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The Lancashire Quality of Life Profile: modification and psychometric evaluation

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Abstract *Background:* Although widely used in Europe, the conceptual and psychometric qualities of the Lancashire Quality of Life Profile (LQoLP) have not been thoroughly examined. Four issues need attention: coverage, scale construction, systematic missing data, and psychometric properties. *Method:* Concept mapping was used to examine the coverage, and exploratory factor analysis to examine the empirical scale structure of the LQoLP. Data of 518 long-term patients from ten different mental health care settings were used. Modifications to the LQoLP were proposed on the basis of these findings, and its psychometric properties were tested. Thirty-one respondents participated in a test-retest reliability study (T1–T2: 2 weeks). *Results:* The modified LQoLP covers the quality of life-concept in a more comprehensive manner. Internal consistency, test-retest reliability and validity are good. *Conclusions:* The modified version of the LQoLP now covers ten domains, paying specific attention to patients' definition of quality of life (autonomy, coping, self-worth). Domains are now based on factor analysis. The

problem of systematic missing data is solved. Psychometric properties are good. Because of moderate alphas, two domains need further investigation.

Introduction

During the past decades, the interest in quality of life and health-related quality of life (QoL) has grown steadily. In general medicine, the number of publications about QoL increased rapidly during the 1970s. This increase has been explained as an answer to the growing concern about the real advantages of the new and powerful 'weapons against disease' (Elkinton 1966; Oliver et al. 1996b). In the field of psychiatry, lacking the same immense development of technocratic practice as in general medicine, the QoL concept emerged in the scientific literature in the early 1980s, initiated by a humanisation of mental health care and the trend towards community psychiatry; first in Sweden (Malm et al. 1981), followed by the United States (Lehman et al. 1982; Baker and Intagliata 1982), the United Kingdom (Oliver 1991–92), and the Netherlands (Boevink et al. 1995).

Despite its clinical importance in the evaluation of treatment for chronic and sometimes incurable diseases, there is still no consensus about what constitutes QoL, how patients' views should be incorporated in the definition and assessment of QoL (Orley et al. 1998) or which theoretical models can be tested and which have superior explanatory power (Zissi et al. 1998). Most of the work of QoL researchers has been dedicated to instrument development. At the moment, about ten instruments are available for assessing QoL in psychiatry (see, for a review, Van Nieuwenhuizen et al. 1997; see also Lehman 1996; Oliver 1999). These reviews show that QoL is measured for a number of reasons. First, it can be used in the assessment of an individual's life

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circumstances and his or her satisfaction with them. Second, it can be used to gain insight into the specific consequences of a psychiatric disability. Finally, it can be used as an outcome measure or to evaluate different mental health care programme. The majority of the reviewed QoL instruments are being used for evaluation purposes. This is also true for the Lancashire Quality of Life Profile (LQoLP), one of the most commonly used instruments in Europe today.

The LQoLP is a structured interview developed in the UK by Oliver et al. between 1986 and 1991 (Oliver et al. 1996b). The LQoLP is nowadays used in the UK (Huxley and Warner 1992; Bridges et al. 1993; Oliver et al. 1997; Shepherd et al. 1996; Becker et al. 1998; Taylor et al. 1998), Austria (Kemmler et al. 1995; Kemmler et al. 1997), Germany (Priebe et al. 1995; Heinze et al. 1997; Kaiser et al. 1997; Röder-Wanner et al. 1997), Italy (Warner et al. 1998), the Netherlands (Van Nieuwenhuizen et al. 1998), the US (Warner and Huxley 1998; Huxley et al. 1999) and the Scandinavian countries and Spain.

Although widely used, the conceptual and psychometric qualities of the LQoLP have not been further systematically examined since its publication. When using the LQoLP, we were confronted with four aspects of the instrument which, in our opinion, potentially limit its usefulness in both clinical and research applications: coverage, scale construction, non-applicability of items to a large proportion of chronic psychiatric patients and low reliability of the specific domain scores.

