Original Article

Condition-related coping strategies in persons with spinal cord lesion: a cross-national validation of the Spinal Cord Lesion-related Coping Strategies Questionnaire in four community samples

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Study design: Cross-sectional, questionnaire.

Objectives: Coping strategies employed to manage the consequences of a spinal cord lesion (SCL) have been found to be distinctly related to emotional well-being. However, research and clinical implications have been hampered by the lack of cross-validated measures that are directly related to the lesion and its consequences. This study investigates the psychometric performance of the SCL-related Coping Strategies Questionnaire in four different countries.

Setting: Austria, Germany, Switzerland and UK.

Methods: The study sample comprised 355 community residing persons with SCL. Multi-trait/multi-item analysis methods and non-parametric and parametric tests were used.

Results: The Acceptance coping scale showed satisfactory psychometric qualities, whereas there were some problems in the Fighting spirit scale and greater problems in the Social reliance scale. Compared with the Swedish developmental sample, Acceptance was used more in the four study countries. Consistent with the original sample, Acceptance and Fighting spirit coping correlated with fewer signs of emotional distress, persons lesioned ≥ 5 years tended to report more Acceptance than the newly lesioned and coping strategies were mainly unrelated to neurological status.

Conclusion: The English and German language versions of the Acceptance coping scale were valid and reliable, whereas some translated items in the Fighting spirit scale need to be revised. Translations of the Social reliance scale need to be thoroughly revised and retested. The results add further evidence to the literature on the stability of the link between adapting life priorities (ie Acceptance) and emotional well-being.

Spinal Cord (2007) 45, 420–428; doi:10.1038/sj.sc.3102003; published online 19 December 2006

Keywords: spinal cord injuries; psychological adaptation; coping behaviour; mental health

Introduction

Coping strategies have repeatedly been shown to be associated with the emotional well-being of persons with traumatically acquired spinal cord lesion (SCL).^{1–3} In particular, the acceptance strategy, that is modifying life values and setting new priorities, has been shown to be strongly associated with better well-being.^{4,5} A predictive relationship has been found between the use of acceptance during the first months after lesion and

decreased depression 1 year post-discharge.⁶ Consequently, several authors have emphasized the need for further research on coping strategies in persons with SCL.^{7–9}

To date, research and clinical implications have been hampered by the use of unstandardized coping measures,^{10–12} measures that seem more oriented towards the outcome of coping than coping efforts *per se*,^{10,11} inclusion of psychological defences among coping behaviours,¹² the use of bivariate instead of multivariate correlations,^{10,11,13,14} and the use of the psychometrically unstable Ways of Coping Questionnaire.^{1,2,15–21} Furthermore, it has been difficult to demonstrate any significant change in the pattern of coping strategies

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 We certify that all applicable institutional and governmental regulations concerning the ethical use of human volunteers were followed during the course of this research

following interventions aimed at improving adaptation by enhancing coping, although adaptation in terms of depression and anxiety have been shown to be significantly improved.^{22,23} Most importantly, to our knowledge, no SCL-related coping measure has been used and validated in different countries.

