

Integrity

Overall Report

Job name: Psychology 101 Session A1

Client: Dr. Jane Jones

Date submitted: 3/29/2005 9:15:03 PM

Date completed: 3/29/2005 9:15:20 PM

Number of examinees: 225

Number of items: 65

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Job Profile

Job ID	65
Name	Psychology 101 Session A1
Date submitted	Tuesday, March 29, 2005
Date completed	Tuesday, March 29, 2005
Data file	\\example_testdata_Integrity.dat
Answer key	\\example_key_Integrity.dat
Contains writing location	Yes
Contains group code	Yes
Number of examinees	225
Number of questions	65
Perform collusion detection	Yes
Perform writing location analysis	Yes
Perform group analysis	Yes
Perform subscale analysis	Yes
Generate overall report PDF	Yes
Generate item report PDF	Yes
Generate data files	Yes

Executive summary

Summary

Summary statements

Applicable items

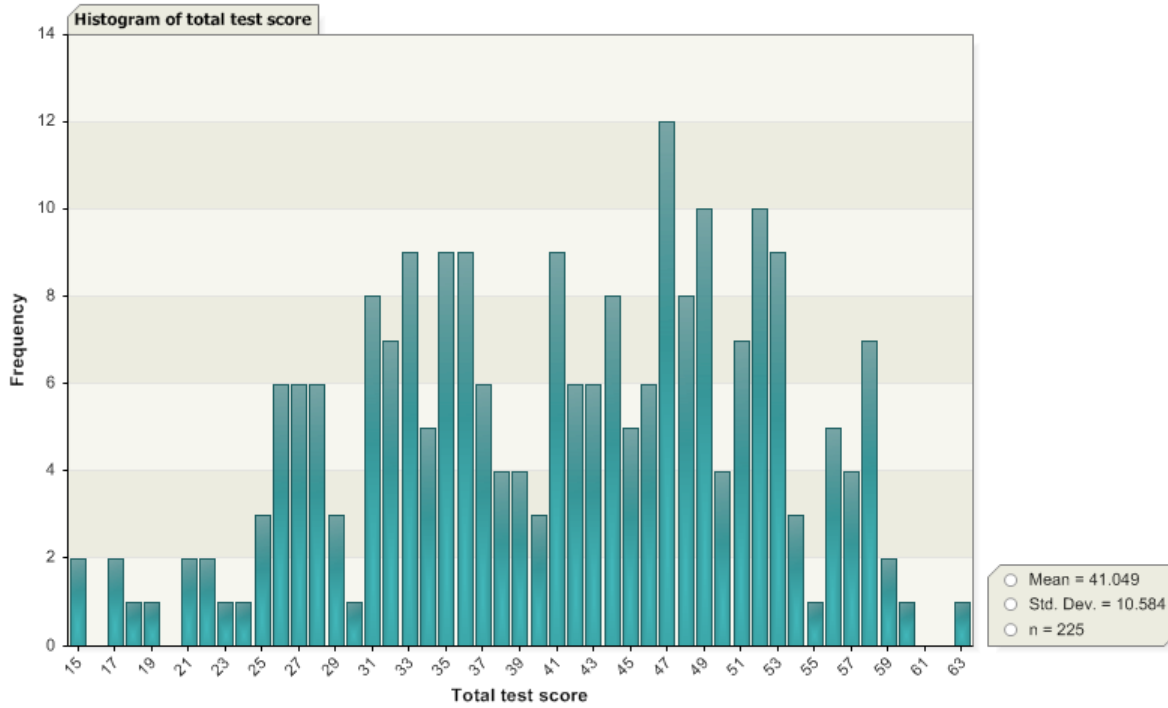
<ul style="list-style-type: none"> This item may be too difficult. Item difficulty affects item discrimination in that items of high and low difficulty may have lower discrimination statistics. Consider reviewing the content of the item to determine if it should be made less difficult. 	2
<ul style="list-style-type: none"> This item has a negative CPBR, which is statistically very problematic. Examinees of low ability may have a greater probability of answering the item correctly, than do examinees of high ability. This item may be keyed incorrectly. If the item key is correct, review the content of the item carefully and consider deleting this item from the test. 	2
<ul style="list-style-type: none"> This item has low discrimination. Examinees of low ability should have a much lower probability of answering an item correctly than do examinees of high ability. Low discrimination statistics suggest that this may not be what is occurring. Consider reviewing and revising the content of this item to see if ambiguity in the item content can be limited. Also, consider that item difficulty affects item discrimination in that items of high and low difficulty may have lower discrimination statistics. 	4 8 10 19 20 31 33 35 38 43 64
<ul style="list-style-type: none"> This item may be too easy. Item difficulty affects item discrimination in that items of high and low difficulty may have lower discrimination statistics. Consider reviewing the content of the item to determine if it should be made more difficult. 	39
<ul style="list-style-type: none"> The five most difficult items on this test are: 	2 38 31 34 20
<ul style="list-style-type: none"> The five least difficult items on this test are: 	39 54 1 29 25
<ul style="list-style-type: none"> The KR-20 for this test indicates moderate to high test reliability. 	
<ul style="list-style-type: none"> 2 pairs of examinees have been identified by the collusion detection analysis. 	

