situation. According to this, stress only becomes damaging stress ("distress"), if the individual evaluates it as such on the basis of deficiencies in his psychosocial resources. "Coping" with stress is the term used for the attempt to deal with the demands of the surrounding world in such a way that negative consequences are avoided. A distinction is made between problem-orientated coping (dealing directly with the stressor by active problem solution) and emotional coping, meaning that no attempt is made to change the stress situation by defensive mechanisms, but rather an attempt for a search of emotional support, changes in thinking about stressors and changes in physical reactions [2]. Following Lazarus [1], Antonovsky [3], [4] formulated a stress concept, according to which stressors do not cause illness in principle, but only trigger a state of tension in an individual, which not necessarily must lead to distress. With his model of salutogenesis, Antonovsky presented an alternative way of viewing the development of disease or rather, the maintenance of health. He emphasised the importance of coping with stress and formulated the concept of "Sense of Coherence, SOC". Sense of coherence reflects the manner in which the individual views the world and is expressed in a specific underlying attitude to his own person and to the environment [5], [6]. The sense of coherence is nevertheless, not a coping strategy, but permits the individual to make a decision between different coping strategies and to activate resources for coping with stress [7]. Sense of coherence is an overall orientation, expressing the extent to which an individual possesses a stable but dynamic feeling of confidence, penetrating all his attitudes, so that a) stimuli, events or developments are perceived as being structured, ordered and predictable (comprehensibility), b) the necessary resources are available to cope with both internal and external demands (manageability), and c) life is felt to be meaningful and demands are evaluated as challenges deserving investment and dedication [8].

Sense of coherence and sociodemographic variables

The results of empirical studies regarding the association between sense of coherence and gender are heterogeneous. There are studies which found that the sense of coherence was lower in men than in women [9], [10], [11], [12], [13], but other studies suggest a lower sense of coherence in women [14], [15], [16] or no differences between genders [17], [18], [19]. Franke postulated that associations between gender and sense of coherence were most likely to be found in clinical studies [7], whereas Bengel et al. [6] found associations in non-clinical studies.

Sense of coherence may change with age. However, no generally valid statement can be made about increases or decreases in sense of coherence with increasing age, as results obtained from multiple studies are too heterogeneous [10], [20], [21], [22], [23].

On the other hand, many studies have demonstrated that the sense of coherence increases with improvements in professional status [10], [11], [20], [21], [24], [25].

Sense of coherence and related concepts

Antonovsky developed a questionnaire with 29 items (SOC-29) for the measurement of the sense of coherence [5]. There have hardly been any empirical studies on the validity of this SOC questionnaire [26].

Because of the overlap with other psychological variables, it has repeatedly been doubted whether the sense of coherence can be empirically demonstrated.

Antonovsky [3] postulated that there is a direct association between subjective physical health and sense of coherence. Empirical studies have yielded conflicting results: whereas some have found a direct association with subjectively evaluated physical health [18], [27], [28], [29], others have reported no direct [30], [31], [32] or unambiguous association [6], [10], [11], [25]. It has been demonstrated that high sense of coherence is associated with low anxiety and depression [12], [33], [34], [35], more optimism [9], [12], [30], [36], [37], more possibilities of positive coping [9], [12], [30], [36], [37] and less perceived stress [31], [38], [39], [40], [41].

There have been few studies on the significance of the sense of coherence in psychosomatics and psychotherapy [12]. It may be expected that a high sense of coherence would have a favourable effect on the course of psychotherapy. Moreover, a low SOC may be used as an indication for psychotherapeutic intervention.

The present study is intended as a contribution towards the investigation of the validity of the concept "Sense of Coherence" in psychosomatic patients. In addition, asso-

ciations were investigated between sense of coherence and sociodemographic variables.

We expect that:

1. There will be no association between sense of coherence and gender;
2. Younger patients will exhibit a lower sense of coherence than older patients;
3. Patients with the main diagnosis of "Depressive Syndrome" ("Depressive Episode" or "Recurrent Depressive Disorder") will exhibit a lower sense of coherence than patients with anxiety disorders ("Phobic Disorders" or "Other Anxiety Disorder"), "Somatoform Disorders" or "Eating Disorders".

On the basis of the results of previous studies [9], [12], [18], [27], [28], [29], [30], [31], [36], [37], [38], [39], [40], [41] and Lazarus's transactional stress model, we expect that strong sense of coherence will be associated with:

4. Better subjective health and less perceived stress;
5. More active coping behaviour, more search for social support, more "focus on positive matters" and less evasive coping behaviour;
6. More optimism and higher expectation of self-efficacy.