The SCL-related Coping Strategies Questionnaire (SCL CSQ) met basic psychometric demands of reliability and validity in the Swedish SCL-sample in which it was developed.²⁴ The SCL CSQ comprises three coping scales: Acceptance (ie revaluation of life values), Fighting spirit (ie efforts to minimize the effects of the lesion) and Social reliance (ie a tendency to equate physical dependency with negative psychological and social dependency). The development of the SCL CSQ, including item generation, factor identification and scale reliability, is described in detail elsewhere.²⁴ Its validity has been documented regarding item discrimination²⁴ and relationships of the coping factors with emotional well-being,⁴ a broad spectrum of health-related quality of life domains,⁵ locus of control,²⁵ social support, sociodemographics and neurological deficit.⁴ Generally, emotional well-being and quality of life have been positively associated with Acceptance and negatively with Social reliance. Fighting spirit, to a lesser degree, has followed the pattern of Acceptance. Persons who had lived 5 years or longer with their injuries reported more Acceptance and less Social reliance than persons lesioned 1–4 years. Coping strategies were unrelated to type of neurological deficit, except in persons with functionally complete tetraplegia who reported higher levels of Social reliance than persons with other types of lesions.²⁴ The coping strategies have also been discussed and interpreted from a health psychological perspective.²⁶ In addition, a comparison between the SCL CSQ and the generic Ways of Coping Questionnaire by Lazarus and Folkman has been performed.¹⁶ However, the validity of the SCL CSQ has yet to be assessed in other countries and cultures. In a first pilot test of the SCL CSQ, Kennedy *et al*²⁷ found that persons from the UK used less Acceptance and Fighting spirit and more Social reliance compared to persons from Austria, Germany and Switzerland. Nevertheless, a more thorough cross-cultural validation²⁸ is needed.

The overall aim of this study was therefore to conduct an initial cross-validation of the SCL CSQ. Three research questions were formulated:

1. Could the three SCL-related coping strategies documented in the Swedish developmental sample also be found among persons with SCL from other European countries? If so,
2. Were the strategies used to a comparable degree as in the developmental sample?
3. Were the associations with emotional well-being, time since lesion and neurological status similar to those found in the developmental sample? It was expected that elevated Acceptance and Fighting spirit scores would be associated with few signs of general psychological distress, whereas elevated Social reliance

scores were expected to be related to increased signs of psychological distress. It was also expected that time since lesion would be related to the use of the coping strategies, where newly lesioned would use Acceptance less and Social reliance more. Few relations were expected between coping and neurological status.

Methods

Participants

The participants comprised a subset of the samples from the study of community needs of people with SCL by Kennedy *et al*.²⁷ In that study, potential participants were selected from the database of Rolli Moden, a division at Manfred Sauer GmbH that manufactures disability aids. It was felt that this client database was comparable to the population sample of Kennedy *et al*'s⁶ longitudinal study, which had demographics representative of the general traumatic SCL population. Potential participants were thus selected from the Rolli Moden database of people with SCL. The database was stratified into four groups by gender and tetraplegia *versus* paraplegia and participants were randomly selected from each stratum such that the ratio men to women was 4:1 and paraplegia to tetraplegia was 2:1.

Measures

Sociodemographic and lesion-related variables were collected by self-report questions to obtain personal details such as date of birth and marital status, lesion characteristics including cause, date, level and completeness of lesion, as well as information on employment status.

SCL CSQ²⁴ is a measure of coping strategies that is directly related to the lesion and its consequences. SCL CSQ items were generated from in-depth interviews. A rigorous psychometric testing procedure, including exploratory, confirmatory and subgroups analyses, yielded three factors/coping strategies that met established criteria. The factors were: Acceptance (four items), Fighting spirit (five items), and Social reliance (three items). All items are included in the Appendix. Items are rated on a four-step Likert scale (*strongly disagree, disagree, agree, strongly agree*) and responses are coded from 1 to 4. Scores represent the mean of the ratings, giving a theoretical range of 1–4. Higher scores indicate greater use of the strategy in question. In the developmental sample, item internal validity (ie correlation of each item with its own scale) ranged 0.44–0.64 (corrected for overlap). Internal reliability coefficients for the scales were 0.79 for Acceptance, 0.72 for Fighting spirit and 0.73 for Social reliance.