Table of statistics summary

Number of examinees = 225
 Number of items on test = 63
 Mean = 42.006
 Median = 42.000
 Mode = 47.000
 Standard deviation = 10.584
 Variance = 112.029
 Maximum score = 63
 Minimum score = 15

Standard error of the mean = 0.706
 Standard error of measurement = 3.511
 KR-20 reliability = 0.890
 Spearman-Brown split half reliability coefficient = 0.887
 Spearman-Brown prophecy reliability formula = 0.940
 Guttman split-half reliability coefficient = 0.888
 Skewness (total score) = -0.246
 Kurtosis (total score) = -0.719

Histogram of test total score



Collusion detection report

2 pairs of examinees have been identified by the collusion detection analysis.

	<u>Examinee ID</u>	<u>Writing center</u>	<u>B-Index</u>	<u>PAIR1</u>	<u>PAIR2</u>	<u>MESA</u>	<u>g2</u>
Examinee pair 1	666 669	Class 3 Class 3	High	High	High	High	High
Examinee pair 2	672 675	Class 3 Class 3	High	Moderate	High	N/A	Moderate

Test statistics

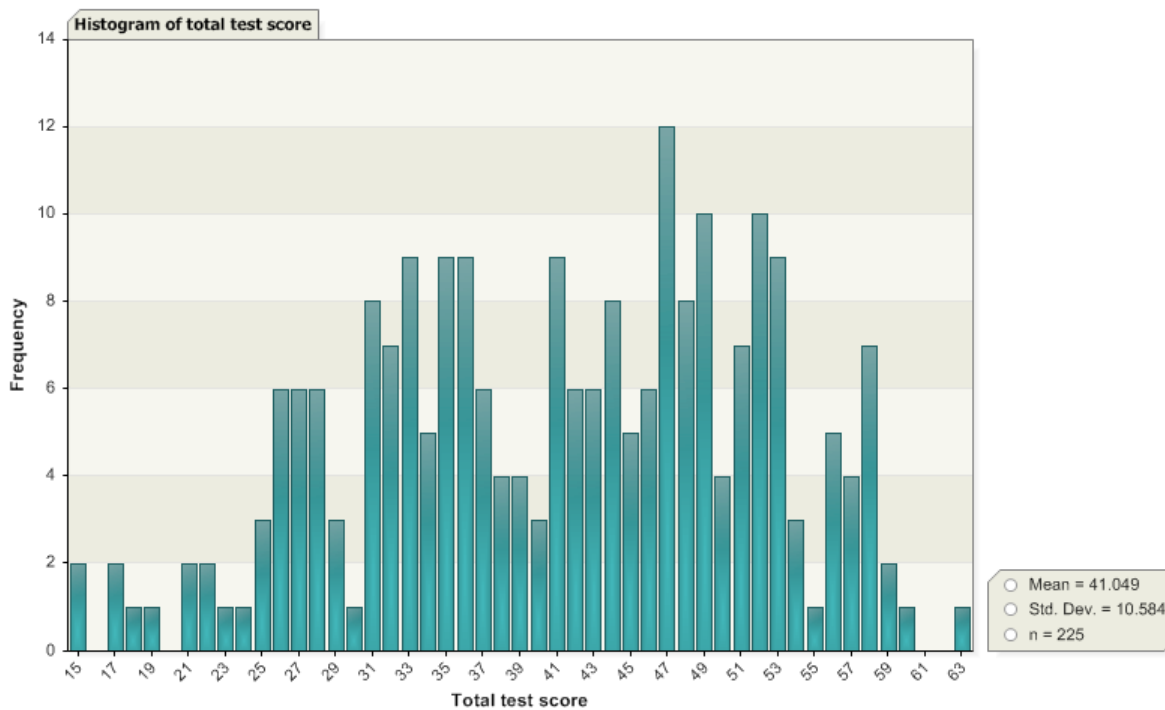
Summary

- The KR-20 for this test indicates moderate to high test reliability.
- The distribution of test scores is platykurtic (too flat; see kurtosis value) and therefore not normally distributed. Consider examining the items that compose this test to investigate why this is the case.

Table of statistics summary

Number of examinees = 225	Standard error of the mean = 0.706
Number of items on test = 65	Standard error of measurement = 3.511
Mean = 0.706	KR-20 reliability = 0.890
Median = 42.000	Spearman-Brown split-half reliability coefficient = 0.887
Mode = 47.000	Spearman-Brown prophecy reliability formula = 0.940
Standard deviation = 10.584	Guttman split-half reliability coefficient = 0.888
Variance = 112.029	Skewness (total score) = -0.246
Maximum score = 63	Kurtosis (total score) = -0.719
Minimum score = 15	

