

Measuring Adaptive Coping of Hospitalized Patients With a Severe Medical Condition: The Sickness Insight in Coping Questionnaire*

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Objectives: Adaptive coping strategies are associated with less psychological distress. However, there is no brief, specific, and validated instrument for assessing adaptive coping among seriously ill patients. Our objective was to examine the validity and patient-proxy agreement of a novel instrument, the Sickness Insight in Coping Questionnaire.

Design: A cross-sectional design which included two related studies.

Setting: A single university-affiliated Dutch hospital.

Subjects: Hospitalized patients (study 1) and ICU-patients and proxies (study 2).

Interventions: None.

Measurements and Main Results: Study 1 ($n = 103$ hospitalized patients) addressed the Sickness Insight in Coping Questionnaire's performance relative to questionnaires addressing similar content areas. Coping subscales of the BRIEF COPE, Illness Cognition Questionnaire, and Utrecht Coping List were used as comparator measures in testing the construct validity of the Sickness Insight in Coping Questionnaire-subscale (fighting spirit, toughness, redefinition, positivism, and non-acceptance). The Sickness Insight in Coping Questionnaire had good internal consistency ($0.64 \leq \alpha \leq 0.79$), a clear initial factor structure, and fair convergent ($0.24 \leq r \leq 0.50$) and divergent ($r, \leq 0.12$) construct validity. Study 2 examined the performance of the Sickness Insight

in Coping Questionnaire among 100 ICU patients and their close family members. This study showed that the Sickness Insight in Coping Questionnaire has good structural validity (confirmatory factor analyses with Comparative Fit Index > 0.90 and Root Mean Square Error of Approximation < 0.08) and moderate ($r, 0.37$; non-acceptance) to strong ($r, > 0.50$; fighting spirit, toughness, redefinition, and positivism) patient-proxy agreement.

Conclusions: Overall, the Sickness Insight in Coping Questionnaire has good psychometric properties. ICU clinicians can use the Sickness Insight in Coping Questionnaire to gain insight in adaptive coping style of patients through ratings of patients or their close family members. (*Crit Care Med* 2016; 44:e818–e826)

Key Words: adaptive coping; instrument; intensive care unit; measure; patient coping strategies

Hospitalized patients with life-threatening illnesses and injuries regularly suffer negative psychological consequences from their condition, such as existential distress, extreme helplessness, sense of incompetence, and loss of dignity (1). For such patients, their psychologic state undermines the process of recovery and quality of life (1–4). Hence, it is imperative for ICUs to measure and monitor whether patients cope adaptively with their severe medical condition. Adaptive coping behaviors may reduce distress and prevent negative psychological reactions in patients (5). Negative events induce stress in individuals because they disrupt inner homeostasis, and adaptive coping behaviors are strategies that help to restore inner homeostasis (6). Adaptive coping refers to approach-based coping to overcome problems, such as a negative health state, and it contributes to recovery and rehabilitation (7–9). Maladaptive coping, on the other hand, tends to have negative effects on health (10, 11).

Because of possible health-related effects of coping, it would be useful for ICUs to have a brief, serious illness-specific, and validated instrument for determining via patient-proxy ratings whether hospitalized patients with a severe medical condition cope adaptively. However, current questionnaire instruments

*See also p. 1797.

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The authors have disclosed that they do not have any potential conflicts of interest.

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DOI: 10.1097/CCM.0000000000001743

have notable limitations. Most are self-report and not amenable to proxy completion. Also, current instruments such as the COPE tend to be too long for patients with a critical medical condition to complete. Indeed, many patients with a critical medical condition have limited ability to concentrate for long periods of time due to their health.

Many current coping instruments include coping strategies that may have less relevance for hospitalized patients with severe illness or injuries (e.g., exercising a hobby to distract the self). Tailored measurement instruments—that is, instruments that take into account the context of the individual—are not only likely to be better suited for hospitalized patients but also to have better measurement properties than generic instruments (12). Important coping styles that are particularly relevant to serious ill patients that are not generally included in current coping instruments are fighting spirit, toughness, redefinition, positivism, and non-acceptance. Fighting spirit reflects efforts to fight for one's life and/or for an acceptable quality of life when faced with a serious illness and/or injury. This adaptive coping style may contribute to recovery from a severe medical condition and psychological adjustment (13, 14). Toughness represents preparedness to endure pain without increasing stress during health treatment (15). Redefinition represents seeing advantages of the medical situation (e.g., a life lesson that one should adopt a more healthy lifestyle, personal growth), which may reduce distress among patients with a severe medical condition (16, 17). Positivism refers to keeping a positive mindset under the negative circumstances of a serious illness and/or injury. By using humor and a positive outlook (18), in contrast to negative reactions such as extreme worrying (19), positivism may help patients to adapt to the situation they face due to their severe medical condition. Finally, non-acceptance refers to unwillingness to accept one's negative medical condition and possible end of life. Whereas acceptance is important for quality of life in the end phase of medical treatment (20), non-acceptance of the medical condition is important during active medical treatment (13).