General anxiety and depression were assessed with the *Hospital Anxiety and Depression Scale* (HADS).²⁹ The HADS is a widely used and reliable measure used to screen for probable presence and severity of clinical anxiety and depression.^{30,31} Anxiety (A) and depression (D) are measured by seven items each, and answered on

a four-step Likert scale scored from 0 to 3. Responses are summed for each factor, giving a range of 0–21. Persons scoring between 0 and 7 are regarded as non-cases, 8–10 as possible cases and 11–21 as probable cases.²⁹ A review of papers assessing the validity of the HADS scale reported internal consistency estimates between 0.68–0.93 (mean = 0.83) for the HADS-A and 0.67–0.90 (mean = 0.82) for the HADS-D. Its concurrent validity has been evaluated against other commonly used questionnaires and found to range between 0.49 and 0.83 (mean = 0.66).³² The internal consistency of the HADS-A and HADS-D was found to be 0.85 and 0.70, respectively, in a psychometric evaluation of the HADS in a sample of 963 adults with a SCL.³³

Procedure

Questionnaires were sent to selected participants with SCL who resided in Germany ($n = 400$), the UK ($n = 300$), Switzerland ($n = 150$) and Austria ($n = 150$). A letter was included explaining the purpose of the study. Questions on sociodemographics and lesion-characteristics were translated from English into German. The SCL CSQ was translated from Swedish into English and from English to German. In all translations, a forward-backward translation procedure was used to establish semantic equivalence. In the forward translations, we used two translators for Swedish to English and five translators from English to German; bilingual persons performed backward translations (one translator from English to Swedish and two translators from English to German). Follow-up reminders were sent to the participants 2 weeks after the questionnaires had been distributed. The study was conducted in accordance with local research ethics and research governance requirements.

Data analysis

Descriptive statistics, including means, confidence intervals, skewness and kurtosis, were computed for each variable.

Research question 1. Scaling assumptions were tested with multi-trait/multi-item analysis.³⁴ Item-internal validity was achieved when the correlation between an item and its own scale was at least 0.40 (corrected for overlap). For item-discriminant validity, a definite scaling success was noted if an item correlated significantly higher with its own scale (corrected for overlap) than with competing scales, that is, exceeding two standard errors of the correlation matrix ($1/\sqrt{n}$). A probable scaling success was noted if the item-scale correlation was higher, but not significantly so, for the hypothesized scale *versus* competing scales. Likewise, a probable scaling failure was noted if the item-scale correlation was lower, but not significantly so, for the hypothesized scale *versus* competing scales. A definite scaling failure was noted if the item-scale correlation was significantly lower for the hypothesized scale *versus* competing scales. Because the confidence intervals for

correlations increase as the n diminishes, items that discriminate very well may appear to fail some tests when samples are small. Hence, in the analyses where n was smaller than in the developmental sample (ie < 274), decisions regarding item performance were based on repeated definite/probable scaling successes or failures.

Internal consistency reliability of the multi-item scales was tested with Cronbach's alpha coefficient. Values exceeding 0.70 were desired.³⁵

Research question 2. The Mann-Whitney U -test (two tailed) was used to test for differences between the Swedish developmental sample²⁴ *versus* the four community samples. Differences between the four community samples are presented elsewhere.²⁷

Research question 3. General anxiety and depression, assessed with the HADS, were used as comparison variables. Pearson correlations were used to study the relations between the coping scales and the comparison variables. The Mann-Whitney U -test (two tailed) was employed for significance testing by time since lesion. The Kruskal-Wallis one-way ANOVA (corrected for ties) and the Mann-Whitney U -test (two tailed) were used for testing differences by neurological status.

Results

The sociodemographic and lesion-related background characteristics of the participants are presented in Table 1. There were 355 participants in total (response rate = 36%). During the course of the recruitment, it was discovered that the Swiss database was not updated, hence the smaller Swiss sample. Owing to fewer missing values than in the Kennedy *et al* study,²⁷ there were four more participants from the UK and one more from Germany in this report. Otherwise, the characteristics of our study sample did not significantly differ from those of the Kennedy *et al*²⁷ community needs study. In addition, gender, level of injury and aetiology in this sample was comparable to Kennedy *et al*'s longitudinal sample.⁶

The percentage of missing values in SCL CSQ was very low (0.005%). In the total sample, none of the coping variables had a skewness or kurtosis exceeding ± 1 . Among the different countries, all skewnesses were $< \pm 1$, whereas three kurtosises marginally exceeded 1, the largest being 1.37 for Fighting spirit in the Swiss sample. It was concluded that the coping variables approximated normal distribution.

