The Work and Social Adjustment Scale: a simple measure of impairment in functioning

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Background Patients’ perspectives concerning impaired functioning provide important information.

Aims To evaluate the reliability and validity of the Work and Social Adjustment Scale (WSAS).

Method Data from two studies were analysed. Reliability analyses included internal scale consistency, test–retest and parallel forms. Convergent and criterion validities were examined with respect to disorder severity.

Results Cronbach’s α measure of internal scale consistency ranged from 0.70 to 0.94. Test–retest correlation was 0.73. Interactive voice response administrations of the WSAS gave correlations of 0.81 and 0.86 with clinician interviews. Correlations of WSAS with severity of depression and obsessive–compulsive disorder symptoms were 0.76 and 0.61, respectively. The scores were sensitive to patient differences in disorder severity and treatment-related change.

Conclusions The WSAS is a simple, reliable and valid measure of impaired functioning. It is a sensitive and useful outcome measure offering the potential for readily interpretable comparisons across studies and disorders.

Declaration of interest The copyright in WSAS is owned by I.M.M. Financial support from Pfizer, Inc. (see Acknowledgements).

Depression study
The first study was a 7-month longitudinal study of patients being treated for depression (Mundt et al, 2001). The WSAS was completed by 380 patients at the start of treatment with antidepressant medication and up to three times subsequently, at intended follow-up intervals of 4, 12 and 30 weeks. Follow-up assessments were obtained from 217 patients 21–66 days after starting treatment (mean 29.3, s.d. 5.5 days), from 208 of them 70–118 days later (mean 86.2, s.d. 5.9 days) and from 189 patients 174–248 days later (mean 211.8, s.d. 7.7 days).

OCD study
The second study was a randomised, controlled trial of computer-assisted behaviour therapy for obsessive–compulsive disorder (OCD) (Greist et al, 2002). The WSAS was administered at an initial study screening (n=197) and on four subsequent occasions (at treatment randomisation and at 2, 6 and 10 weeks later). The WSAS was completed by 190 participants 6–26 days after screening (treatment randomisation; mean 14.8, s.d. 2.5 days); 174 completed the WSAS 22–41 days after screening (mean 29.9, s.d. 3.5 days), 164 did so 35–70 days after screening (mean 57.4, s.d. 5.4 days) and 150 subjects did so 69–98 days after screening (mean 85.9, s.d. 5.5 days).

RESULTS
Data analyses reported below were performed by J.C.M. using the Statistical Package for the Social Sciences (version 10.0, SPSS, Chicago, USA).

Scale reliability
Cronbach’s α measure of internal consistency, which may be conceptualised as the mean of all possible split-half correlations (Cortina, 1993), was used to assess the internal consistency of the WSAS. Table 1 provides conservative estimates of the internal consistency of the items comprising the WSAS, presenting the distribution of α across different follow-up points in both studies. Rather than aggregating ratings both between and within subjects, each participant contributed a single set of ratings to each estimate. Alpha coefficients of 0.75 or greater are conventionally regarded as evidence of acceptable internal
scale consistency (Cortina, 1993). A monotonic rise in internal consistency over
time suggests that reliability increased. All
nine principal component analyses (varimax rotation) of the data subsets listed
in Table 1 extracted a single factor with eigenvalues ranging from 2.73 to 4.05
(54.6% to 81.0% of the total variance). Individual item factor loadings ranged from
0.66 to 0.93.

Test–retest
Test–retest reliability was examined using data from the OCD study. A mean of 2
weeks elapsed between the WSAS rating at screening and that at randomisation; no
treatment was given during this interval. The mean change on the Yale–Brown
Obsessive Compulsive Scale (Y–BOCS;
Goodman et al., 1989) between screening and treatment randomisation was less
than 0.1 point. The test–retest correlation for the
total WSAS score was 0.73, and the correla-
tions for each item separately were 0.75,
0.70, 0.72, 0.71 and 0.70.

