Psychometric Analyses
of the
Leadership Behavior Inventory (LBI)

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Marcus Lieberman, Ph.D.

Introduction

The Leadership Behavior Inventory (LBI) is a self reporting instrument composed of 14 questions with four choices each. Each choice represents a preference in how people attend to and act on what they learn. Respondents are instructed to rank the descriptors/choices from 4, Most Like You to 1, Least Like You.

The descriptors/choices for each item have been designed to represent one of the four preference types, so there is a key for each choice. To score the inventory, one adds the ratings for all the choices for a specific preference across the items. The resulting four sums are inspected and the highest sum represents the respondent's preferred style of Leadership Behavior.

For this report, 1,419 completed inventories were used for the analysis. The report summarizes the results of statistical analyses to determine the validity and reliability of the LBI.

In addition, an analysis of the differences between the four preference scores is presented to demonstrate the discriminating power of the inventory.

Validity

If the test is valid, more people of a particular preference should rank the choice keyed to that preference highly, i.e. 3 or 4, than any other group. The first table shows the proportion of the "key" group rating that choice a 3 or 4. In addition, the table also shows the group with the next highest proportion rating the item 3 or 4. Of the 1419 inventories, 98 respondents showed equal preference for two types of behavior. They were eliminated from this analysis.

For EVERY CHOICE IN EVERY ITEM, the proportion of "key" people choosing (rating 3 or 4) the "correct" stem is higher than any other group.

Ratings by the Key Group and the Next Highest Group

		Key Group	Pct. Rating 4	Pct. Rating 3 or 4	Next Hi'est Group	Pct. Rating 4	Next Hi'est Group	Pct Rating 3 or 4
Q1	A	2	61.8	89.9	1	36.5	3	68.9
	B	4	64.3	90.2	1	11.8	1	26.0
	C	3	53.4	83.8	2	24.5	2	64.8
	D	1	33.7	64.6	3	8.1	4	26.8
Q2	A	1	28.3	52.8	4	20.5	4	35.7
	B	4	46.4	76.8	1	18.5	1	41.5
	C	2	34.3	67.4	3	26.7	3	64.6
	D	3	50.9	83.8	2	41.8	2	70.5
Q3	A	2	46.3	80.0	4	24.1	1	65.8
	B	3	62.7	84.4	4	33.0	4	70.5
	C	1	60.0	85.5	2	22.1	2	55.5
	D	4	24.1	31.2	3	12.4	3	15.5
Q4	A	4	44.6	64.2	2	27.2	2	52.0
	B	1	23.7	57.9	4	9.8	3	46.0
	C	3	64.6	86.3	2	45.7	2	75.0
	D	2	19.1	44.2	1	12.8	4	36.6
Q5	A	1	50.8	79.1	2	17.3	4	38.4
	B	3	43.5	73.3	4	17.9	4	42.9
	C	2	36.1	67.4	3	18.6	3	44.1
	D	4	54.5	75.0	2	32.5	2	65.6
Q6	A	2	57.0	77.9	3	39.1	3	55.9
	B	3	33.5	67.0	1	22.2	2	51.9
	C	1	19.5	48.1	2	10.4	4	36.6
	D	4	51.8	76.8	1	25.5	1	48.9
Q7	A	4	37.5	67.9	3	17.4	1	45.4
	B	1	60.3	85.3	2	30.1	2	69.8
	C	3	39.8	61.5	4	15.2	4	37.5
	D	2	52.8	77.3	3	26.1	3	59.0

Ratings by the Key Group and the Next Highest Group (continued)

	Key	Pct.	Pct.		Next	Pct.		Next	Pct

		Group	Rating 4	Rating 3 or 4	Hi'est Group	Rating 4	Hi'est Group	Rating 3 or 4
Q8	A	4	55.4	82.2	3	29.2	1	75.6
	B	2	19.4	43.0	3	8.1	4	31.3
	C	3	9.3	23.0	4	9.8	2	11.7
	D	1	76.0	97.7	2	53.7	3	82.6
Q9	A	3	46.6	70.8	4	27.7	4	45.6
	B	4	51.8	78.6	3	21.1	3	45.9
	C	2	32.2	64.1	3	17.4	3	42.2
	D	1	57.8	83.0	2	30.1	2	53.4
Q10	A	1	83.6	97.6	4	56.3	2	88.6
	B	4	23.2	58.0	3	14.3	3	43.5
	C	3	18.0	37.3	4	8.9	4	14.3
	D	2	33.1	80.9	3	16.8	1	80.4
Q11	A	1	22.9	54.3	4	25.0	4	47.3
	B	2	64.2	86.6	3	30.4	3	57.7
	C	4	38.4	70.5	1	15.3	1	34.5
	D	3	52.2	73.9	1	31.6	1	56.4
Q12	A	3	47.8	74.6	4	38.4	4	52.7
	B	4	29.5	75.9	1	18.7	3	54.0
	C	2	42.7	76.1	1	28.5	1	61.7
	D	1	42.1	67.8	3	21.7	2	40.0
Q13	A	2	56.1	80.3	4	26.8	1	47.9
	B	1	51.3	75.8	2,4	14.3	2	43.0
	C	4	30.4	53.6	3	18.0	3	41.6
	D	3	46.0	79.5	4	28.6	2	63.3
Q14	A	4	45.5	75.0	2	17.0	1	62.4
	B	3	22.4	53.5	2	9.6	4	27.7
	C	2	22.1	57.0	3	11.2	3	36.0
	D	1	75.7	90.1	3	54.7	2	70.4

Reliability

One form of reliability is internal consistency. This means that each item is a good predictor of the total score, in this case a specific preference type.

