Brief Symptom Inventory

(Grade12/Year 13)
Fast Track Project Technical Report
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Citation

Instrument

Derogatis, L. & Melisaratos, N. (1983). *The Brief Symptom Inventory: an introductory report.* The Journal of Psychological Medicine, 13, 595-605

Lamb, R. (2010). *Brief Symptom Inventory* (Fast Track Project Technical Report). Available from the Fast Track Project Web site, http://www.fasttrackproject.org

Data Sources

Raw: P13AL1

Scored: BSP13

I. Survey Description

The Brief Symptom Inventory (BSI) is a 53-item, free standing, self-reporting survey measuring nine symptom dimensions and three global indices of distress. The BSI is most useful in a clinical and research setting where time is the major limiting factor (Derogatis & Melisaratos, 1983). This measure was added to the Fast Track protocol in year 13 (2003) for cohort 1.

The BSI used for the Fast Track Project is a modified 35 item paper survey measuring a total of five indices of distress resulting in a point-in-time measure of the subjects' states of distress. Responses are provided via zero (not at all) to four (Extremely) Likert scale.

II. Report Sample

These analyses were conducted on the first cohort on the high-risk control sample (n = 155) and the normative sample (n = 387, N = 463 with overlap) for the fourteenth year of the study. One hundred twenty records were missing for the complete measure. Forty-one records from the control sample (19 from Durham, 21 from Nashville and 1 from Washington) and 104 records were missing from the normative sample (45 from Durham, 39 from Nashville, 8 from Pennsylvania and 12 from Washington).

III. Scaling

The 35 items evaluate five symptom dimensions (Somatization, Interpersonal Sensitivity, Depression, Anxiety and Hostility) and three global indices of distress (PST, PSDI and the Global Severity Index). Each item is scored on a response scale of 0 to 4, where 0 = *Not at all*, 1 = *A little bit*, 2 = *moderately*, 3 =

Quite a bit and 4 = *Extremely*. There are five derived scores and six diagnostics scores for this measure. The five subscales from which the diagnostic scores are derived from are Somatization, Interpersonal Sensitivity, Depression, Anxiety and Hostility. All of the subscale scores are summary scores converted to diagnostics scores using a standardized t-table. Item and subscale designations are listed in table 1.

Raw scores are developed by summing the participants answer for each item in each of the five symptom dimensions (subscales) and remaining additional items. The resultant score is then divided by the number of items answered in each subscale by the participant. This raw score for each of the dimensions is then converted to a standardized t-score based upon normalized and gender specific t-tables.

Three global scores are also created based on Derogatis' scoring methods. For each of these scales 31 items from the Fast Track version of BSI are included – these are the items adapted from Derogatis' original measure. Derogatis' *Global Severity Index* (GSI) is calculated by taking the mean of the items. In the Fast Track version of the BSI, only 31 of the original 53 items are included. Thus, to create the *Global Severity Index*, we multiply the original definition of the GSI by 53/31, the ratio of the original BSI items to Fast Track BSI items. This transformation ensures that the range of our version corresponds to the range of the original so that Fast Track can use the published tables to create T-scores for the dimensions. Derogatis' *Positive Symptom Total* is derived by counting the number of items endorsed with a positive response. In the Fast Track version, the result is then multiplied by 53/31 to account for the difference in the number of items included in the measure. Derogotis' *Positive Symptom Distress Index* (PSD) is derived by summing across the items and then dividing by the *Positive Symptom Total*. Again, the Fast Track version is then multiplied by 53/31 to account for the difference in the number of items included in the measure.

Table 1.

Item and Subscale Designation

Variable	Number	Item	Subscale
P13AL02	2	Faintness or dizziness	Somatization
P13AL07	7	Pains in heart or chest	Somatization
P13AL23	23	Nausea or upset stomach	Somatization
P13AL29	29	Trouble getting your breath	Somatization
P13AL30	30	Hot or cold spells	Somatization
P13AL33	33	Numbness or tingling in parts of your body	Somatization
P13AL37	37	Feeling week in parts of your body	Somatization
P13AL20	20	Your feelings being easily hurt	Interpersonal Sensitivity
P13AL21	21	Feeling that other people are unfriendly or dislike you	Interpersonal Sensitivity
P13AL22	22	Feeling inferior to others	Interpersonal Sensitivity
P13AL42	42	Feeling very self-conscious with others	Interpersonal Sensitivity
P13AL09	9	Thoughts about ending your life	Depression
P13AL16	16	Feeling lonely	Depression
P13AL17	17	Feeling blue	Depression
P13AL18	18	Feeling no interest in things	Depression
P13AL35	35	Feeling hopeless about the future	Depression
P13AL50	50	Feelings of worthlessness	Depression
P13AL01	1	Nervousness or shakiness inside	Anxiety
P13AL12	12	Suddenly scared for no reason	Anxiety
P13AL19	19	Feeling fearful	Anxiety
P13AL38	38	Feeling tense or keyed up	Anxiety
P13AL45	45	Spells of terror or panic	Anxiety
P13AL49	49	Feeling so restless you couldn't sit still	Anxiety
P13AL06	6	Feeling easily annoyed or irritated	Hostility
P13AL13	13	Temper outburst that you could not control	Hostility