Patients and methods

Patients

The study was based on a population of 3932 patients treated as out-patients or in consultations in the Clinic for Psychosomatic Medicine at the Charité University of Medicine, Berlin, between July 2002 and October 2005, and who completed the questionnaire on sense of coherence for the first time during this period. At the time of enrollment, none of the patients was an in-patient for psychosomatic treatment.

Only those patients with the following ICD-10 diagnoses were enrolled in the study: Depressive Episode (F32), Recurrent Depressive Disorder (F33), Anxiety or Phobic Disorder (F40/41), Somatoform Disorder (F45) or Eating Disorders (F50). These diagnoses were made in the first clinical discussion by a doctor or psychologist. In addition, patients were excluded, if the complete test diagnosis was unavailable, because of language problems or if they were too old or refused to answer the questionnaire.

After considering these criteria, 1403 psychosomatic patients remained - 963 female (68.64%) and 440 male (31.36%). Table 1 includes additional information on the sample.

Instruments

During the initial investigation - in the out-patient clinic or as a consultation - the patients completed the following psychometric questionnaires as part of their diagnosis (see Table 2). Consent for the evaluation of questionnaires for scientific purposes were generally obtained on entry to the clinic.

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Leipzig Short Scale for Recording Sense of Coherence (SOC-L9)

The Leipzig Short Scale (SOC-L9) was used for recording the sense of coherence [18]. The SOC-L9 is a one dimensional measurement instrument. In contrast to the original 29-item version of Antonovsky [4], it consists of only 9 items, which cover the three subcomponents (comprehensibility, manageability and significance) of sense of coherence. The SOC-L9 is a reliable and valid measurement. It not only measures the content of the SOC-29 overall scale in a comparable manner, but is also economic [18].

Perceived Stress Questionnaire (PSQ-20)

The PSQ-20 records the subjective stress experienced and perceived. The 20 items in the short version may be summarised in the following four scales: worries, tension, joy and demands. The first three scales map the individual's internal stress reactions. The scale "Demands" records external stressors. The values of all PSQ items are also included in a total score. The reliability and validity of the PSQ-20 have been shown to be satisfactory [42].

Questionnaire on Self-Efficacy, Optimism and Pessimism (SWOP-K9)

Personal resources were recorded with the questionnaire "Self-Efficacy, Optimism and Pessimism" (SWOP) [43]. The SWOP is composed of the questionnaire on general expectation of self-efficacy [44] and the Life Orientation Test (LOT) [45], which measures the outcome expectation. The 9 items in the SWOP-K9 may be summarised in 3 scales: self-efficacy, optimism and pessimism. The test quality criteria are satisfactory to good [43].

Patient Health Questionnaire (PHQ)

The Patient Health Questionnaire (PHQ) uses 77 items to record depressiveness, somatoform symptoms and psychosocial stress factors. The test quality criteria of the German version of the PHQ [46] are good to very good.

Brief COPE

Coping strategies were recorded with the German version of the Brief Cope [47]. This serves to measure the coping behaviour in past difficult or unpleasant situations. The 28 items may be summarised in 4 scales: search for support (emotional support, instrumental support, religion), focus on positive matters (humour, acceptance, positive re-evaluation), evasive coping behaviour (denial, self-accusation, experience of emotions) and active coping behaviour. The quality criteria are satisfactory [47].

Table 1: Description of the sample

	Total (n=1403)	Women (n=963)	Men (n=440)
Age (years)			
Mean	41.17	40.37	42.93
SD	14.88	15.30	13.78
Range	16 – 82	16 – 82	17 – 79
Age groups			
16 – 30 years	411 (29.3%)	319 (33.1%)	92 (20.9%)
31 – 40 years	274 (19.5%)	166 (17.2%)	108 (24.6%)
41 – 50 years	312 (22.2%)	203 (21.1%)	109 (24.8%)
51 – 60 years	525 (18.0%)	173 (18.0%)	79 (18.0%)
above 60 years	154 (11.0%)	102 (10.6%)	52 (11.8%)
Main diagnosis (ICD-10)			
Depressive episode	306 (21.8%)	211 (21.9%)	95 (21.6%)
Recurrent depressive disorder	77 (5.5%)	51 (5.3%)	26 (5.9%)
Phobic disorder	54 (3.8%)	39 (4.1%)	15 (3.4%)
Other anxiety disorders	175 (12.5%)	102 (10.6%)	73 (16.6%)
Somatoform disorders	518 (36.9%)	315 (32.7%)	203 (46.1%)
Eating disorders	273 (19.5%)	245 (25.4%)	28 (6.4%)

