

Regular Article

Reliability, validity and standardization of the Japanese version of the Social Adjustment Scale-Self Report

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Abstract

The purpose of the present paper was to examine the reliability and validity of the Japanese version of the Social Adjustment Scale-Self Report (SAS-SR) and to present its normative data. The SAS-SR was administered to a random sample of all the employees of a large general hospital, together with the General Health Questionnaire ($n=363$). It was also administered to a representative subset of first-visit patients at 33 psychiatric hospitals and clinics from all over Japan, along with the semistructured psychiatric interview to ascertain the patients' diagnoses ($n=1581$). For the internal consistency reliability of the subscales and the overall scale of the SAS-SR, Cronbach's α was between 0.61 and 0.73. The Pearson product-moment correlations between the subscale and overall scale scores with the GHQ score were mostly >0.3 . The scores were statistically significantly and substantively different between the normal sample and the patient samples, and were also meaningful, differentiating between various diagnostic subgroups. The reference ranges of the SAS-SR scores for mentally healthy subjects were calculated as 95% prediction intervals; for example, 1.22–2.22 for the overall score. The Japanese version of the SAS-SR has good reliability and satisfactory validity. The present study provided reference ranges for its scores in order to increase their interpretability. With its ease of administration and its rich subscales, the scale promises to offer a psychometrically sound measure with which to assess social adjustment in people with various psychiatric disorders.

Key words

cross-cultural comparison, psychometrics, reproducibility of results, social adjustment, validity.

INTRODUCTION

The ultimate aim of any health intervention is to improve quality of life and social functions. It is therefore no wonder that there has recently been increased interest in instruments to measure these two constructs.^{1,2}

Scales that focus specifically on social functions to perform social roles and to maintain meaningful inter-

personal relationships, apart from core symptoms of the disorders, have been available since the 1960s.³ The interest in measuring social functions is today even increasing, particularly because of some recent cohort studies showing discrepancies between symptomatological versus functional improvements,⁴ drug trials showing differential effects on social functioning between classes of antidepressants,^{5,6} and psychotherapy trials demonstrating specific effects of cognitive behavioral techniques on social adjustment.^{7–9}

The Social Adjustment Scale Self-Report (SAS-SR) is a 42-item self-report questionnaire that measures affective or instrumental performance over the past 2 weeks in seven major areas of social functioning: work (as a worker, housewife or student), social and leisure activities, relationship with extended family,

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marital role as a spouse, parental role, membership in the family unit, and economic adequacy.^{10,11} It was originally an interviewer-based scale, derived from the then much used Structured and Scaled Interview to Assess Maladjustment (SSIAM)^{12,13} but it was soon converted into a self-report format because the latter is simple to administer and inexpensive, waiving interviewer's time. The SAS-SR scores are highly correlated with those obtained with the interview form of the scale.¹⁰ The SAS-SR is one of the most often used instruments in the area of social adjustment.¹⁴ Portuguese,¹⁵ French¹⁶ and Japanese¹⁷ versions are now available.

In order for a psychometric scale to be clinically useful, it must be reliable, valid and interpretable.¹⁸ Although the Japanese version of the SAS-SR was published in 1986¹⁷ there has been no study on its reliability and validity, or on how to interpret the obtained scores. The aims of the present study is to examine the reliability of the instrument's scales and its validity to differentiate between general populations and various psychiatric populations, and to present the normative data to aid in the interpretation of its subscale scores.

METHODS

Subjects and instruments

Two datasets were used in the present study.

Normal subjects were recruited from among employees of an 800-bed general hospital in Shizuoka, Japan. A randomly selected half of all the employees were invited to fill in a series of questionnaires as part of an anonymous survey of mental health in the workplace. The questionnaire battery contained the SAS-SR and the 30-item General Health Questionnaire (GHQ),¹⁹ which is one of the most widely used screening instruments for non-organic non-psychotic mental disorders in the general populations. Usable data were obtained from 363 subjects; the response rate was 85.8%. There were 289 women and 74 men. The mean age was 33.0 ± 10.3 years. A total of 193 was nurses, 32 were medical doctors, 51 were comedical professionals such as pharmacists and radiological technicians, and the remaining 87 included administrative staff and others. Subjects scoring ≤ 7 on the GHQ ($n = 192$) were considered psychologically healthy.²⁰