To address these deficiencies in the literature, we aimed to develop and provide evidence of the early validity of a serious illness-specific coping instrument amenable to proxy completion—the Sickness Insight in Coping Questionnaire (SICQ).

METHODS

Participants and Procedure

The research was conducted at the Gelre Hospital Apeldoorn, a 650-bed university affiliated teaching hospital with a 14-bed medical-surgical ICU in the Netherlands. Study 1 first examined the internal consistency, initial factor structure, and construct validity of the SICQ (see below) among hospitalized patients admitted to the general ward (internal medicine, surgery, pulmonology, neurology, and cardiology). This approach was chosen to first examine whether the SICQ can be applied to patients, before presenting the SICQ to patients with a severe medical condition. For study 1, patients were randomly selected and asked to participate. Patients completed a

15-minute questionnaire at the ward, and this questionnaire contained the coping measures under examination. After completion, the participants returned the completed questionnaire to the study coordinators (J.H., A.H.). Study 2 was conducted to examine the structural validity and patient-close proxy agreement of the SICQ. The researchers (J.H., A.H.) asked ICU-patients and one of their close family members to participate. The Ethical Committee of the Gelre Hospital had approved the research. Patients with language barriers, dementia and other cognitive disorders, and delirium were excluded from research participation. To not overly burden research participants, the Ethical Committee had indicated that signed informed consent for this research was not necessary because expressed willingness to fill in a questionnaire in itself should be considered consent with study participation.

Development of the SICQ

Six questionnaire items were constructed to reflect each coping dimension. A pile sorting study was conducted in which experts ($n = 6$ psychologists) individually evaluated the items from the item pool and categorized the items into themes. This technique is common in the development of questionnaires (21) and was used to verify whether the items belong to their respective item domains. The results suggested high domain distinctiveness (average measure ICC, 0.97). To shorten the SICQ for ease of completion, items with high inter-item correlations were selected to reflect the core of the respective constructs (total of 13). According to the results following the analysis of study 1, in study 2, two items were added to the SICQ so that each of the five subscales of the SICQ would have three items (and one item was slightly rephrased due to remarks from the respondents of study 1). The two items that were added were improved versions of the existing items that had initial moderate intercorrelations. The inclusion of these reworded items did not negatively affect the SICQ, since the structural validity of the 15-item SICQ was as good as the structural validity of the 13-item SICQ (see Table 5, presented later). The final SICQ-questionnaire is included in the Appendix.

Reliability and Structural Validity of the SICQ

In study 1, reliability analyses were conducted to verify whether the participants responded systematically to the items of the SICQ-subcales. Furthermore, exploratory factor analysis was used and it was expected that the pool of items would reflect the underlying SICQ-structure (i.e., five dimensions that correspond with the conceptual constructs of fighting spirit, toughness, redefinition, positivism, and non-acceptance). In study 2, confirmatory factor analysis was conducted with the structural equation program EQS (22) to examine the structural validity of the SICQ. It was predicted that the hypothesized measurement model consisting of the five SICQ-subcales would show good fit (23) to the data (i.e., nonsignificant Chi-square, Non-Normed Fit Index and Comparative Fit Index > 0.90 , Root Mean Square Error of Approximation < 0.08).

Construct Validity of the SICQ

By testing an instruments' construct validity, one answers the question whether an instrument measures the intended construct. Construct validity was tested based on the expected strength of the correlations between the SICQ and comparator measures (13–25) using the criteria for weak, moderate, and strong correlations of Cohen (26). In the current research, medium ($0.30 \leq r < 0.50$) to strong ($r \geq 0.50$) correlations between the SICQ-subcales and conceptually related comparator measures indicate good convergent construct validity. Trivial ($r < 0.10$) or weak ($0.10 \leq r < 0.30$) correlations between the SICQ-subcales and conceptually unrelated comparator measures suggest good divergent construct validity.