Abbreviation: SD: Standard deviation

Table 2: Psychometric information on questionnaires and scales

Psychometric questionnaires and scales	Typical item	Number of items	Answer categories
Leipzig short scale for recording sense of coherence (SOC-L9)	How often are your feelings and ideas totally mixed up?	9	1 to 7 (e.g. "very often" to "very rarely or never"; "will you still feel well" to "something certainly will happen to spoil the feeling").
Patient Health Questionnaire (PHQ)	Over the last 4 weeks, how often have you been bothered by any of the following problems? Stress at work or at school	77	1 to 2; 4-steps ("yes/no" or "not impaired" to "greatly impaired"; "not at all" to "nearly every day".
Perceived Stress Questionnaire (PSQ-20)	You feel at ease.	20	1 to 4 ("almost never" to "mostly")
Brief COPE	I've been trying to come up with a strategy about what to do.	28	1 to 4 ("not at all" to "a lot")
Questionnaire about self-efficacy, optimism and pessimism (SWOP-K9)	I always look optimistically into the future.	9	1 to 4 ("not correct" till "absolutely correct")

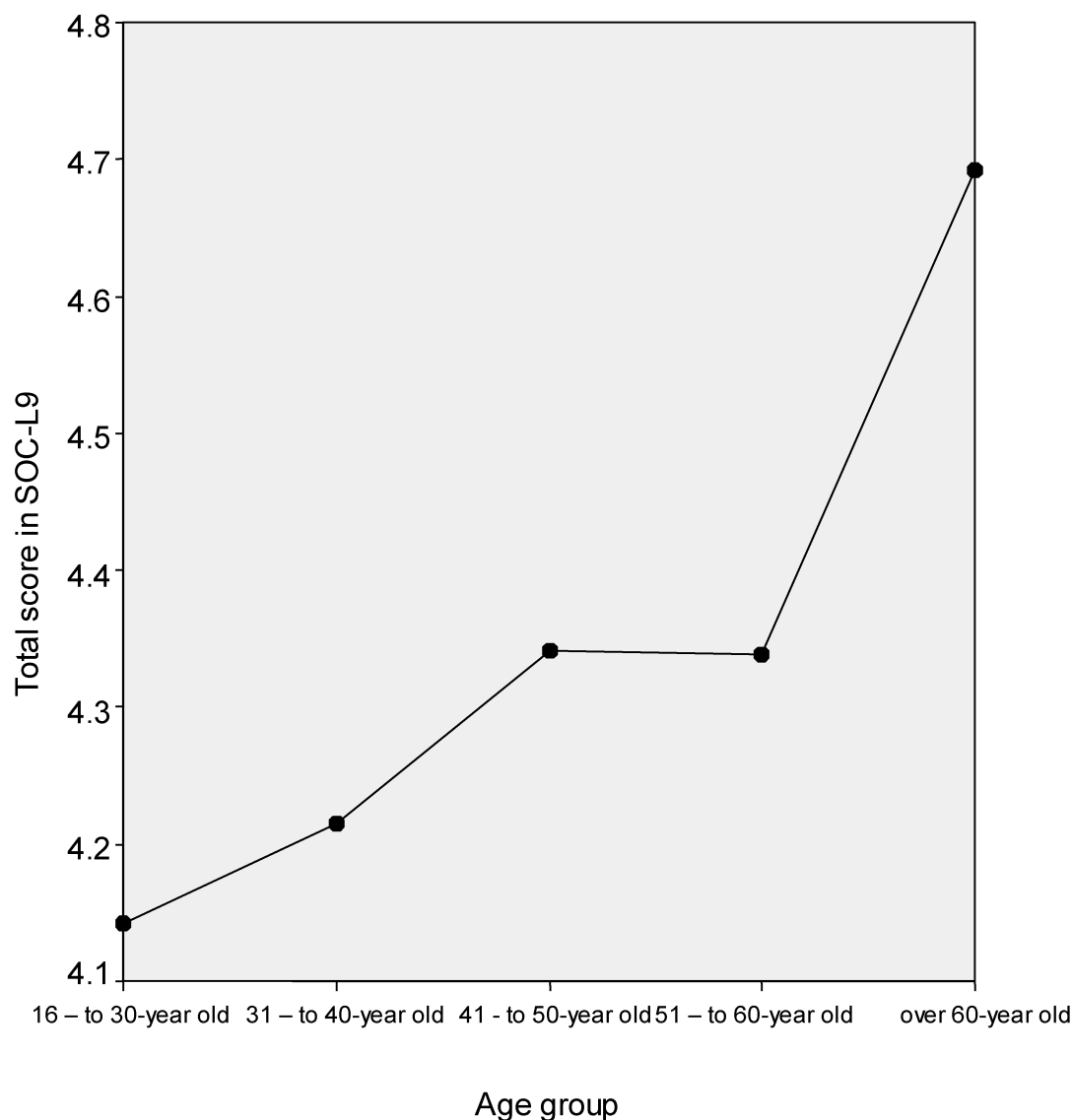


Figure 1: Total score in the SOC-L9 for 16- to 30-year old, 31- to 40-year old, 41- to 50-year old, 51- to 60-year old and over 60-year old psychosomatic patients

Statistical Analyses

Statistical evaluation of the data was performed employing the Program SPSS, Version 11. Gender and age effects were analysed with the t-test for unpaired samples or with univariate analysis of variance.

For this purpose, age was split into categories. Associations between sense of coherence and other constructs (stress, coping strategies etc.) were tested by Pearson correlation analyses or partial correlations. Because of the large sample size, the selected level of significance was $p < 0.001$.

Results

Gender and age effects

No differences between male and female psychosomatic patients with respect to sense of coherence (women: Mean=4.37, SD=1.07, Men: Mean=4.26, SD=1.12) were detected (see Figure 1).