Research question 1: could the coping strategies in the SCL CSQ be found in the study countries?

The results of the multi-trait/multi-item scaling analyses are presented in Table 2. Owing to the small number of participants, and hence large confidence intervals in the Austrian and Swiss samples, these groups were combined with the German sample into a German-speaking group. The Acceptance coping scale performed satisfactorily in all samples, whereas there were some problems in the performance of the other two scales.

Table 1 Sociodemographic and lesion-related characteristics of the study sample ($n = 355$)

Characteristic	Number	Percent
<i>Country</i>		
Austria	44	12.4
Germany	172	48.5
Switzerland	27	7.6
United Kingdom	112	31.5
<i>Gender</i>		
Men	279	78.6
Women	74	20.8
Missing	2	0.6
<i>Age</i>		
Mean (SD)	49.0 (12.0)	
Median (range)	49.0 (20–76)	
Missing	6	1.7
<i>Marital status</i>		
Married/living with partner	214	60.3
Single	104	29.3
Divorced/separated	31	8.7
Widowed	3	0.8
Missing	3	0.8
<i>Employment</i>		
Paid or voluntary employment	185	52.1
No employment	167	47.0
Missing	3	0.8
<i>Cause of lesion</i>		
Road traffic accident	151	42.5
Accident at work	51	14.4
Fall	30	8.5
Sporting accident	53	14.9
Medical treatment	6	1.7
Illness	33	9.3
Other	29	8.2
Missing	2	0.6
<i>Age at lesion</i>		
Mean (SD)	27.8 (11.4)	
Median (range)	24.5 (0–63)	
Missing	23	6.5
<i>Duration of disability</i>		
Mean (SD)	21.0 (11.2)	
Median (range)	19.0 (1–59)	
Missing	19	5.4
<i>Level of lesion</i>		
Cervical	147	41.4
Thoracic	155	43.7
Lumbar	23	6.5
Sacral	1	0.3
Missing	29	8.2
<i>Type of lesion</i>		
Complete paraplegia	162	45.6
Complete tetraplegia	85	23.9
Incomplete paraplegia	32	9.0
Incomplete tetraplegia	58	16.3
Missing	18	5.1

The reliabilities of Fighting spirit were slightly below the 0.70 criterion in all analyses except in the UK sample. Correspondingly, there was also some evidence of suboptimal item-internal consistency, that is some low item-scale correlations and scaling failures. On closer examination, these problems were due to two items that correlated higher, although not significantly, with the Acceptance scale than with their own scale (ie probable scaling failure). The items were *I try to make the best of life despite my lesion* and *I refuse to let the lesion rule my life*. Excluding these items resulted in unacceptable reliability estimates (ie ≤ 0.60) for the modified scale. Furthermore, correlations with the original five-item scale ranged 0.92–0.88, indicating that the two versions were very similar. It was therefore decided to retain the original Fighting spirit scale.

The reliability of the Social reliance scale was clearly inadequate in the UK sample, and unsatisfactory in the other samples. Further, in the UK sample, the item *You have to believe that other people are able to help you* (no. 4) correlated significantly lower with its own scale than with Acceptance (ie definite scaling failure). A probable scaling failure was noted for the item *My lesion has taught me that we are all dependent upon others* (no. 9), which correlated higher with Acceptance in the German-speaking samples. As excluding one or both of these items would mean that the Social reliance would no longer qualify as a scale, it was decided to exclude Social reliance from subsequent analyses.

The Pearson correlation between Acceptance and Fighting spirit was 0.50 in the total sample. In the combined German-speaking samples, the German sample alone and the UK sample, the correlations were 0.54, 0.51 and 0.73, respectively.