Scales of the BRIEF COPE (hereafter referred to as "COPE") (27), the Illness Cognition Questionnaire (ICQ) (28), and the Utrecht Coping List (UCL) (29, 30) were used to test convergent and divergent construct validity. The COPE assesses multiple types of coping, namely positive coping reactions to chronic illness such as active coping (e.g., "I've been concentrating my efforts on doing something about the situation I'm in") and positive redefinition (e.g., "I've been trying to see it all in a different light, to make it seem more positive") and specific negative reactions such as denial (e.g., "I've been saying to myself this isn't real"). The ICQ measures positive and negative cognitive reactions to the stressful and negative character of a chronic condition, specifically acceptance and seeing perceived benefits of the chronic condition versus helplessness (31). The UCL captures multiple coping dimensions, including active coping and passiveness. The patient scores on conceptually related subscales of respectively the COPE, the ICQ, and the UCL were evaluated for normal distribution and subsequently correlated using Pearson correlation test with the patient scores on the SICQ-subcales to test for convergent and divergent construct validity.

To test for convergent construct validity, medium to strong correlations were predicted between on the one hand the SICQ-subscale "fighting spirit" and on the other hand the "active coping"-subcales of respectively the COPE and the UCL and the "passiveness"-subscale of the UCL, between the SICQ-subscale "toughness" and the COPE "venting"-subscale, between the SICQ-subscale "non-acceptance" and the "acceptance"-subcales of respectively the COPE and the ICQ, between the SICQ-subscale "positivism" and the COPE "humor"-subscale, and between the SICQ-subscale "redefinition" and the subscales "positive reframing" and "benefits" of respectively the COPE and the ICQ. In the case of testing for convergent construct validity, moderate correlations are also indicative of construct validity because the SICQ specifically addresses adaptive coping of patients with severe health problems and receiving intense medical treatment. To test for divergent construct validity, it was predicted that the SICQ-subcales would correlate only trivially or weakly with maladaptive coping styles that reflect neglect of, and unwillingness to acknowledge, the medical condition, notably denial and self-distraction as measured with the COPE. To further address divergent construct validity, the correlations between the SICQ-subcales and coping styles that involve

the use of external resources (COPE instrumental support subscale, COPE emotional support subscale) were expected to be weak.

Test of Patient-Proxy Agreement

Patient-proxy agreement refers to level of agreement between coping as reported by the patient him- or herself and perception of coping by the patient as reported by a close family member of the patient. In line with the criteria of Cohen (26), in this study, moderate ($0.30 \leq r < 0.50$) to strong ($r \geq 0.50$) correlations indicate good patient-proxy agreement. In addition, Bland-Altman plots (32) were constructed to inspect level of patient-proxy agreement. As an inclusion criterion, proxies had to have been in close contact with a patient on a daily basis. Patients and proxies were asked to complete the SICQ within 72 hours following ICU admission. All items had a third-person perspective (e.g., "would the patient say that he/she..."). Proxies completed the questionnaire by themselves, when possible at the same moment the patients completed the questionnaire.

RESULTS

One hundred and three patients ($n = 103$; 53 men, 50 women) participated in study 1. The mean age of the respondents was 61.5 years (SD, 13.2), the majority of the respondents (73%) had a partner and had children (81.6%), and the educational background and health problems of the respondents varied (Table 1). ICU-patients ($n = 100$; 61 men, 39 women) paired with a close family member ($n = 100$; 31 men, 69 women; marital partners, children, etc) participated in study 2. Tables 2 and 3 provide an overview of the characteristics of these respondents.

Exploratory Factor Analysis, Reliability Analyses, Construct Validity (Study 1)

The exploratory factor analysis showed the expected initial five-factor structure consistent with the intended constructs of the SICQ and minimal overlap among the respective scales. All α reliabilities were in the acceptable range ("fighting spirit," two items, $\alpha = 0.71$; "toughness," three items, $\alpha = 0.64$; "redefinition," three items, $\alpha = 0.64$; "Optimism," three items, $\alpha = 0.79$; "non-acceptance," two items, $\alpha = 0.70$). These coefficients did not differ largely across groups with different education levels, suggesting that the items have adequate face validity. Correlation analyses showed that the subscales of the SICQ correlated ($r \leq 0.36$) weakly with each other, as intended. Furthermore, the SICQ-subcales demonstrated moderate to good convergent construct validity and good divergent construct validity (Table 4). Specifically, the SICQ-subcales "fighting spirit," "toughness," and "redefinition" showed moderate to strong convergent validity correlations. The convergent correlations of "positivism" and "non-acceptance" were in the expected direction, but somewhat weaker. Additionally, the data showed that the SICQ-subcales had adequate divergent construct validity. Across the board, the correlations reflecting divergent construct