This paper suggests a number of adaptations on the LQoLP to deal with these issues. Based on a conceptual analysis of the QoL concept and an exploratory factor analysis, a modified version of the LQoLP is proposed. First of all, the original LQoLP is introduced.

■ Lancashire Quality of Life Profile

The LQoLP is based on Lehman's Quality of Life Interview (Lehman et al. 1982). When developing the LQoLP, Oliver and co-workers added several additional items to the Lehman interview and used a so-called 'minimalist' approach on this itempool. This means that they only included those items of the itempool that were significantly related to the QoL of the patients. The minimalist approach was adopted because the instrument was designed to be used in a British social services context, where workers felt that the existing instrument based on Lehman's original was too long for operational use. Their final version of the LQoLP comprises 105 items.

The LQoLP offers both objective QoL indicators and a subjective QoL estimate. For the subjective QoL estimate, the LQoLP focuses on nine specific domains (see Table 1): work and education, leisure and participation, religion, finances, living situation, legal and safety, family relations, social relations, and health. The questions pertaining to the subjective QoL appraisal allow patients to rate their satisfaction on a seven-point scale ('can't be worse' to 'can't be better'). The sum of the nine dimension scores is the 27-item 'perceived QoL score'. The subjective QoL is summarised in a nine-domain QoL profile, which can be used for population or individual comparisons. In addition to the QoL profile, the LQoLP assesses positive and negative affect (using the Affect-Balance Scale; Bradburn 1969), positive and negative self-esteem (using a modified version of the Self-Esteem Scale; Rosenberg 1965) and global well-being (using a 100-mm linear analogue version of Cantril's Ladder, a Happiness Scale and an average Life Satisfaction Score; LSS score).

Table 1 Content of the original Lancashire Quality of Life Profile (LQoLP): number of objective items, subjective items, and items in the quality of life (QoL) profile (LSS Life Satisfaction Score)

	Objective items	Subjective items	Subjective items in QoL profile
Introductionary items	5		
Demographic characteristics	4		
Global well-being (i.e. average LSS)		1	
Work/education	4	3	3
Leisure/participation	5	3	3
Religion	2	2	2
Finances	5	2	2
Living situation	5	7	7
Legal/safety	3	2	2
Family relations	4	3	3
Social relations	4	2	2
Health	7	3	3
Affect-balance		10	
Self-esteem		10	
Final remarks and interviewer comments	6		
Total number of items	54	51	27

■ Issues concerning the Lancashire Quality of Life Profile

As mentioned before, four aspects of the LQoLP potentially limit its usefulness as a clinical or research instrument:

Coverage of the quality of life concept

This concerns the content validity of the instrument and pertains to the type and total number of domains that should be included in a QoL instrument to cover the QoL concept adequately (Mercier 1994; Lehman 1996; Van Nieuwenhuizen et al. 1997). The coverage of the LQoLP will be studied using concept mapping.

Which scales belong to the QoL profile

The LQoLP as proposed by Oliver et al. contains several scales that are not used in the QoL profile (e.g. the Affect-Balance Scale and the Self-Esteem Scale). These scales were included for operational and conceptual reasons (Oliver et al. 1996b), but their actual status has not been further examined. Conditional on the answer to the issue of coverage, we will explore the relation of these scales with the nine domains incorporated in the QoL profile and reassess their function in the LQoLP.

Structural missing data

The interview comprises several items that do not apply to the overall majority of chronic psychiatric patients. Items concerning partnership, for example, are often skipped because respondents have no intimate relationship or are living on their own. The same applies to items pertaining to satisfaction with work: most chronic schizophrenic patients do not have a job and will already have been unemployed for several years. The problem with items that do not apply to substantial subgroups of your target population is that the mean (sub)scale scores are based on different items or a different number of items. This raises a number of methodological questions about the comparability of profile scores for different subpopulations, or for the same patients over time when, for instance, a patient's work situation has changed during the study period.