The patients were classified into the following age groups: 16-30 years (Mean=4.14, SD=1.08), 31-40 years (Mean=4.21, SD=1.08), 41-50 years (Mean=4.34, SD=1.13), 51-60 years (Mean=4.33, SD=1.08) and above 60 years (Mean=4.69, SD=1.11). Univariate analysis of variance found significant differences between the age groups ($p < 0.0001$, $\eta^2 = 0.02$).

Table 3: Correlation between SOC and subjective health, stress, coping and self-efficacy/optimism/pessimism

Test	Scales	Total scores	
		Controlled for age	Not controlled for age
Patient Health Questionnaire (PHQ)	Depressiveness	-0.61**	-0.62**
	Somatic symptom	-0.38**	-0.37**
	Stress	-0.52**	-0.54**
Perceived Stress Questionnaire (PSQ-20)	Total score	-0.69**	-0.69**
	Demands	-0.32**	-0.33**
	Worries	-0.70**	-0.70**
	Tension	-0.58**	-0.58**
	Joy	0.68**	0.68**
Brief COPE	Search for support	0.22**	0.20**
	Focus on positive matters	0.22**	0.21**
	Evasive coping behaviour	-0.35**	-0.37**
	Active coping behaviour	0.24**	0.24**
Questionnaire on self-efficacy, optimism and pessimism (SWOP-K9)	Self-efficacy	0.61**	0.62**
	Optimism	0.63**	0.64**
	Pessimism	-0.45**	-0.44**

** p<0.001 (one-tailed)

Diagnosis groups

Univariate analysis of variance found significant differences between the diagnosis groups for the SOC total score ($p<0.001$; $\eta^2=0.07$). The variable "Age" was controlled for in the analysis. Patients with depressive syndromes exhibited the lowest sense of coherence (recurrent depressive episodes Mean=3.71, SD=1.04; depressive episode Mean=3.93, SD=1.09). The highest values for sense of coherence were found in patients with somatoform disorders (Mean=4.62, SD=1.02) and for various (other) anxiety disorders (Mean=4.38, SD=1.09). The mean for patients with phobic disorder was 4.19 (SD=1.17) and for patients with eating disorders 4.23 (SD=1.09).

Construct validity

By controlling for the variable "age", correlations were found between the SOC and other psychological constructs or questionnaires. High sense of coherence is associated with low depressiveness, high expectation of self-efficacy, more optimism, less pessimism and lower perceived stress (see Table 3).