TABLE 1. Demographic Characteristics of Patients in Study 1

Category	Frequency
Men, <i>n</i> (%)	53 (51.5)
Women, <i>n</i> (%)	50 (58.5)
Single, <i>n</i> (%)	28 (27.2)
Partner, <i>n</i> (%)	75 (72.8)
Children, <i>n</i> (%)	
No	13 (12.6)
Yes	84 (81.6)
If yes, how many children, <i>n</i> (%)	
1	12 (11.7)
2	42 (40.8)
3	19 (18.4)
4 or more	11 (10.7)
Education level, <i>n</i> (%)	
University	5 (4.9)
Higher education	23 (22.3)
Vocational training	31 (30.6)
Secondary education	22 (21.4)
Primary education	3 (2.9)
Primary admission physician, <i>n</i> (%)	
Internist	22 (21.4)
Surgeon	23 (22.3)
Pulmonologist	22 (21.4)
Neurologist	4 (3.9)
Cardiologist	6 (5.8)
Other (e.g., urologist, gynecologist)	26 (25.2)

n = 103.

validity between on the one hand the SICQ-subscale scores and on the other hand the COPE subscale scores under examination were not significant.

Structural Validity of the SICQ and Patient-Close Proxy Agreement (Study 2)

Subsequently, confirmatory factor analyses (CFAs) were conducted to corroborate the structural validity of the SICQ. It was examined whether the factor structure of the items matched the intended factor structure consisting of five separate coping style factors. The data showed support for the factor structure of the SICQ (Table 5). The fit indices of the CFA indicated that the hypothesized five-factor measurement model fitted the data of both the patient and close family member sample. Chi-square differences tests showed that the hypothesized five-factor measurement model was superior to

TABLE 2. Demographic Characteristics of Patients in Study 2

Category	Frequency
Age	67 (58–75)
Gender, male/female (%)	61/39
Acute Physiology and Chronic Health Evaluation II score	15 (12–20)
Simplified Acute Physiology Score	34 (23–44)
ICU length of stay	2 (2–3.75)
Hospital length of stay (median, IQR)	11 (8–17)
Lactate (median, IQR)	1.8 (1.2–2.4)
Mechanically ventilated <i>n</i> (%)	43 (43)
Type of admission <i>n</i> (%)	
Medical	47 (47)
Elective surgical	41 (41)
Acute surgical	12 (12)
Type of proxy	
Spouse	77
Child	17
Brother/sister	3
Parent	1
Nephew/niece	1
Other	1

Data presented as the median interquartile range (P25–P75) or *n* (%). *n* = 100 patients.

TABLE 3. Patients Excluded From Research Participation in Study 2 (Numbers and Reasons)

Exclusion Reasons	<i>n</i> (%)
Mechanically ventilated > 72 hr	183 (28.4)
Dementia/cognitive problems	21 (3.3)
No close family	95 (14.7)
No informed consent	64 (9.9)
Not adequate/delirious	126 (19.5)
Not speaking sufficient Dutch	13 (2.0)
Already included in the study	5 (0.8)
Absence investigator	138 (21.4)

alternative measurement models (e.g., the alternative measurement model in which “fighting spirit” and “toughness” were aggregated into one factor). Furthermore, the one-factor measurement model did not fit the data in the patient sample nor in the family member sample. Thus a single factor

TABLE 4. Correlations Between Sickness Insight in Coping Questionnaire–Constructs and Comparator Measures for Testing Construct Validity

Construct	SICQ-Subscales				
	Fighting Spirit	Toughness	Redefinition	Positivism	Non-Acceptance
Convergent validity					
COPE active coping	0.26 ^a	–	–	–	–
UCL active coping	0.44 ^b	–	–	–	–
UCL passiveness	–0.39 ^b	–	–	–	–
COPE venting	–	–0.32 ^b	–	–	–
ICQ benefits	–	–	0.50 ^b	–	–
COPE reframing	–	–	0.44 ^b	–	–
COPE humor	–	–	–	0.24 ^c	–
ICQ acceptance	–	–	–	–	–0.25 ^c
COPE acceptance	–	–	–	–	–0.24 ^c
Divergent validity					
COPE denial	–0.01	–0.08	–0.10	–0.12	0.0
COPE distraction	0.12	–0.10	0.16	0.06	–0.03
COPE instrumental support	–0.11	–0.35 ^b	0.16	0.09	–0.17
COPE emotional support	0.11	–0.11	0.12	0.18	–0.11

UCL = Utrecht Coping List questionnaire, ICQ = Illness Cognition Questionnaire.

^a $p < 0.01$.

^b $p < 0.001$.

^c $p < 0.05$.

COPE = brief COPE questionnaire.

Dashes indicate data not a focus of the research or not calculated.