Psychiatric patients were recruited in the screening phase of the nationwide follow-up study of affective disorders by the Group for Longitudinal Affective Disorders Study (GLADS). The details of this recruitment phase are reported elsewhere^{21,22} and are briefly summarized here. Psychiatrists at 34 hospitals and clinics

from all over Japan screened the representative subset of their first-visit patients with a semistructured interview named the Psychiatric Initial Screening for Affective disorders (PISA).²³ After obtaining the basic sociodemographic variables including the marital, educational, and employment statuses, the PISA probes for the presence/absence of 33 psychiatric symptoms and signs to arrive at the *Diagnostic and Statistical Manual of Mental Disorders* (3rd edn, revised; DSM-III-R) diagnoses. The employment status was recorded for the past 3 years in seven grades, from 1 (no employment) to 7 (full employment) throughout 3 years. The interrater reliability of this interview schedule has been found to be satisfactory.²⁴ The patients were also asked to fill in the questionnaire battery containing the SAS-SR. The protocol for the present study was approved by the institutional review board of the respective participating centers where such was available and overall by the institutional review board of the National Center of Neurology and Psychiatry. After oral consent, usable data were obtained from 1581 patients. Their mean age was 41.3 ± 17.2 years. There were 749 men and 832 women.

Each item in the SAS-SR is scored on a five-point scale, the higher scores being indicative of greater impairment. Each subscale of the SAS-SR has between three and 11 items, except for the economy subscale, which has only one item. When the subject answered at least half of the required item for the subscale, the subscale score was computed by averaging the answered items. The overall score was computed by averaging the nine subscales. Therefore, for all the subscale scores and overall score, the score ranges between 1 (normal functioning) and 5 (severe maladjustment).

Analyses

The internal consistency reliability of the SAS-SR was assessed by means of Cronbach's α .

The validity of the SAS-SR was examined in view of the following a priori hypotheses.

(1) Among the non-clinical subjects, the overall score and subscale scores would correlate with the GHQ score, which reflects the overall severity of psychopathology.²⁵

(2) Among the patients, their work subscale score would depend on their employment status.

(3) The patients' overall score and subscale scores would show meaningful differences according to their diagnoses, and these would all be differentiable from the normal sample.

We used univariate general linear model to estimate the scale means and their 95% confidence intervals

(CI), adjusted for sex and age. We used Bonferroni correction when comparing scale scores across different diagnostic groups.

After all these validity assets were confirmed, we went on to present the normative data of the SAS-SR overall and subscale scores for the normal subjects. The reference ranges were defined as 95% prediction interval,²⁶ in which 95% of the population values are estimated to exist.

RESULTS

Reliability

Table 1 presents the internal consistency reliability coefficients of the nine subscales and the overall score of the SAS-SR. Although Cronbach's α was somewhat lower for the marital role and family unit subscales, they were all in the acceptable range.

Validity

Table 2 shows the Pearson product-moment correlations between the SAS-SR scores and the GHQ score among the non-clinical sample. The overall score and all the subscale scores, except for the parental subscale, had statistically significant correlations with the GHQ score.

Among the patients, the correlation between the work subscale and the job time for the past 3 years was -0.23 (95%CI: -0.17 to -0.30 , $P < 0.001$). All these correlations were in the expected direction.

Among the 1581 patients who constituted the clinical sample, we calculated the means and 95%CI, adjusted for age and sex, of the SAS-SR subscale and

total scores for the following diagnostic subgroups: schizophrenia, mood disorders, anxiety disorders, somatoform disorders, eating disorders, adjustment disorders, psychoactive substance use disorders, sleep disorders, and personality disorders (Table 3). Scores for patients with organic mental disorders were also available but were not reported in Table 3 because their validity was questionable (some of them were apparently completed by relatives but the validity of relative rating is a separate issue to be considered with a different study design).

In comparison with the normal subjects, all the patient groups had a statistically significant and substantive difference in SAS-SR overall score. With regard to subscale scores, the economy subscale tended not to show any statistical difference, except for the psychoactive substance use disorders and personality disorders. This is very understandable because the economic status depends not only on the patient him/herself but often on his/her parents or partner. The work as a housewife scale and the parental subscale also tended to be least able to differentiate between psychiatric patients and normal controls.

Among the diagnostic subgroups, personality disorder patients tended to show the worst social adjustment, followed by mood disorder patients. Because the sample size for the former subgroup was modest, we compared the latter against the remaining subgroups. Mood disorder patients tended to be more severely disturbed than anxiety disorder patients or sleep disorder patients. Patients with psychoactive substance use disorders were also severely disturbed, especially with regard to work roles; this was a very understandable result.

Table 1. Reliability of SAS-SR subscale scores and overall score

SAS-SR subscale	Cronbach's α
Work as a worker	0.72 (0.69–0.75)
Work as a housewife	0.69 (0.65–0.72)
Work as a student	0.65 (0.53–0.76)
Social and leisure	0.68 (0.64–0.72)
Extended family	0.66 (0.63–0.69)
Marital	0.61 (0.55–0.66)
Parental	0.68 (0.63–0.72)
Family unit	0.62 (0.57–0.66)
Economy	— [†]
Overall	0.73 (0.68–0.77)

[†]Cronbach's α cannot be calculated for the economy subscale because this has only one item.

