Development and Validation of a Short Form of the Social Role Participation Questionnaire in Patients with Ankylosing Spondylitis

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ABSTRACT. ***Objective.*** The Social Role Participation Questionnaire (SRPQ) assesses the influence of health on 11 specific roles and 1 general role along 4 dimensions. In this study, a shortened version of the SRPQ (s-SRPQ) was developed in patients with ankylosing spondylitis (AS) to facilitate data collection in clinical studies and practice.

Methods. Using data from 246 patients with AS and population controls, the fit of each role to the different participation dimensions, the contribution of each role to the measurement precision, and the correlation between dimensions were evaluated using item response theory. Representation of the 3 participation chapters of the International Classification of Functioning, Disability, and Health was ensured. Reliability of each dimension of both versions of the SRPQ was compared by correlating scores to the Medical Outcomes Study Short Form-36 (SF-36) and the Satisfaction With Life Scale (SWLS), and by comparing ability to discriminate between patients and controls and between patients with low and high disease activity (Bath Ankylosing Spondylitis Disease Activity Index ≥ 4).

Results. The s-SRPQ, which assesses participation across 6 social roles along 2 dimensions (physical difficulty and satisfaction with performance), was proposed. Both dimensions of the s-SRPQ were highly reliable (r ≥ 0.86) and were shown to have construct validity as indicated by a similar pattern of correlations with the SF-36 and SWLS as the original SRPQ dimensions. Both versions discriminated well between patients and controls and between patients with high versus low disease activity (relative validity ≥ 0.72).

Conclusion. The s-SRPQ retains the measurement properties of the original SRPQ and seems useful for measuring the effect of AS on participation. (First Release May 15 2016; J Rheumatol 2016;43:1386–92; doi:10.3899/jrheum.151013)

Key Indexing Terms:
ANKYLOSING SPONDYLITIS OUTCOME ASSESSMENT SOCIAL ROLE PARTICIPATION

When evaluating the outcomes of clinical care, social role participation is an increasingly important outcome, especially when considering diseases with substantial limitations in physical functioning such as inflammatory rheumatic diseases. Social role participation refers to activities an individual undertakes in the larger social context such as attending social events, being a (grand) parent, religious involvement, and being a working paid employee. For the

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individual, participation in social roles is often important in building and maintaining self-esteem and personal and economic autonomy[1], and can contribute to longterm physical and mental health. For society, social role participation is related to greater societal coherence and happiness, in addition to generating wealth through the participation of paid work[2].

However, clarifying the conceptual meaning of participation and the best approach to measuring it is challenging. For instance, a variety of social roles as well as different dimensions of role participation, such as ability, satisfaction, or importance of role for life, can be relevant. Although tapping different roles from different perspectives generates a comprehensive assessment of participation, it also increases the response burden of participation questionnaires for respondents. The Social Role Participation Questionnaire (SRPQ) is a measurement instrument that assesses the effect of health on 11 important social roles (for example, "intimate relationships") and 1 general participation item across various aspects or dimensions (for example, "role importance," "satisfaction with role performance")[3,4]. A study by Davis, *et al* has shown that this questionnaire with 36 items is reliable and valid when assessing social role participation in patients with ankylosing spondylitis (AS), a chronic and often debilitating rheumatic disease in which inflammatory back pain is the main clinical manifestation[5]. However, the length of the SRPQ may hamper application in trials and observational studies. A short form of the SRPQ might be more feasible to use in research settings because redundant items are deleted and the chance of missing or nonapplicable items is minimized. It may also ultimately facilitate routine outcome data collection in clinical practice. The aim of our present study was to develop a shortened and easy-to-administer version of the SRPQ (s-SRPQ) for patients with AS, while optimally preserving the validity and reliability of the original SRPQ and to offer a preliminary evaluation of its measurement properties[6,7].

