WhitePaper

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Psychometric Properties of the Supports Intensity Scale™

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Editors' Note

The contributors to the AAIDD White Papers on the Supports Intensity Scale™ (SIS™) were sought out by the editors because of their demonstrated successful implementation of SIS, the quality of their application, and the fidelity of their work to the conceptual and application model of SIS. It is important to realize that each psychometric study presented in this White Paper reflects the initial phases of a long-term process of using and evaluating the efficiency, effectiveness, and impact of SIS. Thus, the studies presented should be considered as current efforts, best practices, and benchmarks for evaluating future implementation efforts based on the judgment of the editors.

There is no intent on the part of the editors to suggest that the psychometric studies presented in this White Paper are the only examples available. Knowledge is cumulative, and our primary intent is to share with the reader the current status of the multiple uses of SIS, and in the case of this White Paper, to share with the readers the results of additional studies regarding its psychometric properties. It is our hope that collectively the AAIDD White Papers will serve as the basis for our increased understanding of how multiple entities can use SIS with confidence for the assessment of individual support needs and that we may use this information for multiple purposes, including individual support plans, staffing patterns, resource allocation, monitoring, and evaluating personal outcomes.

Introduction

The Supports Intensity Scale (SIS) authors anticipated that additional studies would be done to systematically evaluate the reliability and validity of SIS. The purpose of this White Paper is to update the reader on three of those studies. The first study, by Morin and Corbigo, describes the procedures they used to determine the reliability and additional psychometric properties of the French version of SIS (SIS-F). The second study, by Thompson, Tassé, and McLaughlin, assessed three types of interrater reliability—interinterviewer, interrespondent, and mixed interrater—in the English version (SIS-E). The third study, by Buntinx, evaluated the reliability and validity of the Dutch version of SIS (SIS-D). Collectively, results from these three studies further confirm the reliability and validity of the scale and underscore the need for systematic training on the administration of SIS.

The French Version of the Supports Intensity Scale

by Diane Morin and Virginie Cobigo

Participants

Forty-two adults were evaluated to estimate the interinterviewer and interrespondent reliability of the French Supports Intensity Scale (SIS-F). Test-retest reliability was also estimated on a sample of 19 individuals who were reassessed on SIS-F 3 weeks later. Participants assessed on SIS-F had a mean age of 36.3 years with a standard deviation of 11.9 (range 16 to 68 years). Twenty were females and 22 were males. IQ levels were unknown for 59% of the sample. Ten percent of the participants had an IQ higher than 70, 12% had an IQ between 51 and 69, 12% had an IQ between 36 and 50, and 7% had an IQ between 20 and 35. None were reported to have an IQ below 20. Thirty-six percent had mild adaptive behavior deficits, 26% had moderate adaptive behavior deficits, 12% had severe deficits, and 14% had profound deficits of adaptive behavior. Information regarding level of adaptive functioning was missing for 12% of the sample.

A total of 72 respondents participated in the reliability study. Respondents must have known the assessed person for at least 6 months and have had the opportunity to observe him or her on a daily basis and in different settings. Persons with intellectual disabilities were not included as respondents for the purpose of the reliability study. Sixty-one percent of the respondents knew the assessed individual for at least 3 years. Thirty-four percent knew the person between 1 to 2 years, and only 5% of respondents had known the assessed person for less than 1 year. All respondents reported knowing the assessed person fairly well to very well.

Thirty-nine individuals served as interviewers. The interviewers were recruited from among the professional staff of the local developmental disabilities agencies. All interviewers met the minimal criteria recommended in the *Supports Intensity Scale Users Manual* (Thompson et al., 2004). In addition, all interviewers received a one-day training session conducted by an AAIDD-certified trainer on how to administer and score SIS. Seventy-six percent of interviewers had worked in the field of intellectual disability for at least 10 years.