Psychometric properties

In three of the five publications focussing on the psychometric properties of the LQoLP (Oliver 1991–92; Oliver et al. 1996a, b), only the reliability of the perceived 27-item QoL total score is reported. The LQoLP results are, however, primarily reported as a QoL profile, based on the nine specific domains

covered by the instrument. In addition to the total-score reliability, information on the domain-score reliability is needed to get a total picture of the psychometric quality of the profiles. The two studies that do report domain-specific reliability coefficients (Oliver et al. 1997; Van Nieuwenhuizen et al. 1998) showed that the majority of these nine domains have alphas of less than 0.70. In one study, four domains had an alpha of 0.50 or less (Van Nieuwenhuizen et al. 1998).

Subjects and methods

Concept mapping was used to examine (1) the coverage of the quality of life concept by the original version of LQoLP, and (2) the status of the scales administered in the LQoLP (Affect-Balance and Self-Esteem Scale) but not used in the actual QoL profile. Exploratory factor analysis was used to assess the empirical scale structure of the LQoLP, because on face value, the low reliabilities of the specific domains could be due to items not being appropriate for a certain domain. In this factor analysis, items resulting in systematic missing data were first excluded. Finally, the psychometric properties of the modified LQoLP were examined.

■ Concept mapping

Concept mapping is a structured method with which a complex concept such as QoL can be charted (Trochim 1989). Concept mapping is a three-stage method. In the first stage, a brainstorm session, several persons to which the concept applies (in our case long-term mentally ill patients, clinicians, and family members) are asked to formulate as many statements pertaining to a concept (i.e. QoL) as possible. In the second phase, they have to evaluate these statements in terms of content and relevance by clustering and prioritising them. In the third phase, these data are analysed, using a specially developed computer programme which produces an item-matrix that can be used as input for a multi-dimensional scaling procedure (Ward's method; see Netherlands Institute of Mental Health 1994). The subsequent results are finally subjected to an hierarchical cluster analysis, and represented graphically in the form of a concept map.

Twenty-nine respondents participated in the concept mapping study (Boevink et al. 1995; Van Nieuwenhuizen 1998): ten patients with mental health care contacts for 2 years or longer, nine relatives of psychiatric patients, and ten professional care-givers. Respondents were asked to answer the question: 'What is important for the quality of life of long-term care-dependent psychiatric patients?'. Cluster analysis resulted in a concept map, with the following nine distinct domains or components which together cover the QoL concept: (1) coping abilities, (2) autonomy, (3) self-worth and self-care, (4) non-material needs, (5) material needs, (6) citizenship, (7) social support, (8) a caring environment, and (9) professional assistance.

Family members and professional care-givers stressed the importance of professional care, coping abilities, a caring environment and material needs. Patients, on the other hand, perceived the QoL concept in a more individualistic way. For them, knowing how to handle their own problems (coping abilities), being able to accept themselves (autonomy), to have future prospects and being able to take adequate care of themselves (self-worth and self-care) are the main issues related to QoL. Interestingly, these are all components which most QoL instruments developed so far have failed to address – with the exception of Oliver's attempt to introduce self-esteem (Lehman 1996; Van Nieuwenhuizen et al. 1997; Mercier 1994). These components have not been addressed,

either because they are difficult to operationalise or because they are considered mediating variables between objective life conditions and perceived QoL, instead of a part of the concept itself (Zissi et al. 1998).