Histogram of test total score

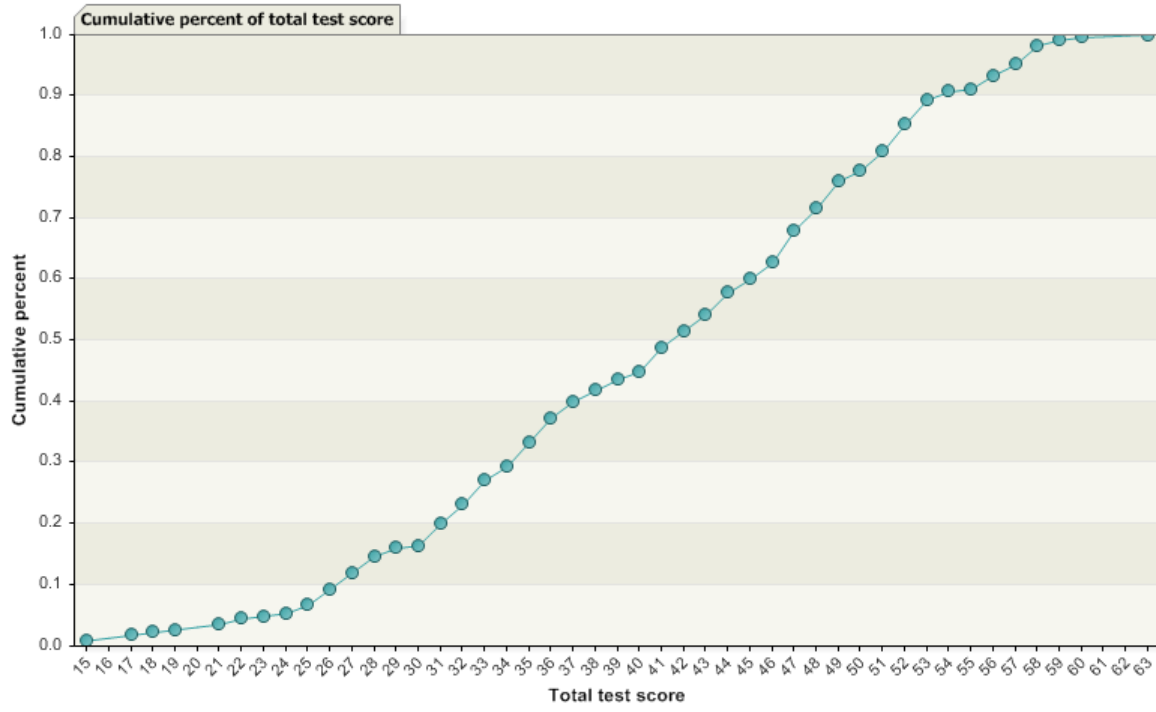


Frequency distribution of test scores

<u>Raw score</u>	<u>Frequency</u>	<u>Percent</u>	<u>Cumulative percent</u>
15	2	0.009	0.009
17	2	0.009	0.018
18	1	0.004	0.022
19	1	0.004	0.027
21	2	0.009	0.036
22	2	0.009	0.044
23	1	0.004	0.049
24	1	0.004	0.053

25	3	0.013	0.067
26	6	0.027	0.093
27	6	0.027	0.120
28	6	0.027	0.147
29	3	0.013	0.160
30	1	0.004	0.164
31	8	0.036	0.200
32	7	0.031	0.231
33	9	0.040	0.271
34	5	0.022	0.293
35	9	0.040	0.333
36	9	0.040	0.373
37	6	0.027	0.400
38	4	0.018	0.418
39	4	0.018	0.436
40	3	0.013	0.449
41	9	0.040	0.489
42	6	0.027	0.516
43	6	0.027	0.542
44	8	0.036	0.578
45	5	0.022	0.600
46	6	0.027	0.627
47	12	0.053	0.680
48	8	0.036	0.716
49	10	0.044	0.760
50	4	0.018	0.778
51	7	0.031	0.809
52	10	0.044	0.853
53	9	0.040	0.893
54	3	0.013	0.907
55	1	0.004	0.911
56	5	0.022	0.933
57	4	0.018	0.951
58	7	0.031	0.982
59	2	0.009	0.991
60	1	0.004	0.996
63	1	0.004	1.000

Cumulative percent of total raw test score



Item statistics

Summary

Summary statements

Applicable items

<ul style="list-style-type: none"> This item may be too difficult. Item difficulty affects item discrimination in that items of high and low difficulty may have lower discrimination statistics. Consider reviewing the content of the item to determine if it should be made less difficult. 	2
<ul style="list-style-type: none"> This item has a negative CPBR, which is statistically very problematic. Examinees of low ability may have a greater probability of answering the item correctly, than do examinees of high ability. This item may be keyed incorrectly. If the item key is correct, review the content of the item carefully and consider deleting this item from the test. 	2
<ul style="list-style-type: none"> This item has low discrimination. Examinees of low ability should have a much lower probability of answering an item correctly than do examinees of high ability. Low discrimination statistics suggest that this may not be what is occurring. Consider reviewing and revising the content of this item to see if ambiguity in the item content can be limited. Also, consider that item difficulty affects item discrimination in that items of high and low difficulty may have lower discrimination statistics. 	4 8 10 19 20 31 33 35 38 43 64
<ul style="list-style-type: none"> This item may be too easy. Item difficulty affects item discrimination in that items of high and low difficulty may have lower discrimination statistics. Consider reviewing the content of the item to determine if it should be made more difficult. 	39
<ul style="list-style-type: none"> The five most difficult items on this test are: 	2 38 31 34 20
<ul style="list-style-type: none"> The five least difficult items on this test are: 	39 54 1 29 25
<ul style="list-style-type: none"> The KR-20 for this test indicates moderate to high test reliability. 	