Alternative forms
In addition, the OCD study obtained WSAS ratings by both IVR and a trained clinician
from 90 participants at treatment randomi-
sation, and from 72 of these after 10 weeks
of treatment. Clinician and IVR scores gave a
correlation of 0.81 (P < 0.001) at the start
of treatment and 0.86 (P < 0.001) after 10
weeks of treatment. The mean WSAS scores
obtained by the IVR system were 20.7 (s.d.
8.0) at the start of treatment and 16.6 (s.d.
9.1) at the end. Mean clinician WSAS
scores were 21.0 (s.d. 8.0) at the start and
16.3 (s.d. 8.6) at the end. Change in scores
for both modes of administration were sig-
nificantly correlated (r = 0.61, P < 0.001),
and reflected significant clinical improve-
ment during study participation: the mean
IVR score change was 4.0, s.d. 7.5 (paired
t = 4.44, d.f. = 69, P < 0.001); the mean
clinician score change was 4.6, s.d. 6.8
(paired t = 5.7, d.f. = 69, P < 0.001).

Scale validity

Convergence with disorder severity
Measurement reliability establishes the
reproducibility of stable ratings, permitting
meaningful data collection and analysis,
but it is not sufficient to permit inter-
pretation of the data or valid conclusions
to be drawn. The WSAS is designed to
measure functional impairment attributable
to an identified problem or disorder. In the
depression study, an abbreviated eight-item
Hamilton Rating Scale for Depression
(HRSD; Hamilton, 1960) administered by
IVR was converted to a 17-item HRSD
equivalence score and used to measure
depression severity (Mundt et al., 1998).
Across 994 conjoint administrations, the
correlation between the HRSD and WSAS
was 0.76 (P < 0.001). Correlations across the four assessment points of the study were
0.63 (P < 0.001), 0.73 (P < 0.001), 0.77
(P < 0.001) and 0.75 (P < 0.001) respec-
tively. In the OCD study, an IVR-adminis-
tered Y–BOCS was used to assess severity.
Across all 875 conjoint administrations, the correlation of Y–BOCS and WSAS
scores was 0.61 (P < 0.001). Over the five
assessment periods of the study the correla-
tions were 0.45 (P < 0.001), 0.48
(P < 0.001), 0.56 (P < 0.001), 0.69
(P < 0.001) and 0.69 (P < 0.001) respec-
tively. In both studies, correlation between
symptom severity and WSAS increased over
time – probably reflecting truncated distri-
butions and diminished variances of symp-
tom severity scores at baseline.

Criterion discrimination
The significant association between symp-
tom severity and functional impairment is
evidence of valid measurement properties.
To examine further criterion validity of the
WSAS, participants’ HRSD scores in the
depression study were stratified by symp-
tom severity: an HRSD score of 18
or over was classed as moderate to severe
(n = 422), between 7 and 18 as mild to
moderate (n = 382) and 7 or less as sub-
clinical (n = 190). The mean WSAS scores
of functional impairment for these
categories were 25.0 (s.d. 7.6), 15.5 (s.d.
7.5) and 6.5 (s.d. 6.9) respectively, re-
flecting significant differences between
groups (F = 438, d.f. = 2, 991, P < 0.001).
Bonferroni-adjusted post hoc comparisons
between all three groups indicated statisti-
cally significant differences between all
three strata.

Similarly, the Y–BOCS ratings of parti-
cipants in the OCD study were stratified
by severity: Y–BOCS scores of 16 or over
were classed as moderate to severe
(n = 783), between 10 and 16 as mild to
moderate (n = 68) and 10 or less as sub-
clinical (n = 24). The mean WSAS scores
for these categories were 20.6 (s.d. 7.5),
10.7 (s.d. 6.4) and 5.1 (s.d. 4.0) respec-
tively, again reflecting significant dif-
fferences between groups (F = 103,
d.f. = 2, 872, P < 0.001). As in the first
study, Bonferroni-adjusted post hoc com-
parisons between each of the groups were
statistically significant.

Convergence with perceived improvement
Patients in both studies also provided
global impressions of perceived clinical
improvement by IVR at each follow-up.
Ratings of perceived global improvement
(PGI) ranged from ‘very much improved’
(1) to ‘very much worse’ (7), with a rating
of 4 indicating no change. In the depression
study, 365 PGI ratings of significant clinical
improvement (1 or 2) were given. The mean
WSAS score associated with these ratings
was 10.8 (s.d. 8.8), which is significantly
lower than the mean score of 22.4 (s.d.
8.5) for the 247 ratings indicating little
or no improvement (t = 16.2, d.f. = 610,
P < 0.001). In the OCD study, the 117
PGI ratings of 1 or 2 had a mean WSAS
score of 11.5 (s.d. 7.5), also significantly
lower than the mean WSAS score of 20.2
(s.d. 7.6) for the 561 ratings of little
or no improvement (t = 11.2, d.f. = 676,
P < 0.001).