■ The modified Lancashire Quality of Life Profile

On the basis of the concept mapping procedure, it was concluded that the LQoLP covers six of the nine domains adequately, though they are labelled differently. The instrument did not cover the domains self-worth and self-care, coping abilities, and autonomy. To enhance the content validity of the LQoLP, the profile was extended by these domains in the following way:

- *Self-worth and self-care* is measured by the Life Regard Index (LRI; Battista and Almond 1973, in a Dutch adaptation of Debats 1996). The LRI contains 23 items with a fixed three-point scale (disagree, no opinion, agree) and comprises two sub-scales: 'framework', which assesses the degree to which an individual can envision his/her life as having some meaningful perspective, and 'fulfilment', which assesses whether an individual has derived a set of life-goals from it. The LRI has been thoroughly examined on its psychometric properties (Framework: alpha = 0.84; Fulfilment: alpha = 0.86) and was tested on distressed and normal students, patients in psychotherapy, and the general population (Debats et al. 1993; Debats 1996).
- *Coping abilities* is measured by a three-item Dealing with Mental Illness scale, which is constructed with the same seven-point scale used for the other subjective items in the LQoLP.
- *Autonomy* is measured by the Self-Esteem Scale, which is already a part of the LQoLP, but not of the QoL profile.

On the basis of the concept mapping procedure, two other subjective items were added to existing domains of the LQoLP: one

on patient satisfaction with medication (domain health) and one on the patient's satisfaction with his/her sex life (domain social relations). The Affect-Balance Scale was excluded, since it does not measure an essential aspect of QoL. In addition, a number of smaller modifications were made to the original LQoLP. Some objective questions pertaining to demographic characteristics were added (e.g. the respondent's country of origin and the number of years/months resident in the Netherlands). A pilot study (Van Nieuwenhuizen et al. 1998) revealed that

- Two objective items: 'Does your family live here too?' and 'How much money are you paid weekly (gross)?' were redundant, and
- Two subjective items: 'How satisfied are you with the pleasure you get from radio or TV?' and 'How satisfied are you with the prospect of being readmitted to hospital?' were either characterised as irrelevant or as an item which the majority of patients had an aversion to. Both the two subjective and objective items were excluded from the instrument. In Table 2 the modified LQoLP is presented.

■ Validation scales

The Satisfaction With Life Scale (SWLS; Diener et al. 1985, in a Dutch adaptation of Arrindell et al. 1991), Cantril's Ladder, the Happiness scale and the average LSS score were used to validate the LQoLP total score. In contrast to the other three scales, the SWLS is a multi-dimensional measure with proven reliability for the five-item total score (alpha = 0.87). Based on preliminary findings with the LQoLP (Van Nieuwenhuizen et al. 1997), together with results from comparable studies reported on elsewhere in the literature (e.g. Lehman 1983, 1988; Oliver et al. 1996b), a relevant correlation is expected for Cantril's Ladder, the average LSS score, and the SWLS, i.e. a correlation of at least 0.50 (Cohen 1977). Based on the more theoretical literature on QoL and related concepts, a

Table 2 Content of the modified LQoLP: number of objective items, subjective items, items in QoL-profile and items included in factor analysis

	Objective items	Subjective items	Subjective items in QoL profile
Introductionary items	5		
Demographic characteristics ^a	8		
Global well-being (i.e. average LSS)		1	
Work/education	4	3	3
Leisure/participation ^b	5	2	2
Religion ^c	2	2	
Finances ^a	7	2	2
Living situation ^{b,c}	4	6	4
Legal/safety	3	2	2
Family relations ^a	5	4	3
Social relations	4	2	2
Health ^a	9	4	4
Affect-balance		10	
Self-esteem ^d		10	10
Dealing with mental illness ^d		3	3
Life Regard Index ^d		23	23
Satisfaction with life scale ^e		5	
Global well-being (i.e. average LSS, Cantril's ladder, Happiness) ^e		3	
Final remarks and interviewer comments	5		
Total number of items	61	77	58

^a Objective items added in response to the Dutch situation

^b Subjective item excluded on the basis of pilot study

^c Subjective items excluded from factor analysis because of systematic missing data

^d Domain added to the QoL profile on the basis of the concept mapping procedure

^e Scales for construct validity

moderate correlation between Happiness and the perceived QoL total score; $r < 0.50$, is expected. Cheng (1988), for instance, commented that: “.. happiness is merely an appraisal of emotional experience whereas satisfaction involves the comparison of objective conditions to some internal standards.” In other words, in the course of time, happiness will fluctuate more than satisfaction, thereby weakening its relationship with global well-being.