Item statistics summary

Difficulty mean = 0.632

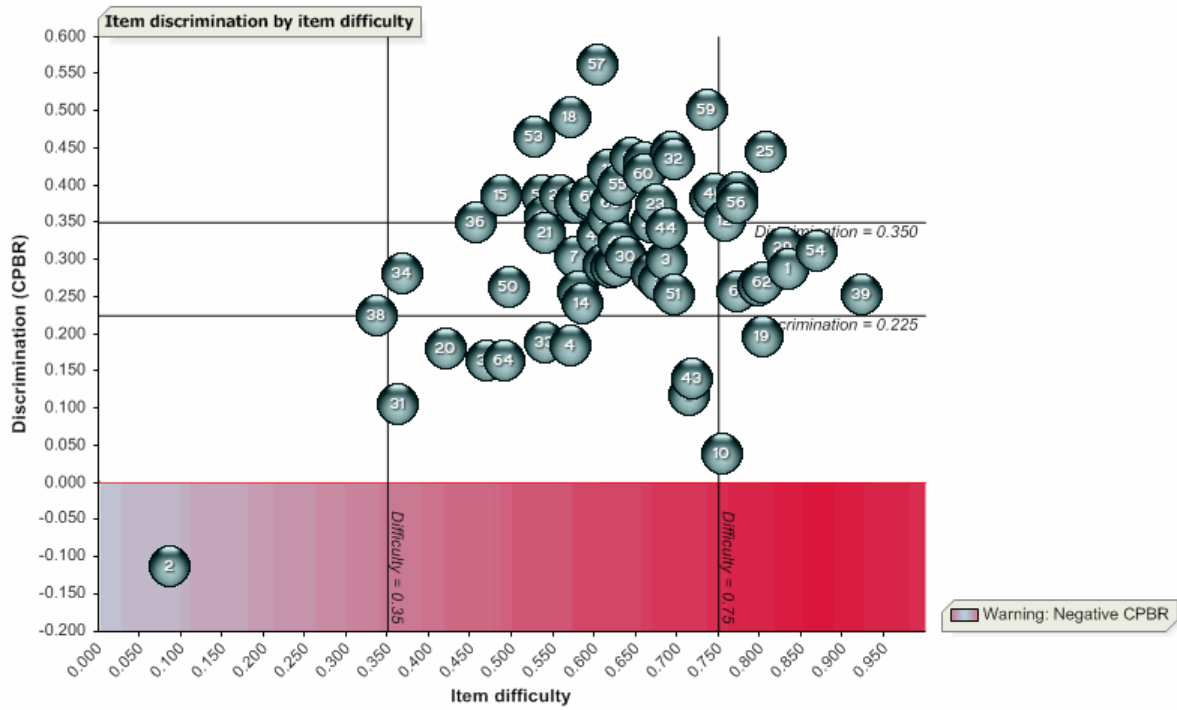
CPBR mean = 0.311

KR-20 = 0.890

<u>Item number</u>	<u>Difficulty</u>	<u>Discrimination (CPBR)</u>	<u>KR-20 if item deleted</u>
1	0.836	0.285	0.889
2	0.089	-0.114	0.892
3	0.689	0.298	0.889
4	0.573	0.182	0.890
5	0.680	0.270	0.889
6	0.613	0.291	0.889
7	0.578	0.303	0.889
8	0.716	0.115	0.891
9	0.773	0.389	0.888
10	0.756	0.036	0.891
11	0.618	0.419	0.887