Research question 2: were the coping strategies used to comparable levels as in the developmental sample?

Means and standard deviations for SCL CSQ subscales for each country are shown in Table 3. Acceptance was used less in the Swedish developmental sample than in the other countries, as there was a significant difference as compared to the lowest study sample mean (ie the UK mean; Mann–Whitney $U = 10056.50$, $P < 0.001$). (As reported elsewhere, Acceptance was significantly less used in the UK sample than in the other three samples.²⁷) For Fighting spirit, the mean in the Swedish sample was just below the lowest (ie the UK) of the other means; however, this difference was not significant (Mann–Whitney $U = 15126.00$, $P = 0.83$). (As reported elsewhere, Fighting spirit was significantly less used in the UK sample than in the other three samples.²⁷)

Research question 3: what were the relations of the coping strategies with anxiety, depression, time since lesion and neurological status?

The correlations of Acceptance and Fighting spirit with psychological distress were as hypothesized (Table 4), that is, the higher the scores in Acceptance and Fighting

Table 2 Item scaling tests and reliability of the SCL CSQ version 1.0

Sample Coping factors	<i>k</i> ^c	Range of item correlation		Scale summary				Reliability ^b
		Item-internal validity ^d	Item-discriminant validity ^e	Item discriminant validity tests ^a				
				Significantly lower (%)	Lower (%)	Higher (%)	Significantly higher (%)	
<i>Total sample (n = 355; SE = 0.05)</i>								
Acceptance	4	0.54–0.65	0.00–0.60	0	0	25	75	0.78
Fighting spirit	5	0.40–0.52	0.03–0.56	0	20	10	70	0.68
Social reliance	3	0.36–0.48	0.04–0.23	0	0	0	100	0.61
<i>AU/CH/DE (n = 243; SE = 0.06)</i>								
Acceptance	4	0.44–0.61	0.00–0.55	0	0	12	88	0.73
Fighting spirit	5	0.31–0.52	0.00–0.53	0	20	10	70	0.65
Social reliance	3	0.34–0.57	0.05–0.31	0	0	33	67	0.65
<i>DE (n = 172; SE = 0.08)</i>								
Acceptance	4	0.39–0.57	0.01–0.56	0	0	50	50	0.70
Fighting spirit	5	0.33–0.54	0.00–0.51	0	20	40	40	0.63
Social reliance	3	0.31–0.59	0.01–0.33	0	17	17	67	0.64
<i>UK (n = 112; SE = 0.09)</i>								
Acceptance	4	0.64–0.67	0.06–0.65	0	0	50	50	0.83
Fighting spirit	5	0.43–0.62	0.02–0.69	0	20	30	50	0.75
Social reliance	3	0.18–0.51	0.05–0.45	33	0	17	50	0.50

SE = standard error of correlation matrix; AU = Austria; CH = Switzerland; DE = Germany; UK = United Kingdom

In the item discriminant validity tests percentages for some variables do not total 100% due to rounding error

^aSuccess summary for item discriminant validity tests^bInternal-consistency reliability (Cronbach's alpha)^cNumber of items and number of item-internal consistency tests per scale^dCorrelation between items and hypothesized scale corrected for overlap^eCorrelation between items and competing scales (absolute values)**Table 3** Means and standard deviations of the subscales of SCL CSQ and Hospital Anxiety and Depression Scale (HADS)

Sample	SCL CSQ		HADS	
	Acceptance Mean (SD)	Fighting Mean (SD)	Anxiety Mean (SD)	Depression Mean (SD)
Austria	3.42 (0.58)	3.41 (0.50)	5.00 (3.89)	3.19 (2.98)
Germany	3.28 (0.56)	3.40 (0.45)	5.60 (3.16)	3.43 (2.91)
Switzerland	3.18 (0.72)	3.43 (0.42)	5.00 (4.21)	3.48 (3.37)
UK	2.96 (0.72)	3.24 (0.49)	7.19 (4.21)	5.39 (3.97)
Total	3.19 (0.65)	3.35 (0.47)	6.00 (3.79)	4.06 (3.46)
Sweden ^a	2.53 (0.70)	3.23 (0.52)	NA	NA