SAS-SR, Social Adjustment Scale-Self Report.

Table 2. Correlations of the SAS-SR scores and the GHQ among the non-clinical sample (95% CI)

SAS-SR subscale	Pearson's correlations
Work as a worker	0.63 (0.56–0.69)**
Work as a housewife	0.32 (0.16–0.46)**
Social and leisure	0.39 (0.30–0.47)**
Extended family	0.34 (0.24–0.43)*
Marital	0.29 (0.15–0.42)*
Parental	0.11 (–0.16–0.27)
Family unit	0.34 (0.21–0.46)*
Economy	0.17 (0.07–0.27)*
Overall	0.56 (0.48–0.63)**

*Correlation is significant at the 0.05 level (two-tailed).

**Correlation is significant at the 0.01 level (two-tailed).

SAS-SR, Social Adjustment Scale-Self Report; GHQ, General Health Questionnaire; CI, confidence interval.

Table 3. SAS-SR scores in different diagnostic subgroups and normal populations (95% CI)

SAS-SR scores	Schizophrenia (<i>n</i> = 144)	Mood disorders (<i>n</i> = 560)	Anxiety disorders (<i>n</i> = 200)	Somatoform disorders (<i>n</i> = 118)	Adjustment disorders (<i>n</i> = 68)	Substance usedisorders (<i>n</i> = 65)	Sleep disorders (<i>n</i> = 82)	Personality disorders (<i>n</i> = 22)	Normal subjects (<i>n</i> = 192)
Work as a worker	2.62* (2.40–2.90)	3.01* (2.89–3.13)	2.39*† (2.21–2.58)	2.50*† (2.23–2.77)	2.80* (2.42–3.17)	3.37* (3.04–3.70)	2.18† (1.85–2.52)	–	1.63† (1.47–1.78)
Work as a housewife	2.00 (1.81–2.18)	2.34* (2.25–2.43)	1.68† (1.54–1.83)	1.81† (1.62–2.00)	1.83† (1.59–2.07)	1.86 (1.53–2.20)	1.64† (1.42–1.86)	1.97 (1.55–2.39)	1.62† (1.47–1.76)
Work as a student	2.19 (1.74–2.64)	2.39 (2.09–2.69)	2.06 (1.58–2.53)	–	–	–	–	–	–
Social and leisure	3.13* (3.01–3.26)	3.04* (2.97–3.10)	2.56*† (2.45–2.66)	2.53*† (2.38–2.67)	2.74* (2.55–2.93)	2.76* (2.57–2.95)	2.35*† (2.19–2.52)	2.92* (2.60–3.24)	1.99† (1.89–2.10)
Extended family	1.95* (1.84–2.07)	1.98* (1.92–2.04)	1.69*† (1.59–1.79)	1.69*† (1.56–1.82)	2.08* (1.91–2.25)	1.96* (1.78–2.14)	1.79* (1.63–1.94)	2.30* (2.00–2.59)	1.32† (1.22–1.42)
Marital	2.41* (2.23–2.59)	2.39* (2.33–2.45)	2.30* (2.20–2.41)	2.31 (2.18–2.44)	2.47* (2.26–2.67)	2.54* (2.35–2.73)	2.38* (2.23–2.53)	–	2.05† (1.94–2.16)
Parental	1.92 (1.63–2.21)	2.11* (2.01–2.20)	1.96 (1.81–2.11)	1.94 (1.71–2.17)	1.81 (1.55–2.07)	2.42* (2.09–2.76)	1.94 (1.63–2.24)	–	1.62† (1.47–1.76)
Family unit	2.31* (1.99–2.63)	2.40* (2.29–2.51)	2.12* (1.94–2.30)	1.94† (1.69–2.19)	2.36* (2.05–2.68)	2.45* (2.13–2.78)	2.08* (1.83–2.33)	–	1.44† (1.27–1.61)
Economy	1.81 (1.63–2.00)	1.61 (1.51–1.70)	1.42 (1.27–1.57)	1.49 (1.29–1.70)	1.79 (1.55–2.03)	2.37*† (2.10–2.63)	1.40 (1.17–1.63)	2.50*† (2.08–2.92)	1.52 (1.38–1.65)
Overall	2.51* (2.41–2.61)	2.55* (2.50–2.60)	2.19*† (2.11–2.27)	2.18* (2.08–2.29)	2.40* (2.26–2.54)	2.55* (2.41–2.70)	2.12*† (1.99–2.25)	2.62* (2.37–2.86)	1.68† (1.60–1.76)

The means and their 95% CI, adjusted for sex and age, are displayed for each cell where there were at least 10 subjects.