■ Translation issues

The original LQoLP was translated into Dutch by five English/Dutch bilinguals according to WHO standards (WHO 1993). Any obvious differences between the English and Dutch versions were discussed with a native English speaker. This resulted in a consensus version which was backtranslated into English by a second native speaker. Any subsequent differences between this English version and the original were discussed with a third English native speaker. A final version was thus constructed maintaining essentially the same format and meaning as the original LQoLP.

■ Sample

A total of 606 respondents from ten different mental health settings ranging from ambulatory care to hospitalisation, participated in the study. The data of 88 (15%) were excluded: 79 (13%) were judged by the interviewer to be ‘unreliable sources’, mainly as a result of their psychiatric disability; in nine cases (2%) we were uncertain about the reliability of the interviews. The ‘unreliable’ respondents were – as compared to the ‘reliable’ respondents – older, had received less education, were hospitalised more often in a sheltered living or intramural setting, and suffered more frequently from mental retardation. The present results are based on the remaining 518 respondents, of whom 31 participated only in a test-retest reliability study with a reassessment period of 2 weeks following the initial interview. These 31 respondents were representative of the whole group, except for the fact that in the test-retest population more patients attended ambulatory services.

Sixty percent of the respondents were male. The mean age was 44 years (range 19–85). Ninety-eight percent of the respondents were Dutch nationals, and 12% were born in countries outside the Netherlands. More than one-third of the study population had dropped out of school before the completion of their formal secondary education. Only 6% had had some kind of paid employment. The financial situation of most of the respondents was problematic: 42% stated that in the past year they had lacked sufficient cash to be able to participate in normal everyday activities, and 25% were in debt. Around 20% of the respondents had been victims of violence in the past year and another 5% had been charged with a criminal offence. Of the total number of respondents, 31% were sheltered-living or intramural-setting residents, and about 40% were living alone. Mean age at first psychiatric hospitalisation was 27 years. The majority of the 322 respondents for whom a diagnosis could be traced were diagnosed in the schizophrenia and other psychotic disorders spectrum (75%) or mood disorder (11%). Of the total population, 12% had never been hospitalised, whereas 40% had been hospitalised in the year prior to the interview.

Results

■ Exploratory factor analysis

Because of the low domain-specific reliability, the empirical scale structure of the LQoLP was examined

using exploratory factor analysis. Because the Self-Esteem and Life Regard Index scales are measures that have been comprehensively investigated in other populations in the past (Krol et al. 1994; Debats 1996), the analysis was on the items of the subjective domains and the newly constructed three-item Dealing with Mental Illness scale. Five items applicable to less than 25% of the respondents were excluded from the factor analysis:

- Satisfaction with religious faith and its teachings (domain religion)
- Satisfaction with frequency of attending services (domain religion)
- Satisfaction with amount of influence (domain living situation)
- Satisfaction with living with the people who share your home (domain living situation), and
- Satisfaction with marriage or intimate relationships (domain family relations)

Factor analysis on the remaining 25 items resulted in seven components with an eigenvalue greater than 1.0. Together they explained 58.6% of the variance. Following varimax rotation, however, one of the factors appeared to be uninterpretable as to the content of the items; the analysis was repeated with a forced six-factor solution. This solution explained 54.6% of the variance. After varimax rotation, a good interpretable factor structure emerged (Table 3). The factors were labelled (1) living situation, (2) leisure and social participation, (3) health, (4) finances, (5) family relationships, and (6) safety. All items load 0.30 or more on at least one factor, with the majority of the items (76%) loading 0.50 or more. Only five items load 0.30 or more on more than one factor, for instance items on the subject of satisfaction with sex life and the acceptance of people with mental problems in our society also load on factor 6, safety, and items pertaining to satisfaction with the respondent’s own mental state, and the extent to which he/she is able to accept his/her own mental problems; also load on factor 2, leisure and social participation.