^aData from Elfström *et al*²⁴ included for comparison

NA = not applicable

spirit, the fewer the signs of anxiety and depression. With one exception, the correlations were strongest in the UK sample. In the two smallest samples, that is the Austrian and Swiss, the correlations with anxiety did not reach significance.

Persons injured ≥ 5 years reported significantly higher levels of Acceptance than those injured 1–4 years in the total sample (Mann–Whitney $U = 2067.50$, $P = 0.046$) and in the German sample (Mann–Whitney $U = 122.50$,

$P = 0.031$). No differences were found concerning Fighting spirit.

Differences regarding type of lesion were significant only for Fighting spirit and only in the total sample, $\chi^2(3, n = 337) = 7.96$, $P = 0.047$. *Post hoc* tests showed that persons with complete paraplegia scored significantly higher on Fighting spirit than did persons with complete tetraplegia, Mann–Whitney $U = 5590.00$, $P = 0.014$. In the analyses concerning level of lesion, the sacral level

Table 4 Pearson correlations of the subscales of SCL CSQ with Hospital Anxiety and Depression Scale (HADS)

SCL CSQ Coping strategy Sample	HADS	
	Anxiety	Depression
<i>Acceptance</i>		
Austria	-0.28	-0.50**
Germany	-0.39**	-0.40**
Switzerland	-0.37	-0.58**
UK	-0.50**	-0.68**
Total	-0.45**	-0.58**
<i>Fighting spirit</i>		
Austria	-0.16	-0.39**
Germany	-0.35**	-0.42**
Switzerland	-0.33	-0.56**
UK	-0.47**	-0.54**
Total	-0.40**	-0.49**

** $P < 0.01$

was excluded because there was only one person with this lesion level. The only significant difference regarding level of lesion was for Fighting spirit in the total sample, χ^2 (2, $n = 324$) = 9.23, $P = 0.010$, where persons with thoracic injuries had higher scores than did persons with cervical injuries, Mann-Whitney $U = 9299.00$, $P = 0.005$.

Because there were few non-traumatic lesions, it was decided that analyses with this subgroup were only meaningful concerning research question 3. The most distinctly non-traumatic group, that is persons lesioned due to illness, showed a correlational pattern between the coping strategies and psychological distress that was very similar to that found in Table 4.

Discussion

In this study, we performed an initial cross-validation of the three lesion-related coping scales in the SCL CSQ.²⁴ The first research question concerned the psychometric structure and performance of the scales. Support was found for the coping strategies Acceptance and Fighting spirit in samples from Austria, Germany, Switzerland and the UK. However, two Fighting spirit items overlapped with Acceptance and there were considerable problems in the third coping scale Social reliance.

We think the psychometric difficulties mainly originate from a flaw in the translation procedure, leading to more or less decisive changes of meaning in some items. The problems were most evident in Social reliance. This coping strategy implies that in relying on help from others to meet their physical needs, individuals also become both psychologically and socially dependent on others in a negative way.²⁶ Thus, they have to accept whatever help is offered, irrespective of their own needs. As indicated by the correlations of items nos. 4 and 9 with Acceptance, we think many respondents may have

interpreted these two items in the opposite manner, that is, actively seeking and determining the help they need (e.g., Seeking social support in the Folkman and Lazarus framework³⁶). The flaw in the translation procedure was that no cognitive debriefing interviews were performed to check that the translations captured what they were intended to. Cognitive debriefing interviews are structured pilot interviews with a small number of persons representative of those for whom the questionnaire was designed, with the aim to identify and solve any potential problems in translation.³⁷