MATERIALS AND METHODS

Participants. The details of the patient recruitment for this study have been described in another paper by our group[8]. In brief, patients registered with AS under the care of a rheumatologist were recruited as part of a multicenter, cross-sectional study in 6 centers across the Netherlands, the Social Role Participation in Ankylosing Spondylitis Study. Subjects were excluded if they did not fulfill the modified New York criteria for AS according to their rheumatologist, had no Internet connection, or were not familiar with the Dutch language. In addition, population subjects were included to serve as a benchmark of participation. They were recruited from a national, open, online panel of the research institute Ipsos. Based upon literature-based knowledge of the demographic characteristics of usual cross-sectional samples of patients with AS, control subjects were requested to be > 18 years old, with mean age of 42 years and a male:female distribution of 3:1. Control subjects were excluded if they had any musculoskeletal disorders. The study was approved by the ethics committee of the Maastricht University Medical Center. All participants provided written informed consent.

Procedures. All participants completed questions regarding their socioeconomic background (age, sex, highest achieved educational level). Social role participation was assessed using the validated Dutch version of the SRPQ (described below)[8]. To evaluate generic health, the Medical Outcomes Study Short Form-36 (SF-36) was used. The SF-36 contains 36 items and 8 subscales, and has 2 summary scores: the physical component summary and mental component summary[9]. In addition, life satisfaction was measured with the Satisfaction With Life Scale (SWLS)[10,11]. The SWLS offers a global measure of satisfaction with life and helps to understand the consequences of ill health on an overall appraisal of a person's life situation. Five items are answered on a 7-point Likert scale, ranging from 1 (very dissatisfied) to 7 (very satisfied), and the scores add up to a total score ranging from 5 to 35 points[10,11].

Disease-specific assessments of AS were performed by asking patients about their disease duration and current use of tumor necrosis factor-α inhibitors. In addition, patients completed the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and the Bath Ankylosing Spondylitis Functioning Index[12,13].

Social Role Participation Questionnaire. The original SRPQ contained 3 dimension scores that assessed respondents' (1) role importance, (2) satisfaction with time spent in roles, and (3) satisfaction with role performance[3,5]. However, because of high correlations between the domain "satisfaction with time spent in roles" and "satisfaction with role performance" in English-speaking samples, the "satisfaction with time spent" dimension was removed, and instead, participants were asked about difficulties performing roles[4]. For the purposes of translation into Dutch and validation of the measure, the Dutch version of the SRPQ retained all 4 dimensions.

Respondents were asked to complete the importance, satisfaction, and difficulty they experienced with the following 11 social roles: (1) intimate relationships; (2) relationships with (step/grand) children; (3) employment; (4) social events; (5) physical leisure; (6) travel or vacation; (7) hobbies; (8) relationships with other family; (9) community, religious, cultural involvement; (10) casual or informal contact with others; and (11) education[3]. The SRPQ also includes 1 general role in which the participant is asked to evaluate their overall perception of their participation across all 11 social roles. This general role was not considered for inclusion in the short form.

Participants rated all roles on a 5-point Likert scale from 1 (not at all important/not at all satisfied/extremely difficult) to 5 (extremely important/extremely satisfied/not at all difficult). Participants also had the option to rate a role as nonapplicable. Nonapplicable roles were scored as missing data in all analyses. Scores for each dimension were obtained by averaging the individual social role scores, and total scores were averaged if participants completed at least 9 of the 12 role domains.

Development of the short form. To gain insight into the diversity of the social roles represented by the SRPQ and understand where there might be conceptual redundancy, we drew on the International Classification of Functioning, Disability, and Health (ICF) and specifically on the 3 ICF classification chapters representing social participation[14,15]. The SRPQ roles "physical leisure," "hobbies," "community, religious, cultural involvement," "social events," and "travel or vacation" assess health concepts linked to ICF chapter "community, social, and civic life"; the roles "intimate relationships," "relationships with (step/grand) children," "relationships with other family," and "casual or informal contact" to the chapter "interpersonal interaction and relationships;" and "employment" and "education" to the chapter "major life areas" of the ICF.