Based on these results, six scales were constructed. A scale consists of all items loading 0.30 or more on a specific factor. For the five items loading on more than one factor, only the highest factor loading was considered. The first scale, ‘living situation’, contains four items from the a priori domain ‘living situation’. The second scale, ‘leisure and social participation’ comprises six items covering aspects of leisure time and interaction with others. The third scale, ‘health’, consists of four items of the a priori domain health and three items originating from the newly constructed Dealing with Mental Illness scale. The fourth scale, ‘finances’ contains four items concerning financial affairs, and the fifth scale, ‘family relations’ consists of two items covering contact with both

Table 3 Factor loadings of the 25 subjective items of the LQoLP after varimax rotation ($N = 467$), for the following factors: f1 living situation, f2 leisure and social participation, f3 health, f4 finances, f5 family relations, f6 safety. Only factor loadings ≥ 0.30 are reported

Content subjective items	Factor loading					
	f1	f2	f3	f4	f5	f6
<i>How satisfied are you with:</i>						
The prospect of living here for a long time?	0.81					
The amount of privacy you have here?	0.79					
The amount of independence you have here?	0.79					
The living arrangements here?	0.77					
How you spend your day?		0.73				
The amount of pleasure you get from the things you do at home?		0.67				
The amount of pleasure you get from the things you do outside your home?		0.63				
The way you get on with other people?		0.44				
The number of friends you have?		0.39				
Your sex life?		0.36				0.33
Your nervous well-being?		0.42	0.65			
Your use of medication?			0.63			
The extent to which you accept you own mental problems?		0.41	0.59			
Your general state of health?			0.58			
How people with mental problems are accepted in our society?			0.51			0.36
How often you see a doctor or other professional care-giver			0.39			
The attitude of your doctor or other professional care-giver towards your mental problems?			0.39			0.38
How well-off you are nancially?				0.85		
The amount of money you have on enjoyment?				0.83		
The amount of money you make?				0.81		
Being unemployed or retired				0.41		
Your family in general?					0.81	
The amount of contact you have with your relatives?					0.78	
The safety of this neighbourhood?						0.78
Your general personal safety?						0.73
Percentage of variance (54.6)	24.1	8.5	7.4	5.5	4.7	4.5

close family members and more distant relatives. The sixth scale, ‘safety’, comprises two items originating from the a priori legal status and safety domain. The QoL profile based on this empirical scale structure now comprises ten domains based on 58 items:

- Six domains (25 items) resulting from the factor analysis
- Two domains: positive and negative self-esteem, from the Self-Esteem Scale (ten items)
- Two domains: framework and fulfilment from the Life Regard Index (23 items)

■ Psychometric properties

Reliability

Table 4 summarises the reliability of the ten domains and the perceived 58-item QoL score. Reliability is assessed using Cronbach’s alpha. Eight of the ten domains have an alpha of 0.70 or more. The alpha of the perceived 58-item QoL score is 0.93. The problem

of items only pertaining to a small sub-sample of patients – as was the case with the original LQoLP – has been substantially mitigated. The data of almost all respondents (i.e. 93%) could be used for the reliability analyses.