TABLE 5. Confirmatory Factor Analysis Results: Model Fit of Measurement Models Study 1 and Study 2

Model	Degrees of Freedom	χ^2	$\Delta\chi^2$	Non-Normed Fit Index	Comparative Fit Index	Root Mean Square Error of Approximation	Akaike Information Criterion
ICU-patients							
5A-factor measurement model	55	64 ^a	–	0.95	0.97	0.04	–46
5B-factor measurement model	80	104 ^a	–	0.91	0.93	0.06	–56
4A-factor measurement model	84	161 ^b	57 ^b	0.72	0.77	0.10	–6.5
1-factor measurement model	90	282 ^b	178 ^b	0.34	0.44	0.15	102
Close others (proxy) ICU-patients							
5A-measurement model	55	62 ^a	–	0.96	0.97	0.04	–48
5B-factor measurement model	80	111 ^c	–	0.89	0.92	0.06	–49
4A-factor measurement model	84	188 ^b	77 ^b	0.66	0.73	0.11	20
1-factor measurement model	90	309 ^b	198 ^b	0.33	0.43	0.16	129

5A = initial measurement model with 13 items (study 1), 5B = final measurement model with 15 items (3 items for each subscale), 4A = Combining the SICQ-subscales "fighting spirit" and "toughness" into one factor.

^aNot significant.

^b $p < 0.001$.

^c $p < 0.05$.

Dashes indicate data not a focus of the research or not calculated.

did not account for the covariation among all items, and the SICQ as a coping instrument thus contains multiple unique coping aspects. This illustrates that coping styles and strategies cannot be grouped together into one single measure.

Finally, the level of agreement about SICQ-coping style between patients and their close family members was examined. The SICQ-subscale “fighting spirit,” “toughness,” “redefinition,” and “optimism” demonstrated adequate agreement between patients and their close proxies (Tables 6 and 7). Indeed, the relevant scores of the patients correlated strongly with the respective scores of their close proxies. The SICQ-subscale “non-acceptance” showed moderate patient-close proxy agreement. Bland-Altman plot analyses further corroborated adequate agreement about the SICQ-coping style (fighting spirit, toughness, positivism, redefinition, and non-acceptance) between patients and their close family members, because most of the differences lie within two SDs from the mean group difference (Figs. 1–5).

Since certain types of family members could have completed the SICQ in a more reliable way, this was analyzed separately. The individuals who acted as proxy were either the parent ($n = 1$), romantic partner ($n = 77$), child ($n = 17$) or his or her romantic partner ($n = 1$), brother or sister ($n = 3$), or other type of close family member such as nephew or niece ($n = 1$), of the patient. Although the groups were rather small, overall a t test did not show differences in level of coping between on the one hand the romantic partners ($n = 77$; e.g., spouses) acting as proxy for the patient and on the other hand the children ($n = 17$) of the patients acting as proxy for the patient. Also, the SD of the types of coping was not consistently larger for one of these types of family

members. Finally, the correlations between ratings of coping self-reported by the patient and ratings of patient coping reported by the proxy were not consistently strongest in the group of romantic partners acting as proxy nor consistently strongest in the group of children acting as proxy. Thus, the results did not show that certain types of family members had completed the SICQ better than other types of family members acting as proxy.

SICQ and Outcome

In exploratory analyses, we examined the relationship between SICQ score and length of stay outcome among patients in study 2. The ICU length of stay was related to redefinition ability (SICQ) (test result, $\beta = -2.015$; $p = 0.017$). No relation could be found between SICQ domains and hospital length of stay, severity of illness (Acute Physiology and Chronic Health Evaluation [APACHE] II score), or age (all $p > 0.05$).

DISCUSSION

We found that the SICQ, a novel measure for recording adaptive coping of hospitalized patients with a severe medical condition, has good psychometric properties (internal consistency, structural and construct validity) with acceptable patient-proxy agreement.

Recent literature has increasingly examined how critically ill and severely injured patients cope with their personal situation (33) and how family members of such patients cope (34) with the medical condition of the patient and its consequences (e.g., potential loss of a beloved one). The SICQ includes five

TABLE 6. Mean Scores, SDs, and Score Ranges, of ICU-Patients and Their Proxies

Construct	ICU Patients ($n = 100$)			Proxy ICU Patients ($n = 100$)			t Test
	Mean	SD	Range	Mean	SD	Range	p
Fighting spirit	4.53	0.64	3.33	4.47	0.67	3.67	NS
Toughness	3.73	0.95	3.67	3.85	0.97	4.00	NS
Redefinition	2.79	0.94	4.00	2.71	0.83	3.67	NS
Optimism	4.05	0.85	3.67	3.75	0.94	4.00	0.02
Non-acceptance	2.31	0.88	3.67	2.37	0.85	3.67	NS

NS = not significant.