12	0.760	0.350	0.888
13	0.542	0.356	0.888
14	0.587	0.239	0.889
15	0.489	0.384	0.888
16	0.578	0.376	0.888
17	0.644	0.436	0.887
18	0.573	0.489	0.886
19	0.804	0.195	0.890
20	0.422	0.178	0.890
21	0.542	0.335	0.888
22	0.627	0.289	0.889
23	0.676	0.372	0.888
24	0.560	0.385	0.888
25	0.809	0.443	0.887
26	0.596	0.379	0.888
27	0.618	0.354	0.888
28	0.671	0.349	0.888
29	0.831	0.313	0.888
30	0.640	0.301	0.889
31	0.364	0.104	0.891
32	0.698	0.433	0.887
33	0.542	0.187	0.890
34	0.369	0.280	0.889
35	0.471	0.162	0.890
36	0.458	0.348	0.888
37	0.742	0.380	0.888
38	0.338	0.223	0.889
39	0.924	0.251	0.889
40	0.604	0.330	0.888
41	0.662	0.430	0.887
42	0.582	0.255	0.889
43	0.720	0.139	0.890
44	0.689	0.341	0.888
45	0.631	0.322	0.888
46	0.747	0.387	0.888
47	0.622	0.288	0.889
48	0.671	0.281	0.889
49	0.693	0.444	0.887
50	0.498	0.262	0.889
51	0.698	0.252	0.889
52	0.800	0.263	0.889
53	0.529	0.464	0.887
54	0.871	0.310	0.889
55	0.631	0.398	0.887
56	0.773	0.375	0.888
57	0.604	0.560	0.885
58	0.538	0.384	0.888
59	0.738	0.501	0.886
60	0.662	0.414	0.887
61	0.773	0.256	0.889
62	0.804	0.268	0.889
63	0.622	0.374	0.888
64	0.493	0.163	0.890
65	0.596	0.382	0.888

Item discrimination by item difficulty



Examinee scores

Examinee results

<u>Examinee ID</u>	<u>Raw test score</u>	<u>Percentage test score</u>	<u>Percentile</u>
3	48	73.8	69
6	49	75.4	73
9	52	80.0	83
12	52	80.0	83
15	35	53.8	31
18	51	78.5	79
21	27	41.5	10
24	28	43.1	13
27	22	33.8	4
30	32	49.2	21
33	34	52.3	28
36	21	32.3	3
39	25	38.5	6
42	31	47.7	18
45	33	50.8	25
48	44	67.7	56
51	36	55.4	35
54	47	72.3	65
57	35	53.8	31
60	37	56.9	38
63	44	67.7	56
66	26	40.0	8
69	35	53.8	31
72	31	47.7	18
75	28	43.1	13
78	39	60.0	42
81	41	63.1	46
84	35	53.8	31
87	43	66.2	52
90	60	92.3	99
93	36	55.4	35
96	33	50.8	25
99	33	50.8	25
102	35	53.8	31
105	50	76.9	76
108	29	44.6	15
111	47	72.3	65
114	47	72.3	65
117	56	86.2	92
120	43	66.2	52
123	59	90.8	98
126	42	64.6	50
129	44	67.7	56
132	59	90.8	98
135	46	70.8	61
138	28	43.1	13
141	54	83.1	90
144	27	41.5	10
147	47	72.3	65
150	37	56.9	38
153	58	89.2	96
156	53	81.5	87
159	53	81.5	87
162	39	60.0	42
165	35	53.8	31
168	36	55.4	35
171	35	53.8	31
174	41	63.1	46
177	42	64.6	50