Table 4 Reliability of the modified version of the LQoLP: number of items, Cronbach’s alpha (452–487), and intra-class correlations ($N = 27–31$)^a

Domain	No. of items	Cronbach’s alpha	Intra-class correlations
1 Living situation	4	0.84	0.82
2 Leisure & social participation	6	0.72	0.86
3 Health	7	0.72	0.75
4 Finances	4	0.75	0.90
5 Family relations	2	0.68	0.67
6 Safety	2	0.62	0.73
7 Positive esteem	5	0.74	0.81
8 Negative esteem	5	0.70	0.88
9 Framework	10	0.81	0.84
10 Fullment	13	0.83	0.92
Perceived 58-item QoL score	58	0.93	0.92

^a The number of respondents per domain differs because of missing data

Test-retest reliability (ICC)

Table 4 also presents the test-retest reliability of the modified LQoLP. Test-retest reliability is assessed using the intraclass correlation coefficient (ICC). Of the ten domains, seven domains have an ICC greater than 0.80, whereas one domain has a somewhat lower ICC (family relations, ICC = 0.67). The perceived 58-item QoL score produces good stability (ICC = 0.92).

Content validity

The construction process of the instrument, as described earlier, guarantees its content validity. Using the concept mapping method, the QoL concept was mapped out for patients with severe mental illness. Dimensions not covered by the LQoLP were added. The LQoLP was translated according to a strict forward-backward translation procedure.

Construct validity

The construct validity of the modified LQoLP is assessed by the relationship of the perceived 58-item QoL score with four global well-being measures, Cantril's Ladder, the Happiness scale, the average Life Satisfaction Score, and the Satisfaction With Life Scale total score. Cantril's ladder, the average LSS and the SWLS total score all have a substantial correlation with the perceived 58-item QoL score, whereas the Happiness scale shows a much weaker relationship with the perceived 58-item QoL score ($r = 0.42$; see Table 5).

Discussion

This article identified four aspects of the original version of the LQoLP that needed further investigation to increase its usefulness as a clinical and a research instrument: coverage, which scales belong to the QoL profile, structural missing data and psychometric properties. The method of concept mapping was used to explore the coverage of the original LQoLP, systematic missing data were excluded from the instrument, and an exploratory factor analysis was

Table 5 Correlations between the perceived 58-item QoL score, global well-being measures and total score; z -scores ($N = 431$ – 452). All correlations are significant at $p < 0.0000$

Measures	Perceived 58-items QoL score
1. Cantril's ladder	0.61
2. Average LSS score	0.71
3. Happiness	0.42
4. SWLS total score	0.73

conducted to examine the scale structure. A modified LQoLP was constructed and the psychometric properties of this version were further explored. To solve the identified problems, a modified version of the LQoLP was presented.

To what extent have we succeeded in dealing adequately with the problems of the original version of the LQoLP, and what are the consequences of the proposed modifications to the LQoLP for quality of life measurement? As for the psychometric properties: the domain-specific reliability has much improved: eight of the ten domains have alphas of 0.70 or more. The relatively low alphas of the domains 'family relations' and 'safety', need further investigation. Since these relatively low alphas could be partly caused by the small number of items in these scales, we have recently started a study in which the number of items of the domains 'family relations' and 'safety' is extended. The modified LQoLP has a good 2-week test-retest reliability for seven of the ten domains. The ICC of the domains 'family relations', 'health' and 'safety', however, are too low; we expect that this will also be solved with the extension of the number of items.

As to the validity of the modified LQoLP: content validity was guaranteed by the instrument's construction process, especially the extension with three self-related constructs. One could argue, however, about whether these self-related constructs, such as self-esteem and coping abilities, should be regarded as *components* of QoL assessment or as *mediators* for subjective QoL evaluation. Zissi et al. (1998) suggest on the basis of a cross-sectional study that self-related constructs are directly and strongly linked with subjective QoL evaluation, whereas we decided on the basis of concept-mapping that these constructs are actually part of QoL. Future research with a longitudinal design is needed to provide a valid answer to this important topic.