Procedure

Two interviewers and two respondents were identified for each assessed person. Three SIS forms were completed for each individual. A fourth SIS protocol was completed 3 weeks later for 19 individuals to estimate SIS-F test-retest reliability. Each interviewer interviewed both respondents following the procedure described in Table 1.

Results

Pearson correlations were computed for all six SIS domain scores and SIS Support Needs Index (SNI) score. Cicchetti and Sparrow's (1981) guidelines were used to interpret the reliability coefficients. As shown in Table 2, SIS-F interrespondent and

interinterviewer correlation coefficients for the six domains of Section I all fall in the excellent range (r = 0.79 to r = 0.92). Test-retest reliability coefficients ranged from r = 0.68 (good) to r = 0.85 (excellent).

TABLE 1

Reliability Study Procedure (SIS-F)

Reliability	Interviewers	Respondents	Delay
Interrespondent reliability	Interviewer 1	Respondent 1 Respondent 2	Day 1 1 to 7 days after day 1
Interinterviewer reliability	Interviewer 2	Respondent 1	1 to 7 days after day 1
Test-retest reliability	Interviewer 2	Respondent 2	3 weeks after day 1

TABLE 2

Support Needs Scale and SIS Support Need Index Score Correlations (SIS-F)

	Interinterviewer	Test-retest	Interrespondent
Home living	0.92	0.85	0.88
Community living	0.82	0.77	0.87
Lifelong learning	0.85	0.75	0.87
Employment	0.90	0.75	0.87
Health and safety	0.79	0.81	0.91
Social	0.79	0.68	0.85
Support Needs Index	0.91	0.84	0.92

All correlations are significant at the p = 0.01 level (2-tailed).

The English Version of the Supports Intensity Scale

by Colleen McLaughlin, Diane Morin, Marc J. Tassé, and James R. Thompson

Thompson et al. (in press) and Tassé et al. (2006) investigated the interrater reliability of the Supports Intensity Scale (SIS) under the condition that interviewers had to have been trained in its administration and scoring. A major goal of the study was to separate out the error variance attributable to different interviewers and different respondents.To accomplish this, three types of interrater reliability were assessed: *interinterviewer* reliability (pairs of SIS scores generated from different interviewers who interviewed the same respondent), *interrespondent* reliability (pairs of SIS scores generated from the same interviewer who interviewed different respondents on two different occasions), and *mixed interrater reliability* (pairs of SIS scores generated from the different interviewers who interviewed different respondents). Both corrected and noncorrected Pearson's product moment coefficients for each condition are shown in Table 3.

The findings from this investigation suggest the value of trained interviewers. Although a definitive 'cause and effect' statement cannot be made in regard to the relationship between training and interrater reliability, the reliability coefficients from the current study are higher than those reported by Thompson et al. (2004) and are quite consistent with those reported for SIS-F (see preceding section).

TABLE 3

Reliability Coefficients: Interinterviewer, Interrespondent, and Mixed Interrater (SIS-E)

Scale	Same interviewer with different respondents *(interrespondent)*		Different interviewers with same respondent *(interinterviewer)*		Different interviewers with different respondents *(mixed interrater)*	
	r	*Corrected r*	*r*	*Corrected r*	*r*	*Corrected r*
Home living	0.83	0.73	0.89	0.80	0.86	0.76
Community living	0.85	0.91	0.85	0.89	0.83	0.90
Lifelong learning	0.60	0.75	0.73	0.88	0.51	0.66
Employment	0.74	0.93	0.54	0.77	0.47	0.69
Health and safety	0.84	0.91	0.92	0.96	0.81	0.90
Social	0.65	0.87	0.51	0.74	0.70	0.90
SIS Support Needs Index	0.87	0.87	0.90	0.88	0.85	0.83

$p < 0.01$ (2-tailed) for all correlations

The Dutch Version of the Supports Intensity Scale

by Wil Buntinx

Note: The White Paper *International Implementation of the Supports Intensity Scale* describes the five studies conducted during the course of the Dutch translation of the Supports Intensity Scale (SIS-D). The results of those studies are summarized here.