Second, to optimally preserve the reliability (i.e., measurement precision) of the original version, the contribution of the individual role scores to the measurement precision of the scores for "satisfaction with time spent in roles," "satisfaction with role performance," and "physical difficulties" was evaluated within the item response theory (IRT) framework. IRT is a statistical framework for the development and evaluation of patient-reported outcomes[7]. A multidimensional generalization of the generalized partial credit model (GPCM) was used. It is an IRT model suitable for the analysis of polytomous data. In this model, all social roles were specified to load on 1 of the 3 participation dimensions (excluding the "role importance" dimension because it did not seem meaningful to approach importance across

roles as a measurable construct), and the relation between the dimensions was modeled by their correlation. To evaluate the fit of the IRT model, Lagrange multiplier (LM) statistics were obtained to evaluate whether the item variables for each social role were invariant across the subsample of patients with low, medium, and high dimension scores, respectively[16]. In case a social role showed statistically significant lack of fit, defined as $p < 0.05$, the magnitude of misfit was evaluated using effect size statistics (ES) that represent the absolute residuals averaged across the 3 subsamples of patients with low, medium, and high scores. In accordance with previous studies, the magnitude of misfit was considered acceptable in case ES ≤ 0.10[17]. The contribution of individual role scores to the measurement precision of a dimensions score was evaluated by considering the standard error of estimation (SEE) associated with different participation levels. The SEE provides an estimate of measurement precision for each observable level of participation and is inversely related to the IRT information function ($SEE = 1/\sqrt{Information}$)[6]. The MIRT software package was used for all IRT analyses.

Final decisions regarding the inclusion of a social role in the short form were made by careful consideration of the information obtained from both analyses as outlined above (representation of the 3 social role domains, contribution to fit, and measurement precision), as well as the role importance dimension ratings given by patients with AS.

Measurement properties of SRPQ short form: Reliability. The reliability of both versions of the SRPQ across 3 dimensions of participation (satisfaction with time spent in roles, satisfaction with role performance, and experienced physical difficulties) was evaluated with an IRT-based index of reliability, similar to Cronbach's alpha coefficient. Values ≥ 0.70 were considered to indicate adequate reliability.

Measurement properties of SRPQ short form: Construct validity. Construct validity of both (i.e., original and short) versions of the SRPQ in relation to other patient-reported outcome measures (SF-36 and SLWS) was evaluated by calculating Pearson correlation coefficients. It was hypothesized that the SRPQ dimensions had a positive and moderate-to-strong correlation (i.e., $r \geq 0.30$) with the SF-36 and SWLS[18]. Further, it was hypothesized that the correlation coefficients with SF-36 and SWLS would differ by no more than 0.05 between the original SRPQ and the s-SRPQ.

Finally, the relative validity (RV) of both SRPQ versions was evaluated by comparing their ability to discriminate between groups known to differ in participation level. First, participation SRPQ dimension levels were compared between patients with high versus low disease activity (high disease activity defined as BASDAI ≥ 4). Next, SRPQ scores were compared between patients with AS and control subjects. For each patient with AS, an age- and sex-matched control was selected randomly. RV coefficients were obtained, defined as the ratio of ANOVA F statistics, with the F statistic of the s-SRPQ measure taken as the numerator and the F statistic of the original SRPQ measure taken as the denominator[19].

Descriptive statistics were used to analyze participant characteristics. Statistical analyses were performed using PASW Statistics 20 (SPSS) or STATA version 12.

RESULTS

Participant characteristics. Of the 740 patients with AS who were invited to participate, 296 (40%) agreed. In total, 246 (83%) out of 296 patients completed the questionnaire. The characteristics of the patients are provided in Table 1.

Table 1. Participant characteristics. Values are n (%) unless otherwise specified.