The next four tables show the results of an analysis to determine the internal consistency of the 14 choices for each preference type.

The closer the Cronbach's Alpha statistic is to one, the higher the internal consistency. Three of the four alphas are over 0.5 and one is close to, but below 0.5, a minimal level for acceptability for a non-objective measure. However, since a large proportion of each type rate the choices three or four, there is large reduction in variation in the responses which depresses the alpha.

The item-total correlation shows the strongest and weakest items in predicting the overall type score.

Preference Type 1

Reliability Statistics

Cronbach's Alpha	N of Items
.685	14

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
q1d	37.01	34.207	.402	.654
q2a	37.15	36.742	.165	.688
q3c	36.39	34.866	.431	.653
q4b	37.03	36.322	.246	.676
q5a	36.72	33.033	.468	.643
q6c	37.19	38.041	.092	.696
q7b	36.38	35.235	.346	.662
q8d	35.97	36.339	.344	.665
q9d	36.54	34.209	.368	.658
q10a	35.90	36.631	.313	.668
q11a	37.05	37.544	.128	.692
q12d	36.88	34.585	.307	.668
q13b	36.67	33.694	.443	.648
q14d	36.11	36.646	.219	.679

Preference Type 2

Reliability Statistics

Cronbach's Alpha	N of Items
.547	14

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
q1a	33.12	25.562	.244	.520
q2c	33.62	26.208	.160	.538
q3a	33.27	26.535	.187	.532
q4d	34.11	27.146	.068	.558
q5c	33.80	25.555	.218	.525
q6a	33.36	25.380	.191	.532
q7d	33.47	25.039	.274	.513
q8b	34.04	26.017	.258	.519
q9c	33.71	26.993	.098	.550
q10d	33.33	27.204	.121	.544
q11b	33.31	23.981	.358	.492
q12c	33.35	26.823	.118	.546
q13a	33.45	24.199	.355	.494
q14c	33.99	25.777	.231	.523

Preference Type 3

Reliability Statistics

Cronbach's Alpha	N of Items
.526	14

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
q1c	29.84	24.788	.274	.489
q2d	29.51	26.786	.069	.536
q3b	29.64	25.239	.289	.489
q4c	29.38	25.778	.173	.512
q5b	30.31	24.009	.321	.476
q6b	29.88	26.977	.068	.535
q7c	30.52	24.738	.262	.491
q8c	30.87	27.267	.113	.522
q9a	30.21	24.459	.244	.495
q10c	30.89	26.390	.214	.506
q11d	29.78	26.142	.109	.529
q12a	30.39	24.395	.240	.496
q13d	29.57	26.878	.100	.527
q14b	30.50	25.409	.252	.496

Preference Type 4

Reliability Statistics

Cronbach's Alpha	N of Items
.477	14

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
q1b	30.03	20.172	.416	.384
q2b	29.74	21.468	.281	.426
q3d	30.71	23.326	.235	.447
q4a	29.49	24.555	-.024	.511
q5d	29.19	24.056	.045	.489
q6d	29.59	21.408	.256	.432
q7a	29.64	23.393	.125	.469
q8a	29.14	24.013	.076	.479
q9b	29.55	22.696	.184	.454
q10b	29.89	24.154	.091	.475
q11c	29.87	21.786	.270	.430
q12b	29.39	24.357	.046	.485
q13c	30.32	22.242	.256	.436
q14a	29.43	23.607	.106	.473

Recall that a preference type is determined by using the maximum of the four preference type scores. It is important to notice how discriminating this method is. If respondents have one high type score and low scores among the others, the inventory discriminates well among the four types.

The next table shows the number of people who have differences between their highest preference type score and the next highest type score. For example, 12% of the respondents have two points between their highest and next highest score. 98 or about 7% had two scores that were equal. Over 50% of the respondents had a difference of five or more between their highest type score and their next highest.

The Minimum Differences Between the Highest Preference Score
And the Next Highest Preference Score

	Frequency	Percent
0	98	6.9
1	157	11.1
2	170	12.0
3	139	9.8
4	126	8.9
5	105	7.4
6	95	6.7
7	82	5.8
8	88	6.2
9	84	5.9
10	51	3.6
11	42	3.0
12	28	2.0
13	42	3.0
14	23	1.6
15	32	2.3
16	17	1.2
17	13	.9
18	7	.5
19	10	.7
20	2	.1
21	2	.1
22	3	.2
23	1	.1
24	2	.1
Total	1419	100.0

Finally, a distribution of the four types is presented. The 98 people with two equal highest scores have been eliminated here.

Distribution of the Four Types of

Leadership Behavior

	Frequency	Percent
1	713	54.0
2	335	25.4
3	161	12.2
4	112	8.5
Total	1321	100.0