Reliability

Table 4 summarizes the internal consistency coefficients (Cronbach's alphas) based on Study 1, which involved 101 individuals with intellectual disabilities. Table 5 summarizes the internal consistency coefficients (Cronbach's alphas) obtained in Study 2 (n = 91), which obtained reliability coefficients for Sections I, II, IIIa, and IIIb of SIS.

TABLE 4

Reliability Coefficients: Subscales and Section Total (SIS-D)

Subscale rating aspect	Home living	Community living	Lifelong learning	Employ-ment	Health and safety	Social	Total Section I
Frequency (F)	0.92	0.93	0.96	0.93	0.92	0.92	**0.98**
Daily support time	0.94	0.95	0.98	0.98	0.95	0.97	**0.99**
Type of support	0.95	0.96	0.96	0.96	0.93	0.96	**0.99**
Summed ratings	0.95	0.96	0.98	0.96	0.95	0.97	**0.99**

TABLE 5

Reliability Coefficients: SIS Sections (SIS-D)

Subscale	Home living	Community living	Lifelong learning	Employment	Health and safety
Cronbach's alpha	0.94	0.92	0.88	0.92	0.91
	Social	**Section I**	**Section II**	**Section IIIa**	**Section IIIb**
	0.84	0.93	0.82	0.74	0.86

Validity

Criterion. In Study 1, an independent evaluation of support needs for the 101 clients involved in the study was obtained from direct support staff who were working with the clients but did not act as respondents in the administration of the SIS.. They were asked to rate the intensity of support needs for every client and for every SIS domain on a 5-point Likert scale (very low to very high intensity of support needs). Pearson correlation coefficients are shown in Table 6.

TABLE 6

Criterion-related Validity Coefficients (SIS-D)

SIS Subsale/ domain Section I	Home living	Community living	Lifelong learning	Employment	Health and safety	Social	Total Section I
Correlation	0.79	0.73	0.81	0.76	0.81	0.75	0.83

All coefficients significant $p < 0.01$

Construct. Data from Study 5, which included 15,224 persons, were used to calculate intercorrelations among SIS subscales. This was done for the six subscales of Section I and the sum of the six subscales. These intercorrelations are shown in Table 7. These values are very close to those reported in the *Supports Intensity Scale Users Manual* (Thompson et al., 2004).

TABLE 7

Construct-related Validity Coefficients (SIS-D)

SIS section	Home living	Community living	Lifelong learning	Employment	Health and safety	Social	SIS index
Home living	1.00	Community living	0.85	1.00			
Lifelong learning	0.77	0.85	1.00				
Employment	0.71	0.76	0.82	1.00			
Health and safety	0.87	0.86	0.84	0.78	1.00		
Social	0.78	0.84	0.84	0.81	0.86	1.00	
SIS index	0.89	0.93	0.93	0.89	0.94	0.92	1.00

All coefficients significant $p < 0.001$

Additional evidence of validity was obtained by following procedures presented in chapter 6 of the *Supports Intensity Scale Users Manual* (Thompson et al., 2004). In that regard, correlations between the SIS index, gender, and age are very low(0.01 to 0.08). However, the relationship between SIS scores and measured levels of intellectual functioning (IQ scores) is mixed. Table 8 presents average SIS subscale raw scores aggregated for levels of intellectual functioning.