The highest correlations were found between SOC and the scales "Worries" ($r=-0.70$) and "Joy" ($r=0.68$) in the PSQ-20. These scales record the patients' feelings. Furthermore, we could detect high correlations between the SOC questionnaire and the scales "Self-Efficacy" ($r=0.61$)

and "Optimism" ($r=0.63$) in the SWOP-K9, that record the general approach to life.

On the other hand, the correlation with external stressors, as recorded by the "Demands" scale in the PSQ-20, was weaker ($r=-0.32$).

The weakest correlations were between the scales in the Brief COPE and the SOC total score ($r=0.22$ to 0.35).

Discussion

The objective of the present study was to investigate the association between sense of coherence and sociodemographic variables as well as ICD-10 diagnosis in a sample of psychosomatic patients. In addition, the work was intended to contribute towards the validation of the construct.

It turned out that the intensity of the sense of coherence was not associated with the gender of the psychosomatic patients. This is in accordance with the findings of Bengel et al. [6], who reported that sense of coherence was largely independent of gender in clinical studies.

It was also found that older patients reported higher values of sense of coherence than younger patients. In contrast to Gunzelmann et al. [48], we also found higher values of the sense of coherence in patients above 60 years as compared to younger patients. The significant differences in age-dependence of the sense of coherence may be due to the large size of our sample ($n=1403$).

The clinically defined ICD-10 diagnosis groups exhibited differences in the mean values of the sense of coherence. The lowest SOC values were exhibited by patients with a depressive episode or recurrent depressive disorders. There was also a very high correlation between the total SOC-L9 score and the PHQ scale depressiveness. Other studies have confirmed the conflation of sense of coherence with depression [23], [34]. Our studies support Geyer's assumption that SOC is an inverse measure of depressiveness [35].

As in other studies, the present investigation found significant correlations between sense of coherence and subjectively evaluated physical health [30], [31], [49], [50], [51]. On the other hand, there are also numerous studies that could not establish a direct or an unambiguous correlation [6], [10], [11], [25], [30], [31], [32]. Because of the heterogeneity of the study results, the relationship between sense of coherence and physical health remains unclear. In our study, the correlation between the scale "Somatic Symptoms" and the total SOC score was comparatively low ($r=0.38$). This may indicate that the specificity and areas of subjective evaluation of health could play an important role.

Patients with high sense of coherence reported more possibilities for more favourable coping, higher self-efficacy expectation, more optimism, less pessimism and less perceived stress. As in other studies, significant correlations were found between sense of coherence and other variables such as optimism, positive coping and less perceived stress [9], [12], [30], [36], [37], [38], [39], [40], [41]. Psychosocial resources seem to form the basis of SOC. The correlations support the concept of sense of coherence as formulated by Antonovsky, who postulated that there is a positive association between subjective physical health, possibilities of positive coping and optimism [3]. Our results support the validity of the SOC-L9 construct. However, the significance regarding the autonomy of SOC is limited as the high correlations obtained could also contain a reference to a general factor that may form the basis of SOC. Other studies have also reported high correlations and general factors of experience constructs [52], [53].

The correlations between all scales of the Brief SOC and the SOC total score were comparatively low ($r=0.22$ to 0.35). Antonovsky [54] suggested that it would be a mistake to regard the SOC as a coping strategy. Rather, high levels of SOC empowered individuals to decide between different coping strategies, thus activating specific resources which may be helpful in dealing with stressors [7].

The high correlations between sense of coherence and other psychological variables (subjective health, self-efficacy expectation, optimism, pessimism, perceived stress and coping) support the theoretical concept of sense of coherence, as formulated by Antonovsky. They also indicate that longitudinal studies should be performed to investigate exactly how and to what extent the SOC is predictive for well-being and quality of life.

Moreover, long-term studies on the stability of sense of coherence would be particularly desirable. How does the sense of coherence develop during a lifetime? How does a change in working life affect the sense of coherence? Is the degree of the sense of coherence a cause or a consequence of e.g. psychological or physical symptoms? A longitudinal study investigating the effects of changes in social environment on the sense of coherence would be of particular significance, as Antonovsky [3] postulated that the social environment has a powerful influence on health maintenance.

In addition, longitudinal studies should be used to check the validity of the assumptions of the transactional stress model [1], in order to clarify associations between the sense of coherence and coping style or subjective well-being.

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Corresponding author:

Nina Zirke
Medizinische Klinik m. S. Psychosomatik, Charité
Universitätsmedizin Berlin, Luisenstr. 13a, 10117 Berlin,
Germany
Nina.Zirke@charite.de

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