P13AL40	40	Having urges to beat, injure, or harm someone	Hostility
P13AL41	41	Having urges to break or smash things	Hostility
P13AL46	46	Getting into frequent arguments	Hostility
P13AL01	1	Worrying	Additional Items
P13AL10	10	Feeling tired	Additional Items
P13AL18	18	Headaches	Additional Items
P13AL20	20	Trouble falling asleep	Additional Items
P13AL32	32	Feeling dissatisfied	Additional Items
P13AL35	35	Feelings of guilt	Additional Items

Table 2 summarizes inter-item reliability for each of the subscale by sample group and gender using Cronbach's Alpha. Some areas of the survey do not show an appropriate of level of internal consistency – shown with bold italics- particularly within the female control sample group. However, the overall internal consistency across the entire survey, sample grouping and genders show a high level of internal consistency with an alpha coefficient of 0.9496.

Table 2.

Alpha Coefficient for Inter-reliability of Subscales by Gender and Sample Group

	Female		Male	
Subscale	Control	Normative	Control	Normative
Somatization	***0.6347***	0.7563	*0.8281*	*0.7495*
Interpersonal Sensitivity	0.8787	**0.6560**	*0.8477*	*0.8593*
Depression	0.7988	0.7091	0.8375	0.8947
Anxiety	0.7353	*0.7322*	*0.8326*	0.8284
Hostility	***0.5283***	*0.7888*	0.7522	*0.9197*
Overall		0.9496		

IV. <u>Differences between Groups</u>

Tables 3 and 4 show the results of a series of one-way Analysis of Variance comparisons between the control and normative sample groups. Results indicated a significant difference (indicated by asterisks) within the male sample for four of the five subscales. One subscale (Somatization) shows a significant between the male control sample and normative sample. For each of the subscales the control sample group showed higher mean scores. Comparison of mean scores for the female normative and control groups shows no significant difference between groups.

Table 3.

One-way ANOVA Comparing Subscale F-score for Control and Normative, Female

	Mean				
Subscale t-score	Control	Normative	*df*	F-ratio	Prob >F
Anxiety	45.27	43.63	156	0.85	0.3583
Somatization	47.68	47.50	156	0.01	0.9145
Hostility	48.27	45.08	156	3.39	0.0675
Depression	49.03	46.92	156	1.99	0.1601
Interpersonal Sensitivity	46.63	45.38	156	0.64	0.4262
Global Severity Index	43.93	41.23	156	1.19	0.2772

Table 4.

One-way ANOVA Comparing Subscale t-score for Control and Normative Sample, Male

	Mean				
Subscale t-score	Control	Normative	*df*	F-ratio	Prob >F
Anxiety	36.58	35.43	171	0.85	0.3580
Somatization	54.37	49.77	171	6.68	0.0106*
Hostility	42.15	41.03	171	0.77	0.3800
Depression	36.87	35.22	171	2.05	0.1544
Interpersonal Sensitivity	51.70	49.49	171	2.00	0.1593
Global Severity Index	35.25	32.99	171	1.82	0.1796

V. Recommendations for Use

The Brief Symptoms Inventory is appropriate in settings in which time is limited. The BSI is commonly used as a single point in time assessment of an individual's clinical status. Conversion of the raw scores to standardized t-scores allows for meaningful comparisons across groups and previous tests. Group mean comparisons of standardized t-values enable the researcher to compare psychological states and characteristics which might differ between the normative and control samples.

One male subject – in the normative group - raw scores showed the presence of a ceiling effect in the four of the five subscales. The subject reported an overall raw scale scores of 4.0 in each of the categories. The highest possible raw scale score is 3.60.

VI. Scale Means and SD

Table 5 and table 6 show the subscale means and standard deviations for each of the scored subscales broken down by sample group. The normative sample group's means are slightly lower than the control sample means. Though the difference is not statistically significant it may warrant further investigation.

Table 5.