180	31	47.7	18
183	26	40.0	8
186	41	63.1	46
189	46	70.8	61
192	46	70.8	61
195	42	64.6	50
198	37	56.9	38
201	52	80.0	83
204	52	80.0	83
207	51	78.5	79
210	28	43.1	13
213	44	67.7	56
216	49	75.4	73
219	44	67.7	56
222	56	86.2	92
225	47	72.3	65
228	46	70.8	61
231	26	40.0	8
234	34	52.3	28
237	49	75.4	73
240	51	78.5	79
243	63	96.9	99
246	49	75.4	73
249	53	81.5	87
252	34	52.3	28
255	36	55.4	35
258	53	81.5	87
261	48	73.8	69
264	41	63.1	46
267	52	80.0	83
270	45	69.2	58
273	24	36.9	5
276	40	61.5	44
279	48	73.8	69
282	21	32.3	3
285	49	75.4	73
288	45	69.2	58
291	33	50.8	25
294	38	58.5	40
297	25	38.5	6
300	41	63.1	46
303	54	83.1	90
306	37	56.9	38
309	55	84.6	90
312	52	80.0	83
315	44	67.7	56
318	51	78.5	79
321	23	35.4	4
324	32	49.2	21
327	17	26.2	1
330	47	72.3	65
333	48	73.8	69
336	29	44.6	15
339	31	47.7	18
342	46	70.8	61
345	44	67.7	56
348	48	73.8	69
351	58	89.2	96
354	45	69.2	58
357	29	44.6	15
360	47	72.3	65
363	42	64.6	50
366	50	76.9	76
369	15	23.1	1
372	50	76.9	76
375	57	87.7	94

378	57	87.7	94
381	58	89.2	96
384	48	73.8	69
387	27	41.5	10
390	52	80.0	83
393	52	80.0	83
396	38	58.5	40
399	15	23.1	1
402	52	80.0	83
405	38	58.5	40
408	46	70.8	61
411	48	73.8	69
414	43	66.2	52
417	17	26.2	1
420	34	52.3	28
423	26	40.0	8
426	36	55.4	35
429	36	55.4	35
432	56	86.2	92
435	31	47.7	18
438	38	58.5	40
441	28	43.1	13
444	31	47.7	18
447	22	33.8	4
450	41	63.1	46
453	36	55.4	35
456	18	27.7	2
459	31	47.7	18
462	47	72.3	65
465	57	87.7	94
468	35	53.8	31
471	49	75.4	73
474	32	49.2	21
477	49	75.4	73
480	40	61.5	44
483	49	75.4	73
486	57	87.7	94
489	49	75.4	73
492	58	89.2	96
495	33	50.8	25
498	53	81.5	87
501	25	38.5	6
504	33	50.8	25
507	58	89.2	96
510	39	60.0	42
513	33	50.8	25
516	56	86.2	92
519	44	67.7	56
522	27	41.5	10
525	32	49.2	21
528	51	78.5	79
531	50	76.9	76
534	43	66.2	52
537	42	64.6	50
540	32	49.2	21
543	47	72.3	65
546	53	81.5	87
549	27	41.5	10
552	51	78.5	79
555	45	69.2	58
558	45	69.2	58
561	36	55.4	35
564	41	63.1	46
567	41	63.1	46
570	43	66.2	52
573	40	61.5	44

576	43	66.2	52
579	36	55.4	35
582	42	64.6	50
585	37	56.9	38
588	51	78.5	79
591	35	53.8	31
594	19	29.2	2
597	58	89.2	96
600	53	81.5	87
603	33	50.8	25
606	28	43.1	13
609	52	80.0	83
612	32	49.2	21
615	39	60.0	42
618	27	41.5	10
621	53	81.5	87
624	48	73.8	69
627	54	83.1	90
630	30	46.2	16
633	47	72.3	65
636	33	50.8	25
639	41	63.1	46
642	34	52.3	28
645	32	49.2	21
648	37	56.9	38
651	53	81.5	87
654	31	47.7	18
657	58	89.2	96
660	56	86.2	92
663	49	75.4	73
666	26	40.0	8
669	26	40.0	8
672	47	72.3	65
675	47	72.3	65

Group analysis

Group analysis summary table

<u>Group</u>	<u>Number of students</u>	<u>Mean</u>	<u>SD</u>	<u>SE Mean</u>	<u>SE Measurement</u>	<u>KR-20</u>
Female	112	41.518	11.012	1.041	3.479	0.900
Male	113	40.584	10.171	0.957	3.523	0.880