Regarding research question 2, the mean level of Acceptance coping was lower in the Swedish developmental sample than in all the four study samples. This finding is not easily interpreted. A hypothesis may be that psychological adaptation was less well integrated in the rehabilitation program for the Swedish sample, as evidenced by the fact that no psychologist was on the staff at the spinal cord unit where all the Swedish patients underwent rehabilitation. Although levels of Fighting spirit have been shown to differ significantly between the four study samples,²⁷ it is important to note that the absolute difference between the lowest mean score (ie the Swedish) and the highest (ie the Swiss) was only 0.20 (Table 3) on a 1–4 scale. Thus, although statistically significant the magnitudes of the differences are trivial in absolute terms. Furthermore, Fighting spirit was used to comparable degrees in the developmental sample and the UK sample. The earlier finding that Social reliance was used more in the UK than in Austria, Germany and Switzerland²⁷ has to be interpreted very cautiously, given the psychometric problems with that scale. The greater endorsement of Social reliance in the UK sample may possibly owe to the translations problems mentioned above.

Regarding research question 3, the relations between the coping strategies and emotional well-being were as expected, that is, the more Acceptance and Fighting spirit, the less anxiety and depression. We attribute the nonsignificant relations with anxiety in the Austrian and Swiss samples mainly to their small sample sizes. The relations found here are in line with previous findings where Acceptance, and to a lesser degree Fighting spirit, have been correlates of emotional well-being^{4,24} and a broad spectrum of health-related quality of life domains.⁵ These findings are also consistent with results from studies using a general acceptance measure (ie the COPE³⁸), which show a clear³ and predictive⁶ link between acceptance and better well-being. High levels of internal control, a concept similar to the Fighting spirit scale, have previously been linked to less psychological distress^{2,39} and better well-being among persons with SCL.⁴⁰

The Acceptance scale is considered a measure of a coping strategy that leads to *disability acceptance*, a concept elaborated by Wright.⁴¹ Like her, we do not think acceptance implies resignation, rather it implies actively approaching the stressors of life associated with a disabling lesion by changing one's life values. We think that Acceptance coping in this study indicates that a

person changes life priorities by subordinating physical limitations relative to other values and also by containing disability effects. Psychological stress may diminish by changing priorities because the discrepancy between perceived demands and goals in the situation may decrease. This might explain why high levels of Acceptance were clearly associated with better well-being. A study of long-term SCL survivors supports this contention in that it seemed that the participants devalued less attainable goals and increased the importance of more attainable areas when assessing their quality of life.⁴²

We think Fighting spirit implies that the individual tries to challenge stressors by actively exerting greater control over life circumstances. Psychological stress may diminish because individuals try to see the brighter side of things and refuse to give up. Fighting spirit may be related to self-efficacy,⁴³ but differs in the sense that Fighting spirit mirrors deliberate coping efforts rather than beliefs in coping ability. Although optimism and independence are highly valued personal qualities in western culture, some caution should be exercised in encouraging such qualities in persons with SCL. A reason for this is that when explored in a multivariate context, Fighting spirit has been a much weaker covariate to psychological and physical well-being than either Acceptance or Social reliance.^{4,5} There are several possible explanations for this. For example, it may simply be that Fighting spirit is less important than the other two coping strategies. Related to this is the possibility that, in the long run, prolonged use of Fighting spirit may lead the individual to maintain goals that are unrealistic or unattainable. Another explanation may be related to the fact that respondents tended to embrace this strategy (as indicated by the relatively high means in this study and in the developmental samples), which may reflect a socially desirable response set, that is the use of Fighting spirit may have been over-reported.