Characteristics	Patients with AS, n = 246
Male	153 (62)
Married/cohabiting	195 (79.2)
Employed	140 (56.9)
Currently engaged in course/study	40 (16.3)
Current use TNF-α inhibitors	123 (50)
Age, yrs, mean (SD) [min–max]	51 (12) [24–79]
Yrs since diagnosis, mean (SD), [min–max]	16.8 (11.8) [1–63]]
BASDAI, mean (SD)	4.4 (2.3)
BASFI, mean (SD)	4.2 (2.5)
SF-36 PCS, mean (SD) [min–max]	38.7 (10.1) [5.2–61.9]
SF-36 MCS, mean (SD) [min–max]	49.2 (12.8) [10.9–70.5]
SWLS, mean (SD) [min–max]	22.2 (7.2) [5–35]

AS: ankylosing spondylitis; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; BASFI: Bath Ankylosing Spondylitis Functional Index; SF-36: Medical Outcomes Study Short Form-36; PCS: physical component summary; MCS: mental component summary; SWLS: Satisfaction With Life Scale; TNF-α: tumor necrosis factor-α.

IRT analysis. The results of the analysis of item fit to the IRT model are summarized in Supplementary Table 1 (available online at jrheum.org). None of the roles met the criteria for lack of fit to the model according to the LM tests (i.e., all p values > 0.05). The conclusion was therefore that the multidimensional GPCM adequately described the response data for all 3 dimensions of the SRPQ. The correlation between the "experienced physical difficulties" with "satisfaction with time spent in roles" and "satisfaction with role performance" dimensions was $r = 0.51$ and $r = 0.71$, respectively. The correlation between both satisfaction dimensions was $r = 0.91$.

The SEE of individual role scores for each dimension are presented in Table 2, together with the distribution of role scores of patients with AS. It can be seen that for each of the 3 dimensions, scores were normally distributed and fell within 3 SD of the mean score (0). In this sample of patients with AS, the roles reflecting "community, social, and civic life" and "major life areas" generally provided optimal information around average levels of all 3 dimensions included in the SRPQ, as indicated by lower SEE. This observation suggested that these roles were appropriately targeted to the study population of patients with AS for all 3 dimensions. However, the roles grouped under the participation domains "interpersonal interactions and relationships" contributed mostly to the reliability of participation levels below the mean scores observed in our present study. This means that these roles were more useful to discriminate between patients with lower levels of satisfaction with time spent in roles, a low level of satisfaction with role performance, and a high level of experienced physical difficulty when participating.

Final selection of dimensions and roles. The very high correlation between both satisfaction dimensions observed in the IRT analysis suggested that these scales provided very little unique information about the effect of the disease in functioning in AS. Because the dimension "satisfaction with performance" had higher face validity, we considered this "satisfaction" dimension only in the s-SRPQ. Therefore, no further results will be presented for the "satisfaction with time spent in roles" dimension (Figure 1).

To ensure coverage of the 3 ICF participation chapters in

Table 2. Distribution of patients and SEE of role scores and subscale scores across different levels of participation. Values are SEE unless otherwise specified.