TABLE 7. Pearson Intercorrelations Patients and Family Members (Patient-Proxy Agreement)

Construct	Fighting Spirit	Toughness	Redefinition	Optimism	Non-Acceptance
Fighting spirit	0.58 ^a	—	—	—	—
Toughness	—	0.53 ^a	—	—	—
Redefinition	—	—	0.57 ^a	—	—
Optimism	—	—	—	0.55 ^a	—
Non-acceptance	—	—	—	—	0.37 ^a

^a $p < 0.001$.

Dashes indicate data not a focus of the research or not calculated.

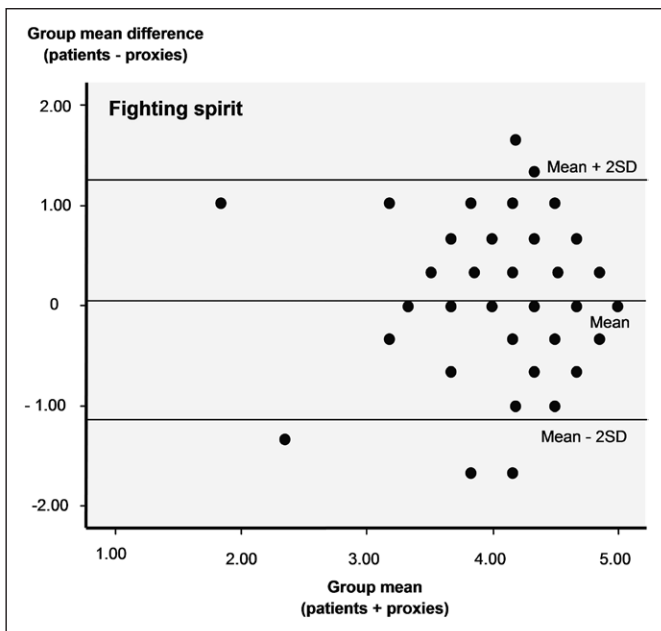


Figure 1. Bland-Altman analysis plot Sickness Insight in Coping Questionnaire-subscale fighting spirit.

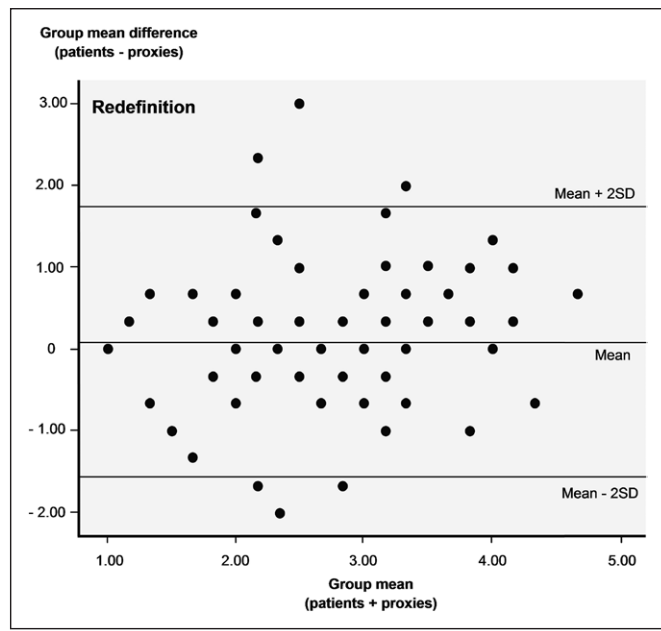


Figure 3. Bland-Altman analysis plot Sickness Insight in Coping Questionnaire-subscale redefinition.

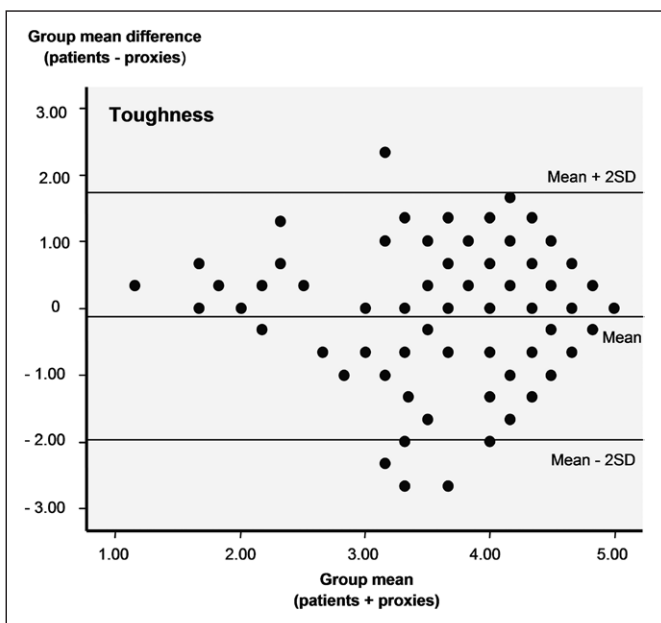


Figure 2. Bland-Altman analysis plot Sickness Insight in Coping Questionnaire-subscale toughness.