Construct validity was demonstrated by the substantial correlation with Cantril's Ladder, the average LSS and the SWLS total score and the relatively low correlation with the Happiness scale. These results correspond with preliminary findings for the LQoLP (Van Nieuwenhuizen et al. 1998) and with results from comparable studies reported on elsewhere in the literature (e.g. Lehman 1983, 1988; Oliver et al. 1996b). Based on theoretical literature on quality of life and related concepts, only a moderate correlation between the perceived QoL score and Happiness, being a more transient feeling, was expected (Cheng 1988; Ryff 1989; Ryff and Keyes 1995) and such a weaker correlational relationship indeed was found.

Construct validity at the domain level of the modified LQoLP could not be assessed in this study, because the data collection did not permit it. Further research is needed to verify whether this instrument, at

a domain-specific level, adequately measures subjective QoL (cf. Kemmler et al. 1997). We did find, however, that the ten domains of the modified LQoLP were substantially related to the perceived QoL total score (correlations ranging from 0.40 to 0.81; see Van Nieuwenhuizen 1998). This suggests that the overall life satisfaction is related to the satisfaction with the life domains as assessed by the modified LQoLP.

During the modification process, the instrument was subjected to substantial, though necessary, changes. The instrument was extended by adding domains regarded as essential for QoL measurement (e.g. the Life Regard Index). Items were removed because pilot testing revealed their irrelevance or their inapplicability to the majority of the respondents. To what extent is the loss of these items problematic (e.g. in limiting the coverage of the instrument)? The two items pertaining to religion proved in practice to be too constricting in what people understand as 'belief' or 'framework'. Many respondents indicated that they experience religion in a different way. The 23 items of the added Life Regard Index seem more than adequate to represent the purport of this domain, with items inquiring about meaning and philosophy in life. Nevertheless, the question remains as to whether the Life Regard Index can also represent religion as such in countries with other cultural backgrounds of religion than the Netherlands. As for the other three items, the fact that many patients with severe mental illness either have no intimate relationships or live alone (78% and 40%, respectively, in our study) lowered the applicability of items relating to marriage, intimate relationships or living with others. It means that information concerning these items would only be available for a select group of respondents, causing a number of methodological problems with between- and within-person comparisons.

At this moment, the modified LQoLP consists of 133 items and takes, on average, 45 min to administer. The instrument is now used in more than 25 settings in the Netherlands, and most studies use the modified LQoLP as an outcome measure – employing a repeated-measures design. In other words, the instrument serves mainly a research purpose, and the question is whether it is also suitable for operational use or whether other, shorter, instruments such as the Manchester Short Assessment of Quality of Life (MANSA) should be opted for (Priebe et al. 1999).

Unfortunately, the modified QoL profile, with the exception of the safety domain, cannot be compared as such to the original LQoLP. What can be said is that from a patient's point of view, the modified QoL profile covers the quality of life concept in a more comprehensive way, paying specific attention to the patients' definition of quality of life. Although the

modified version of the LQoLP means a large improvement in terms of coverage of 'quality of life', there is at least one domain which this instrument does not cover in an adequate way: i.e. patients' own perceptions of symptoms, medication and treatment – a domain also ignored in other instruments (see Mercier 1994). Moreover, the current QoL concept is not yet supported by a theoretical framework. Promising developments in this field of work are the response shift (Sprangers and Schwartz 1999) and dynamic construct theory of Allison and colleagues (1997).

Finally, several authors have suggested that the QoL concept is defined too narrowly (Barry 1997; Barry and Zissi 1997; Mercier 1994; JAMA 1998). Up till now, when measuring QoL, the concept was usually operationalised in variables that are comparatively easy to determine empirically. Perhaps we are dealing here with a phenomenon that has been described as the problem of 'partial covering' (De Groot 1968). Inherent in research on complex concepts such as this is an area of tension between (methodologically sound) measurability and the extent to which concepts and their significance can actually be investigated. Objectivizing a concept such as 'quality of life' reduces its content and the amount of relevant information it can deliver. There is always the risk that only that which can be measured directly will ultimately be used to represent what people regard as the quality of life. All in all, this study shows that less easy to determine variables can be assessed in a population with severe mental illness.

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