Subscale/Social Roles	Participation Levels*										
	–5	–4	–3	–2	–1	0	1	2	3	4	5
Experienced difficulties											
Patients at score level, % of total	0.0	0.0	0.0	7.3	22.8	41.9	19.9	8.3	0.0	0.0	0.0
Physical leisure	2.17	1.46	1.34	1.26	1.06	1.11	1.36	1.39	1.49	2.22	4.02
Hobbies	5.65	2.77	1.44	0.95	1.05	1.34	1.30	1.62	2.81	5.55	11.40
Community, cultural, religious involvement	2.53	1.40	0.96	0.94	1.06	1.18	1.35	2.00	3.59	6.92	13.61
Social events	11.55	3.74	1.32	0.74	0.75	0.92	0.93	2.11	6.32	19.61	57.74
Travel or vacation	2.37	1.41	1.22	1.10	0.83	1.06	1.23	1.33	2.13	4.20	8.84
Casual or informal contact	2.74	1.53	1.02	1.00	1.27	1.86	3.10	5.50	10.00	18.26	33.33
Intimate relationships	2.11	1.43	1.14	1.10	1.27	1.48	1.63	2.03	2.98	4.81	8.06
Relationships (step/grand) children	6.57	3.00	1.51	1.02	0.98	1.16	1.17	1.33	2.34	4.96	11.04
Relationships with other family	1.87	1.10	0.90	0.91	1.02	1.13	1.26	2.07	4.23	9.17	20.00
Employment	2.97	1.61	1.17	1.03	0.84	1.10	1.42	1.27	1.61	2.90	5.95
Education	3.77	2.13	1.34	1.09	1.20	1.35	1.55	2.20	3.70	6.64	12.13
Total	0.84	0.49	0.38	0.33	0.33	0.33	0.40	0.51	0.76	1.34	2.58
Satisfaction with role performance											
Patients at score level, % of total	0.0	0.0	0.4	5.3	23.2	44.3	18.7	7.7	0.4	0.0	0.0
Physical leisure	6.24	3.56	2.03	1.28	1.13	1.38	1.37	1.19	1.36	2.02	3.35
Hobbies	4.46	2.70	1.69	1.25	1.25	1.42	1.41	1.42	1.63	2.19	3.31
Community, cultural, religious involvement	3.34	2.51	2.02	1.80	1.77	1.78	1.76	1.85	2.16	2.76	3.72
Social events	6.38	2.89	1.37	0.85	0.93	1.04	1.03	1.10	1.58	3.10	6.73
Travel or vacation	5.08	3.00	1.85	1.28	1.11	1.17	1.30	1.43	1.66	2.26	3.53
Casual or informal contact	3.30	1.83	1.14	1.04	1.23	1.36	1.46	1.51	1.83	2.75	4.65
Intimate relationships	2.75	2.03	1.65	1.54	1.61	1.76	1.98	2.36	2.98	3.93	5.31
Relationships (step/grand) children	2.22	1.93	1.75	1.62	1.55	1.59	1.77	2.17	2.88	3.99	5.69
Relationships with other family	2.14	2.00	1.98	2.01	2.03	2.00	1.99	2.07	2.29	2.75	3.52
Employment	4.36	2.18	1.28	1.03	1.06	1.14	1.03	1.05	1.44	2.62	5.34
Education	3.27	2.26	1.69	1.51	1.63	1.86	2.07	2.25	2.50	2.93	3.66
Total	0.99	0.69	0.47	0.34	0.33	0.38	0.40	0.41	0.53	0.79	1.23
Satisfaction with time											
Patients at score level, % of total	0.0	0.0	4.5	4.5	24.3	42.7	21.5	5.3	1.4	0.0	0.0
Physical leisure	4.00	2.73	1.98	1.68	1.73	1.89	1.81	1.71	1.89	2.48	3.52
Hobbies	3.35	2.15	1.54	1.32	1.36	1.44	1.37	1.38	1.65	2.32	3.60
Community, cultural, religious involvement	3.12	2.60	2.28	2.13	2.06	2.01	1.98	2.07	2.38	2.94	3.79
Social events	4.00	2.08	1.25	1.00	1.08	1.14	1.15	1.21	1.53	2.58	4.97
Travel or vacation	5.71	3.09	1.77	1.17	0.99	1.05	1.19	1.31	1.55	2.33	4.07
Casual or informal contact	2.61	1.76	1.38	1.38	1.55	1.66	1.74	1.84	2.07	2.62	3.66
Intimate relationships	2.59	2.07	1.78	1.68	1.75	1.92	2.17	2.53	3.08	3.90	5.08
Relationships (step/grand) children	2.19	1.82	1.66	1.61	1.62	1.66	1.76	1.99	2.45	3.26	4.58
Relationships with other family	2.19	1.75	1.60	1.66	1.76	1.78	1.80	1.91	2.20	2.77	3.76
Employment	4.01	2.63	1.79	1.42	1.43	1.64	1.87	2.13	2.55	3.24	4.32
Education	9.62	4.37	1.87	0.85	0.86	1.13	1.28	1.37	1.27	1.74	3.25
Total	0.95	0.66	0.48	0.41	0.43	0.45	0.47	0.48	0.59	0.86	1.31