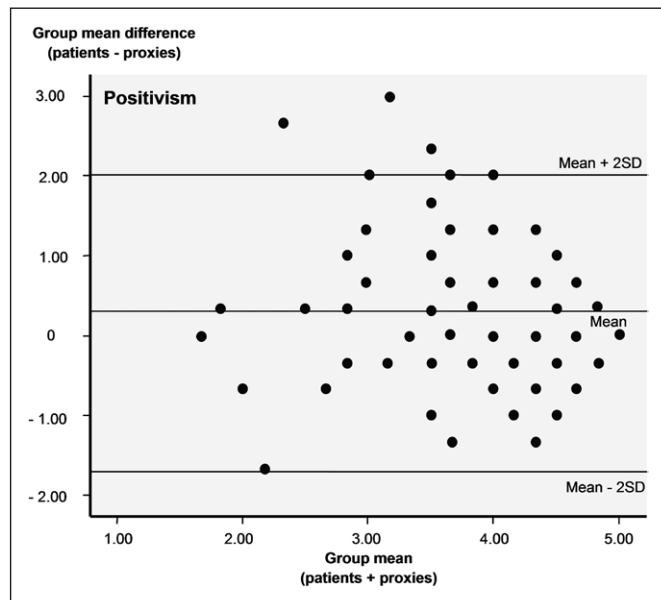


Figure 4. Bland-Altman analysis plot Sickness Insight in Coping Questionnaire-subscale positivism.

adaptive coping strategies especially relevant for patients with a life-threatening health condition (i.e., fighting spirit, toughness, positivism, redefinition, and non-acceptance). Given the association between coping behaviors and psychological distress (9, 34), it may be valuable both to assess and to attempt to foster adaptive behaviors as a way to improve outcomes.

The SICQ presents notable advantages over existing questionnaires. First, several generic questionnaires addressing coping such as the brief-COPE have been used among family members of ICU patients or care-givers of the ICU-team (33–35). However, those questionnaires have not undergone

rigorous psychometric testing as has the SICQ. Therefore, the SICQ may be an important addition to the available instruments, although prospective studies have to be performed illustrating its use in relation to patient outcome. Although we found that the redefining domain was related to ICU length of stay, no other relation with outcome like hospital length of stay or mortality could be found. The found relation could be either due to chance alone, or due to a selection of relatively less-ill patients inherent to the primary focus of this study. Second, we found that the SICQ can be completed by patient proxies with good agreement, a notable advantage given how frequently seriously ill patients cannot participate in interviews. There are