–, too small a sample size to calculate means and 95%CI.

*The difference is statistically significant at the 0.05 level (2-tailed, with Bonferroni correction) vis-à-vis the normal sample.

†The difference is statistically significant at the 0.05 level (2-tailed, with Bonferroni correction) vis-à-vis the mood disorder patients. SAS-SR, Social Adjustment Scale-Self Report; CI, confidence interval.

Table 4. Reference range for the SAS-SR scores

SAS-SR subscale	95% prediction interval
Work as a worker	1.00–2.41
Work as a housewife	1.00–2.54
Social and leisure	1.10–2.86
Extended family	1.00–2.13
Marital	1.21–2.94
Parental	1.00–2.71
Family unit	1.00–2.74
Economy	1.00–3.05
Overall	1.22–2.22

SAS-SR, Social Adjustment Scale-Self Report.

Standardization

In order to make the scale interpretable, we need a ‘reference range’ for the scale scores. Table 4 presents the reference range as defined in the Analyses section.

DISCUSSION

The present study is the first to report on the psychometric properties of the SAS-SR among Japanese subjects.

The scale proved to have good reliability and satisfactory construct validity. The scores correlated with severity of psychopathology as measured with the GHQ and were statistically significantly and substantively different between psychiatric patients and normal controls. Among the psychiatric patients, the scores were higher among those with personality disorders, mood disorders and schizophrenia and lower among those with anxiety disorders, somatoform disorders and sleep disorders. It is curious at first sight that it was not patients with schizophrenia who showed highest social maladjustment among the diagnostic subgroups we examined. However, we must keep in mind that these patients with schizophrenia were first-visit patients who could fill in a self-report questionnaire themselves. It is quite conceivable that many patients with schizophrenia, especially those in chronic stages, would be more severely disturbed than our current study suggests. Otherwise the observed differences according to the diagnostic subgroups and/or the subscale role areas were in the expected directions.

We also presented the reference range for the scale’s overall score and subscale scores in order to make the interpretation of the obtained results easy and clinically comprehensible. There is one caveat, however, to the interpretation of these reference ranges. These values derive from those first-visit patients who could and would fill in at least half the self-report questionnaire

Table 5. International comparison of the normal samples

SAS-SR scores	Present study (n = 192)	USA ¹¹ (n = 399)	Brazil ¹⁵ (n = 61)
Work as a worker	1.63	1.40	1.24
Work as a housewife	1.62	–	–
Work as a student	–	–	–
Social and leisure	1.99	1.83	1.77
Extended family	1.32	1.34	1.46
Marital	2.05	1.75	1.59
Parental	1.62	1.40	1.64
Family unit	1.44	1.46	1.57
Economy	1.52	–	1.64
Overall	1.68	1.59	1.56

–, data not presented in the original reports.

SAS-SR, Social Adjustment Scale-Self Report.

items; they would therefore not apply to all patients at all stages of their illnesses. The reference ranges, however, would certainly aid in the interpretation of the scores obtained with any patient.

It is interesting to note that the SAS-SR overall scores were very comparable between the Japanese, American and Brazilian normal populations as reported in previous studies (Table 5).^{11,15} Because it is meaningless to statistically compare these differently sampled populations, we did not attempt mathematical comparisons but if we look at individual subscale scores, we note some interesting tendencies. Extended family and family unit subscales tend to be lower and the marital subscale tends to be higher among the Japanese than among the other populations. Likewise, the work subscale and the social and leisure subscale tend to be higher among the Japanese. Although these differences may reflect subtle nuances of translation, they are in concert with the preconceived cultural differences: the Japanese tend to place more value on family affairs than on marital relationships and to feel more pressure in work matters than their American or Brazilian counterparts.

One additional great of the SAS-SR that we noticed in the course of the present study is the fine differentiation of several social function areas as reflected in the seven subscales of the measure. The comparisons between different diagnostic subgroups or between different cultures illustrates the usefulness of looking at these subscales. They can thus highlight for each individual patient where his/her role dysfunction lies and may enable individually tailored psychotherapeutic and rehabilitative intervention.

As more and more emphasis is placed on improvement in quality of life and social adjustment of people with mental disorders, it is imperative that we measure

them reliably and validly. With its good reliability, its satisfactory validity, its ease of administration and its richly differentiated subscale scores, the SAS-SR promises to offer a psychometrically sound measure for this purpose. We recommend that the SAS-SR be incorporated, whenever possible and feasible, in future clinical trials and cohort studies of psychiatric disorders.

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