* The SEE is presented for different participation levels expressed on a scale with mean = 0 (SD = 1), range = –5 SD to 5 SD. Lower values of SEE indicate higher measurement precision. SEE: standard error of estimation.

the s-SRPQ, it was decided to include at least 2 social roles for each ICF chapter (participation domain). Because the major life areas were represented by the roles "employment" and "education" only, these roles were included without taking further selection criteria into account. "Attending social events" and "travel or vacation" roles were chosen to represent the community, social, and civic life because they were rated by patients to be most important. Moreover, these 2 roles consistently contributed most to the measurement precision of the satisfaction with time and experienced difficulties subscales, particularly around the most frequently observed levels of participation (Table 2). Finally, of the roles grouped under interpersonal interactions and relationships, the "intimate relationships" and "relationships with other family" roles were rated as very important by patients (Supplementary Table 1, available online at jrheum.org).

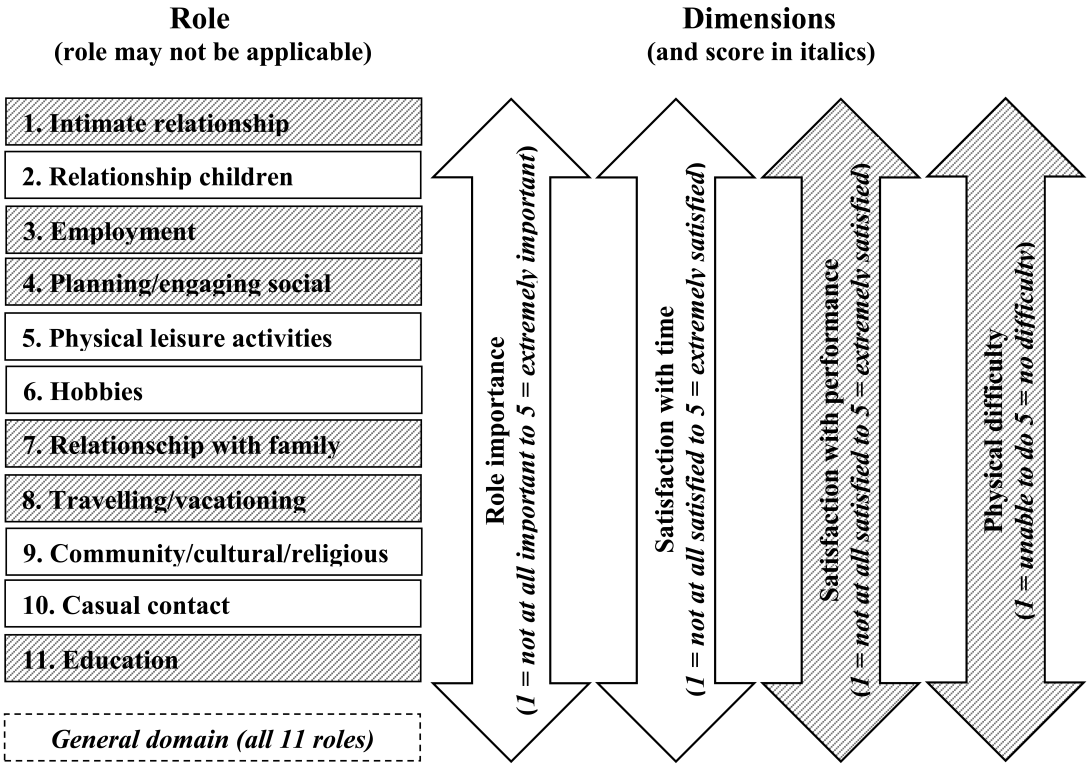

Figure 1. Graphical representation of the content of the SRPQ (unshaded) and content included in both the SRPQ and the s-SRPQ (shaded). SRPQ: Social Role Participation Questionnaire; s-SRPQ: shortened SRPQ.