TABLE 8

Average SIS Subscale Scores Aggregated Across Levels of Intellectual Functioning (SIS-D; Study 3, *n* = 101)

		Classification levels of intellectual disabilities				
		Mild	**Moderate**	**Severe**	**Profound**	**Average raw score**
SIS subscale (raw score)	Home living	27.0	43.4	60.0	79.6	**48.3**
	Community living	27.5	48.2	43.9	69.8	**44.7**
	Lifelong learning	40.2	64.6	58.3	95.6	**61.7**
	Employment	34.7	54.1	53.7	74.9	**51.5**
	Health and safety	31.3	41.0	48.7	82.5	**48.6**
	Social	37.0	50.6	52.6	78.6	**52.4**
	Total Section I	**197.7**	**301.9**	**376.4**	**481**	**307.2**
	Standard deviation	**47.21**	**98.77**	**100.46**	**92.39**	**151.13**
	n	**40**	**21**	**15**	**25**	**101**

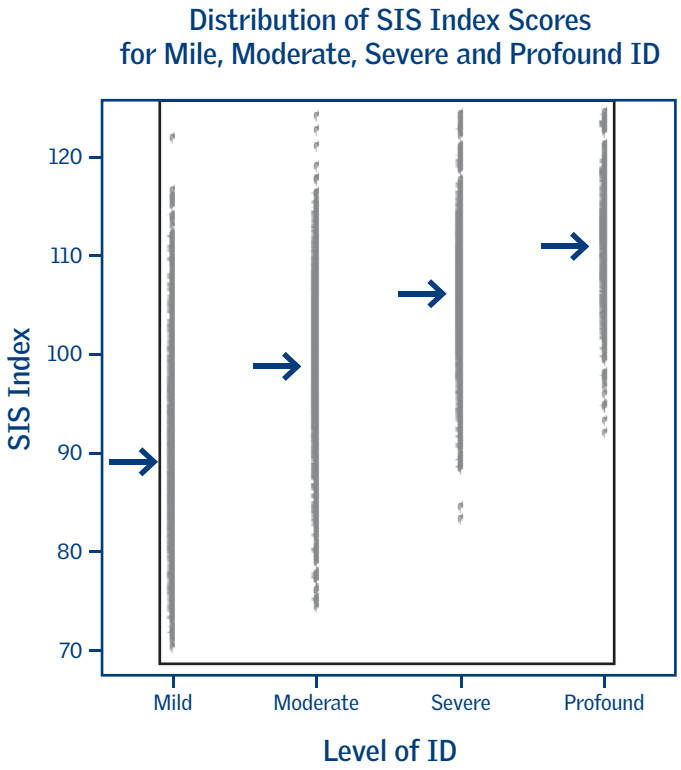
SIS average subscale differences for levels of intellectual disabilities significant $p < 0.001$ (Anova)

Level of intellectual disabilities IQ: Mild: 70–51; Moderate: 50–36; Severe: 35–20; Profound: < 20.

Although SIS subscale outcomes differ significantly across levels of intellectual disabilities, Bonferroni post hoc tests show that differences in SIS scores between levels of intellectual functioning (e.g., mild and moderate) do not always differ significantly. Moreover, as shown in Figure 1, there appears to be considerable overlap in SIS scores across levels of intellectual functioning. In this case, the average SIS index values (indicated by the arrows in Figure 1) for levels of intellectual functioning are mild = 89, moderate = 98, severe = 105, and profound = 110. This phenomenon demonstrates that although the still widely used classification of "level of intellectual functioning" might offer a rough indication of support intensity needs on a *group level*, this classification has very limited value because of the extensive overlap for the estimation of support needs intensity at the individual level. In this contributor's opinion, SIS offers a far more convincing approach to individual support needs intensity than traditional levels of intellectual disabilities.

FIGURE 1

Variance of SIS Index Across Levels of Intellectual Functioning



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Useful Web Sites

Information on the Supports Intensity Scale ..... www.siswebsite.org

Electronic *SIS Vantage* newsletter (Free sign-up) ..... http://www.siswebsite.org/Newsletter/

SIS presentation ..... http://www.siswebsite.org/galleries/default-file/SISpresentation.pdf

The American Association on Intellectual and Developmental Disabilities ..... http://www.aaidd.org

Electronic *AAIDD F.Y.I.* newsletter (Free sign-up) ..... http://www.aaidd.org/FYI/

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