Consistent with results from the developmental sample,²⁴ persons in the total and German samples who had lived with their lesion for 5 years or more reported more use of Acceptance coping than persons who had lived 1–4 years with their lesion. There were only two significant differences regarding neurological status: persons with complete paraplegia used more Fighting spirit than persons with complete tetraplegia, as did persons with thoracic lesions *versus* persons with cervical lesions. However, these differences should be interpreted cautiously, as they were not systematic, that is, they were found only in the total sample and here only in the two largest groups. Although statistically significant, the clinical significance of these differences seems to be that neurological status is mainly unrelated to Acceptance and Fighting spirit coping. This was also the case in the developmental sample.²⁴

An inherent weakness of postal questionnaire studies such as ours is that response rates are oftentimes low and it is thus difficult to know if the respondents are truly representative of the target population. Conse-

quently, it is difficult to know whether the results are generalizable to that population. Nevertheless, the fact that many of our findings corroborate results from the developmental sample lends support to the validity of those findings. A further limitation is that the relationships between coping strategies and emotional well-being and neurological status were not studied within a multivariate context. Such analyses were beyond the scope of this paper, however, a separate study is currently underway. Noteworthy, however, is that multivariate analyses in the developmental sample support the soundness of the SCL CSQ.^{4,5,25}

The major strength of this study is that it is, to our knowledge, the first cross-validation of a condition-related measure of SCL-related coping strategies. The study has responded to the contention that coping strategies should be targets for research.^{7–9} The SCL CSQ seemed to be well accepted by the respondents, as evidenced by the very low percentage of missing values. Although developed for traumatic lesions, there were indications that the Acceptance and Fighting spirit scales may also be meaningful for use with non-traumatic lesions. Forthcoming studies will analyse and report on the performance of revised translations of the SCL CSQ.

In conclusion, in this first cross-validation of the English and German language versions of the SCL CSQ, the Acceptance coping scale was found valid and reliable, whereas some items need to be revised to optimize the Fighting spirit scale in those languages. Translations of the Social reliance scale need to be thoroughly revised and require further testing. Our findings will be of interest to researchers and clinicians concerned with the psychological aspects of rehabilitation. Our results add further evidence to the literature on the stability of the link between adapting life priorities (ie Acceptance) and emotional well-being. They also suggest an association between efforts to maintain a sense of control (ie Fighting spirit) and well-being.

Acknowledgements

This paper was compiled with support from the Norrbacka-Eugenia Foundation, Sweden. We thank the people with SCLs who willingly participated in the study. We greatly appreciate the financial support and encouragement from the Manfred Sauer Foundation (Germany). We gratefully acknowledge the contribution from Lynne Hindson, who was involved in the initial stages of the study, as well as Beth Dixon and Rachel Blaikley who helped to input the data. We also gratefully acknowledge Associate Professor Margareta Kreuter who collected the Swedish data.

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Appendix

Items from each coping scale

SCL-RELATED COPING STRATEGIES QUESTIONNAIRE (SCL CSQ) VERSION 1.0

1. I have been able to see my lesion in relation to other things in life. (Acceptance)
 2. My lesion has made me learn to appreciate new things in life that I did not think about before. (Acceptance)
 3. It is important for me to set goals that I can fight to achieve. (Fighting spirit)
 4. You have to believe that other people are able to help you.* (Social reliance)
 5. I try to make the best of life despite the lesion.* (Fighting spirit)
 6. What I have lost physically I have regained in so many other ways. (Acceptance)
 7. I refuse to let the lesion rule my life.* (Fighting spirit)
 8. I would feel completely helpless without support from others. (Social reliance)
 9. My lesion has taught me that we are all dependent upon others.* (Social reliance)
 10. I always try to manage on my own as much as possible. (Fighting spirit)
 11. I think I have accepted my lesion. (Acceptance)
 12. I always look out for new ways to make life easier. (Fighting spirit)
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Note. The term 'lesion' in SCL is used as recommended by the International Spinal Cord Society. However, many writers and patients still use 'injury', that is spinal cord injury (SCI), and that term might be used when appropriate in the given context

*Item that needs to be reformulated due to psychometric problems