Although, objectively speaking, the "casual or informal contact with others" role contributed much to the measurement precision of, particularly, the satisfaction with time scale (Table 2), this was particularly the case for infrequently observed low levels of satisfaction. Therefore, and because of their importance to patients, the "intimate relationships" and "relationships with other family" roles were chosen to represent the "interpersonal interactions and relationships chapter". An overview of the original and shortened questionnaire is provided in Supplementary Table 2 (available online at jrheum.org).

Reliability and construct validity of the s-SRPQ. Table 3 shows the reliability index and pattern of correlations with the SF-36 and SWLS for both the original version of the SRPQ and the s-SRPQ. For both remaining participation dimensions, the original SRPQ yielded high reliability indices, with reliability coefficients ≥ 0.90. Both scales of the proposed s-SRPQ were still highly reliable, with reliability coefficients ≥ 0.86.

In accordance with our hypotheses, moderate to strong correlations with SF-36 subscales and SWLS were observed in all cases. More specifically for our study, correlation coefficients were within only a 0.05-point difference in all cases, except for the correlation with SF-36 vitality scale, which showed a stronger correlation with the experienced difficulties subscale of the short form compared with the original SRPQ.

Finally, the mean scores and SD for the compared groups (patients vs controls and patients with BASDAI ≥ 4 vs patients with BASDAI < 4), together with the results of the ANOVA tests, are presented in Table 4. Generally, mean scores were similar for the original SRPQ and the s-SRPQ, while SD were slightly higher for the s-SRPQ scales. Statistically significant differences were found by both the original SRPQ and the s-SRPQ for all comparisons. The s-SRPQ experienced difficulties; subscale showed excellent relative efficiency (RV coefficients ≥ 0.88) while the s-SRPQ satisfaction with performance subscale retained slightly less efficiency to discriminate between groups, with RV coefficients ≥ 0.64.

DISCUSSION

Our present study proposes the s-SRPQ to assess social role participation in patients with AS. Although the original version of the SRPQ has been found to be a valid and reliable measure of participation in several previous studies, its 11 specific roles and 4 dimensions likely represent a substantial response burden to patients in completing the measure, especially when considering that patients routinely fill out multiple patient-reported outcome questionnaires for a given

Table 3. Assessment of reliability (IRT reliability index) and construct validity of SRPQ and s-SRPQ.

Dimension	Reliability Index	SF-36 Physical Functioning	SF-36 Social Role Functioning	SF-36 Physical Role Functioning	SF-36 Emotional Role Functioning	SF-36 Mental Health	SF-36 Vitality	SF-36 Bodily Pain	SF-36 General Health Perceptions	SWLS
SRPQ satisfaction with role performance, 12 roles	0.90	0.52	0.69	0.53	0.40	0.58	0.61	0.50	0.31	0.65
s-SRPQ satisfaction with role performance, 6 roles	0.86	0.49	0.66	0.51	0.40	0.58	0.58	0.47	0.27	0.61
SRPQ experienced physical difficulties, 12 roles	0.95	0.73	0.72	0.60	0.41	0.40	0.57	0.67	0.37	0.47
s-SRPQ experienced physical difficulties, 6 roles	0.91	0.69	0.71	0.61	0.41	0.39	0.59	0.66	0.34	0.49

IRT: item response theory; SRPQ: Social Role Participation Questionnaire; s-SRPQ: shortened SRPQ; SF-36: Medical Outcomes Study Short Form-36; SWLS: Satisfaction With Life Scale.

Table 4. Ability of both the SRPQ and s-SRPQ to discriminate between patients (n = 246) and controls (n = 245) and between patients with BASDAI ≥ 4 (n = 102) versus patients with BASDAI < 4 (n = 144). Values are mean (SD) unless otherwise specified.