DISCUSSION

Data from these studies indicate strong
psychometric properties for the Work
and Social Adjustment Scale and support its
broader use in clinical research. The WSAS
is a simple, reliable and valid measure of
self-reported functional impairment. Patients readily understand the functional
domains assessed and easily provide the numeric ratings. Scores are stable over intervals of at least 2 weeks, in the absence of intervention or treatment, and robust across different modes of administration.

Functional impairment between disorders

Very similar results across two DSM–IV disorders for discriminating between patients categorised by symptom severity suggest that the WSAS may be a valuable measure for making comparisons between disorders. A WSAS score above 20 appears to suggest moderately severe or worse psycho-pathology. Scores between 10 and 20 are associated with significant functional impairment but less severe clinical symptomatology. Scores below 10 appear to be associated with subclinical populations. Whether such a pattern will generalise to other disorders remains to be tested.

Patients’ perspectives

Its simplicity, strong psychometric properties and direct applicability to a wide range of clinical problems indicate that the WSAS has greater potential for contributing to epidemiological, service utilisation and clinical trial research than has been realised to date. While disorder-specific symptoms are the observable elements defining differential diagnoses, the experiential impact of a disorder from the patient’s point of view is the manner in which it impairs the ability to function day to day. As interest continues to expand in measuring and monitoring changes in patient impairment, in addition to symptoms, a common scale for making comparisons across and between different disorders and treatment alternatives would be extremely valuable.

Alternative data collection methods

One aspect of the two studies reported above that could limit generalisability of these WSAS results is the use of IVR technology to administer the scale and collect data. This fact notwithstanding, the WSAS scores obtained by clinicians at the beginning and end of treatment for the subset of patients in the OCD study assessed by both methods were highly convergent with those obtained using IVR. In addition, ‘paper and pencil’ versions of the WSAS have been used as self-report questionnaires in an ongoing study of alcohol dependency by the first author (J.C.M.) and in another study of patients with other mood or anxiety disorders by the third author (M.K.S.); the psychometric properties of the WSAS administered in this way remain strong (Cronbach’s $\alpha \geq 0.90$). In a study (M.K.S.) that included 108 patients with mood and/or anxiety disorders and 22 normal control subjects, the contribution of different symptoms to impaired functioning could be discriminated using the WSAS. Further details on these three studies are available from the author upon request.

WSAS used with other populations

Use of the WSAS to date has been limited to self-reported impairment in patients with depression, anxiety or alcohol misuse disorders. No information regarding the potential of this instrument to assess functional impairment in patients with psychotic features (such as schizophrenia or bipolar disorder) is available. With increasing recognition of the importance of functional impairments and disabilities associated with psychotic symptomatology for treatment planning and outcome prediction, research with the WSAS in these patient populations is warranted.

ACKNOWLEDGEMENTS

Both studies reported here were supported with educational grants by Pfizer, Inc., initially awarded to the Dean Foundation for Health, Research and Education, Middleton, Wisconsin, USA, and completed by Healthcare Technology Systems, Madison, Wisconsin.

APPENDIX

Work and Social Adjustment Scale

Rate each of the following questions on a 0 to 8 scale: 0 indicates no impairment at all and 8 indicates very severe impairment.

1. Because of my [disorder], my ability to work is impaired. 0 means not at all impaired and 8 means very severely impaired to the point I can’t work.
2. Because of my [disorder], my home management (cleaning, tidying, shopping, cooking, looking
after home or children, paying bills) is impaired. 0 means not at all impaired and 8 means very severely impaired.

3. Because of my [disorder], my social leisure activities (with other people, such as parties, bars, clubs, outings, visits, dating, home entertainment) are impaired. 0 means not at all impaired and 8 means very severely impaired.

4. Because of my [disorder], my private leisure activities (done alone, such as reading, gardening, collecting, sewing, walking alone) are impaired. 0 means not at all impaired and 8 means very severely impaired.

5. Because of my [disorder], my ability to form and maintain close relationships with others, including those I live with, is impaired. 0 means not at all impaired and 8 means very severely impaired.

Contact Dr Marks at SSHE, 303 North End Road, London W14 9NS, UK for permission to use the WSAS in research without charge.

REFERENCES