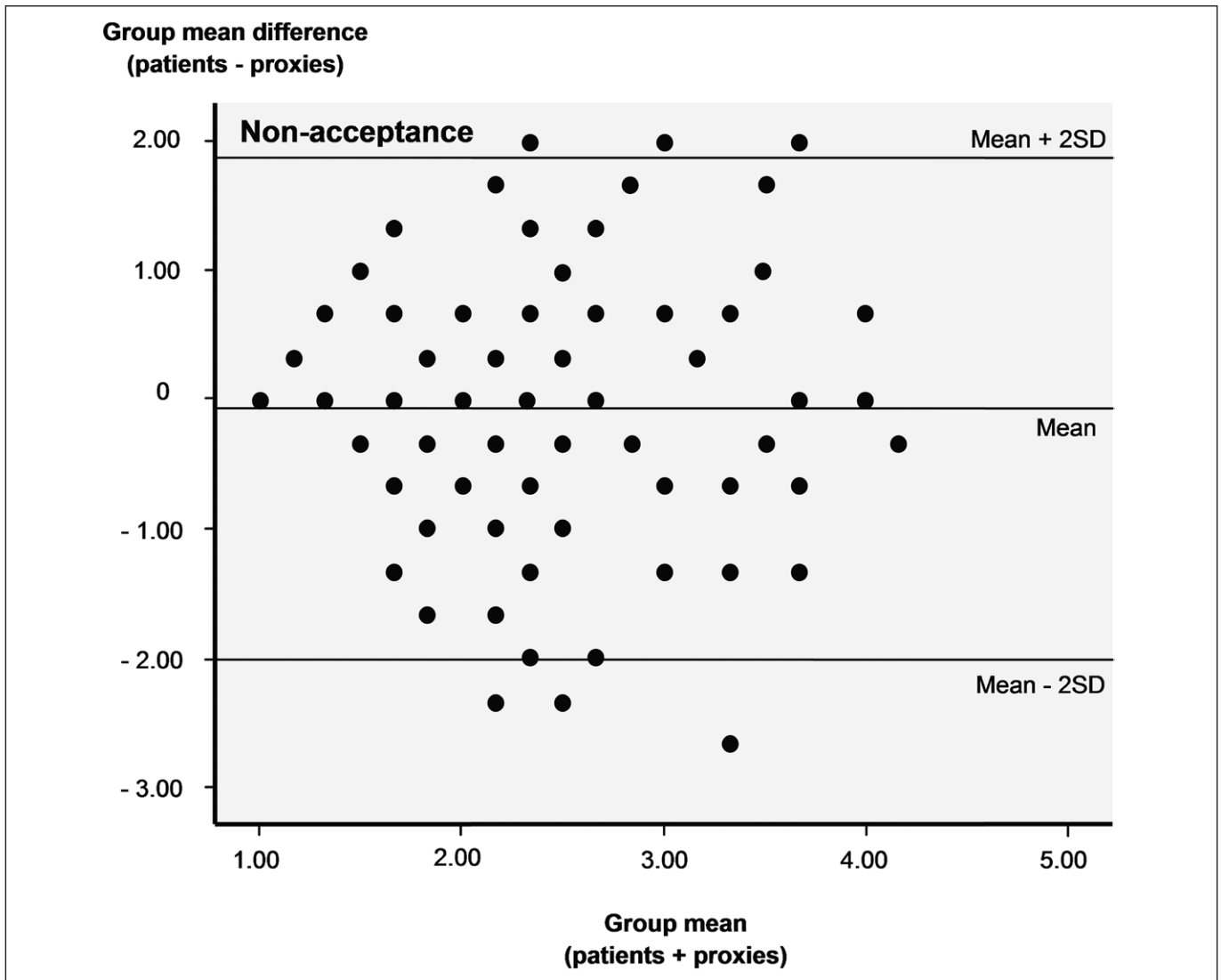


Figure 5. Bland-Altman analysis plot Sickness Insight in Coping Questionnaire-subscale non-acceptance.

limitations of proxy responses, as stress and anxiety evoked by their loved one's medical condition could blur or distort their judgment (33–36). Yet, our data make clear that close family members of hospitalized patients with a severe medical condition have reasonable insight in the coping style of their relative, and as such are a valuable resource to hospital staff.

Several limitations to our study should be acknowledged. First, this was a nonacademic single center study in The Netherlands. Coping styles and interpretations by close proxies may be different among individuals in other countries and settings. Second, the use of proxies as a surrogate way of obtaining information from patients is not ideal. However, this proved to be a reliable way of obtaining information about patient coping style and is in line with previous findings (37, 38). Third, because we wished to avoid a large proportion of delirious and deeply sedated patients, we enrolled patients who were not extremely ill (mean APACHE II score of 15) and who experienced a low mortality rate ($n = 3$). Further study of the SICQ among more diverse groups of severely ill patients will be needed.

We believe it will now be important to examine how coping styles contribute to the recovery process and quality of life of patients who have experienced a serious illness. Also, further study on the effectiveness of interventions designed to encourage patients to cope with their medical condition could be valuable. Last, given our finding that close family members of patients represent a valuable source of information to hospital staff, exploring how these caregivers could contribute to patients' recovery may be important as well.

In conclusion, the newly introduced SICQ has adequate psychometric properties, and it is our hope that it will help hospital staff in measuring adaptive coping of patients with a severe medical condition.

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APPENDIX

The SICQ-subscales use a five-point scale (1, totally disagree; 5, totally agree). Note that we reverse scored (R) all items which referred to lower levels of coping to ensure all items and subscales were keyed in the same direction. The wording was translated from Dutch to English and back-translated to make sure that this list reflects actual items used in the study.

SICQ-Fighting Spirit

- I never give up.
- I do everything to get well.
- I keep on fighting to get better.

SICQ-Toughness

- I am afraid of pain (R).
- I can hardly tolerate pain (R).
- I am tough to myself when in pain.

SICQ-Redefinition

- I view my illness as a personal learning experience.
- I am able to turn my illness into something positive.
- I use my illness in a creative way.

SICQ-Positivism

- I am gloomy about recovery (R).
- I feel the future is bleak (R).
- I do not believe in a happy ending (R).

SICQ-Non Acceptance

- I resign myself to my destiny (R).
- I reconcile myself to the inevitable (R).
- I accept whatever will happen (R).