Variables	Patients with AS	Controls	F*	RV	BASDAI < 4	BASDAI ≥ 4	F*	RV
Original SRPQ satisfaction with role performance	3.16 (0.76)	3.55 (0.71)	34.29	1.00	3.59 (0.65)	2.86 (0.70)	67.61	1.00
s-SRPQ satisfaction with role performance	3.23 (0.80)	3.56 (0.77)	21.95	0.64	3.68 (0.73)	2.96 (0.73)	51.23	0.76
Original SRPQ experienced physical difficulties	3.83 (0.68)	4.64 (0.52)	222.68	1.00	4.27 (0.48)	3.52 (0.64)	99.84	1.00
s-SRPQ experienced physical difficulties	3.82 (0.74)	4.69 (0.55)	212.61	0.96	4.28 (0.55)	3.50 (0.70)	87.77	0.88

* $p < 0.01$ for all comparisons. SRPQ: Social Role Participation Questionnaire; s-SRPQ: shortened SRPQ; BASDAI: Bath Ankylosing Spondylitis Disease Activity Index; AS: ankylosing spondylitis; F: F test; RV: relative validity.

study[3,4,5]. Our current study demonstrates that the proposed s-SRPQ retains the reliability and construct validity of the original version while reducing the questionnaire to 6 social roles along 2 dimensions.

The s-SRPQ assesses participation along the dimensions, "satisfaction with role performance" and "experienced physical difficulties." The "satisfaction with time spent in roles" dimension was omitted from the s-SRPQ because the very high correlation between both satisfaction dimensions observed in the IRT analysis (r = 0.91) suggests that both satisfaction scales are poorly differentiated by patients and provide little unique information[20]. This was also evident from a previous study where the pattern of correlations with other measures was highly similar between both satisfaction scales[5].

The contribution of individual social role scores to the reliability of the dimensions was carefully considered when selecting the roles for the s-SRPQ by using IRT-based methodology. Ultimately, the overall reliability of each dimension of the s-SRPQ was only marginally lower compared with the original SRPQ. Reliability coefficients observed for the satisfaction with role performance (r = 0.86) and experienced physical difficulties (r = 0.91) scales suggest a high degree of internal consistency given that both dimensions now have only 6 items[21].

Construct validity of the s-SRPQ was found comparable to the original as evidenced by a similar pattern of correlations of both dimensions of the s-SRPQ with SF-36 and SWLS. The performance of the original SRPQ in discriminating between patients and controls and between patients with high versus low disease activity was retained to a substantial degree for the experienced difficulties subscale. The satisfaction with role performance subscale retained 64% of the efficiency of the original SRPQ and performed slightly less well. The original SRPQ satisfaction with role performance might perform better in cases where subtle between-group differences are sought or when sample size is expected to be small. Finally, the importance dimension was omitted from the s-SRPQ because it was indirectly taken into account when selecting the final roles for the short form and because it does not, by itself, provide meaningful quantitative information about a patient's participation relative to others or to earlier measurements. However, when working with individual patients, it may provide additional information that helps target areas of life that are most important to individual patients.

There are some limitations of our study that need to be

addressed. First, both the proportion of female patients and the mean age of the sample were higher when compared with other cross-sectional samples[22,23]. However, it should be noted that AS is being increasingly diagnosed in women over the last few years[24]. Also, the complete spectrum of patients with AS (in particular patients with mild or very active disease) may not be adequately represented by our sample. Extrapolation of our results should therefore be done carefully and with reference to the characteristics of the current sample of patients with AS. Second, the psychometric properties of s-SRPQ were evaluated in the same dataset in which it was developed. This may have led to an overestimation of the similarity between the 2 forms. Further studies are necessary to evaluate the sensitivity to change of both versions of the SRPQ. Longitudinal studies are particularly interesting in the case of social role participation, because life transitions may influence how patients value their social roles over time[5].

Although the s-SRPQ was developed for use in patients with AS, its items represent general roles and were not restricted to any AS-specific area. It would therefore be interesting for future studies to assess its performance in other disease groups.

The s-SRPQ seems to be a promising, valid, and reliable instrument to assess social role participation in patients with AS. Although further longitudinal studies are necessary to assess the responsiveness to change, the current brief version is more "user friendly" and can be used in both clinical and research settings.

ONLINE SUPPLEMENT

Supplementary data for this article are available online at jrheum.org.

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