Summary Statistics of Subscales from the Control Sample

Subscale	N	*df*	*M*	*SD*	Sum	Minimum	Maximum
Anxiety	97	96	39.27	3.75	3809	30	70
Somatization	97	96	52.25	11.40	5068	41	78
Hostility	97	96	44.04	8.94	4272	34	78
Depression	97	96	40.63	9.59	3941	31	65
Interpersonal Sensitivity	97	96	50.13	10.45	4863	41	80
Global Severity Index	97	96	37.94	13.02	3680	26	78

Table 6.

Summary Statics of Subscales from the Normative Sample

Subscale	N	*df*	*M*	*SD*	Sum	Minimum	Maximum
Anxiety	234	233	39.92	9.07	9341	30	70
Somatization	234	233	48.63	9.62	11379	41	78
Hostility	234	233	43.24	8.50	10119	34	78
Depression	234	233	41.62	9.26	9739	31	65
Interpersonal Sensitivity	234	233	47.24	8.67	11055	41	80
Global Severity Index	234	233	37.50	11.77	8775	26	78

VII. <u>Scale Correlations</u>

Table 7.

Subscale Correlation Coefficients, Female Control Sample, r(30), p < 0.05

	SOM	IPS	Dep	ANX	HOS	GSI
SOM	1.0000	0.6322	0.7528	0.6386	0.4569	0.6372
IPS	0.6322	1.0000	0.8374	0.6181	0.6054	0.7528
Dep	0.7528	0.8374	1.0000	0.6777	0.5771	0.7759
ANX	0.6386	0.6181	0.6777	1.0000	0.7804	0.6170
HOS	0.4569	0.6054	0.5771	0.7804	1.0000	0.5605
GSI	0.6372	0.7528	0.7759	0.6170	0.5605	1.0000

Table 8.

Subscale Correlation Coefficients, Female Normative Sample, r(128), p < 0.05

	SOM	IPS	Dep	ANX	HOS	GSI
SOM	1.0000	0.3715	0.5571	0.5211	0.3130	0.4276
IPS	0.3715	1.0000	0.5221	0.5152	0.5317	0.4543
Dep	0.5571	0.5221	1.0000	0.5276	0.2415	0.4857
ANX	0.5211	0.5152	0.5276	1.0000	0.4030	0.5151
HOS	0.3130	0.5317	0.2415	0.4030	1.0000	0.3541
GSI	0.4276	0.4543	0.4857	0.5151	0.3541	1.0000

Table 9.

Subscale Correlation Coefficients, Male Control Sample, r(67), p < 0.05

	SOM	IPS	Dep	ANX	HOS	GSI
SOM	1.0000	0.6424	0.6865	0.7685	0.6924	0.7355
IPS	0.6424	1.0000	0.7350	0.5530	0.5320	0.5294
Dep	0.6865	0.7350	1.0000	0.6804	0.6491	0.5534
ANX	0.7685	0.5530	0.6804	1.0000	0.7257	0.7343
HOS	0.6924	0.5320	0.6491	0.7257	1.0000	0.5657
GSI	0.7355	0.5294	0.5534	0.7343	0.5657	1.0000

Table 10.

Subscale Correlation Coefficients, Male Normative Sample, r(108), p < 0.05

	SOM	IPS	Dep	ANX	HOS	GSI
SOM	1.0000	0.6514	0.6806	0.7002	0.6484	0.6639
IPS	0.6514	1.0000	0.7353	0.7192	0.6902	0.5873
Dep	0.6806	0.7353	1.0000	0.8195	0.6657	0.7385
ANX	0.7002	0.7192	0.8195	1.0000	0.7613	0.7038
HOS	0.6484	0.6902	0.6657	0.7613	1.0000	0.6140
GSI	0.6639	0.5873	0.7385	0.7038	0.6140	1.0000

VIII. Clinical Significance

Kuhn, Bell, Seligson, Laufer and Lindner (1988) developed the operational score for clinical significance when using the BSI. The operational score for clinical significance according to Kuhn et. al. is that a subject shows a t-score greater than 63 in GSI or a score greater than 63 in any two of the five primary dimensions. Table 11 shows the number of subjects by dimension who show a t-score greater than or equal to 63 in each of the individual dimensions.

Table 11.

Number of Control and Normative Sample Subjects with t-Scores Greater than 63

Dimension	Control, t-score ≥ 63	Normative, t-score ≥ 63
ANX	3	4
SOM	20	27
DEP	4	5
HOS	5	11
IPS	12	16

There are 41 clinically significant cases with t-scores in two dimensions greater than or equal to 63. There is not a statistically significant difference between the control and normative group in the number of clinically significant cases. Table 12 shows the number of clinically significant cases for each of the sample groups.

Table 12.

Number of Clinically Significant Cases using Two Dimensions

Sample	Number Significant
Control	18
Normative	29