Summary: Female

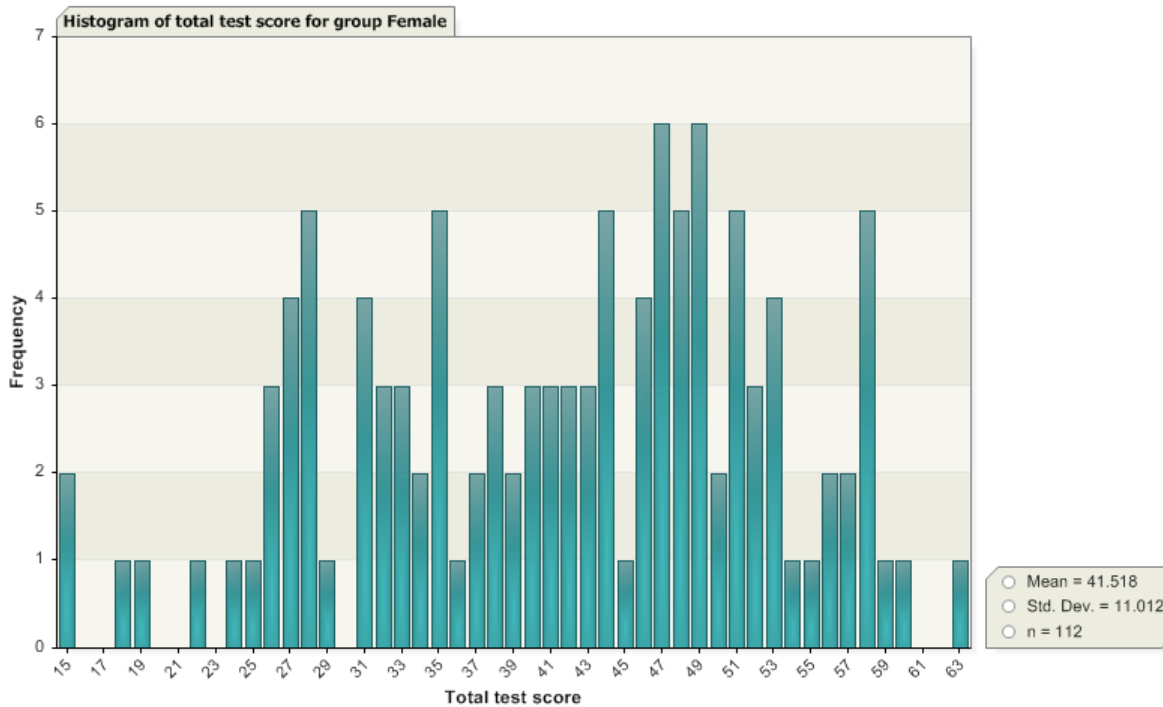
- The skewness and kurtosis statistics indicate that the distribution of scores is relatively normally distributed.
- The means for Male and Female are likely not statistically significantly different as the 95% confidence bands surrounding each mean do overlap.

Table of statistics for group: Female

Number of examinees = 225
 Number of items on test = 65
 Mean = 1.041
 Median = 43.000
 Mode = 49.000
 Standard deviation = 11.012
 Variance = 121.261
 Maximum score = 63
 Minimum score = 15

Standard error of the mean = 1.041
 Standard error of measurement = 3.479
 KR-20 reliability = 0.900
 Spearman-Brown split half reliability coefficient = 0.898
 Spearman-Brown prophecy reliability formula = 0.946
 Guttman split-half reliability coefficient = 0.901
 Skewness (total score) = -0.319
 Kurtosis (total score) = -0.651

Frequency histogram for group: Female



Summary: Male

- The skewness and kurtosis statistics indicate that the distribution of scores is relatively normally distributed.

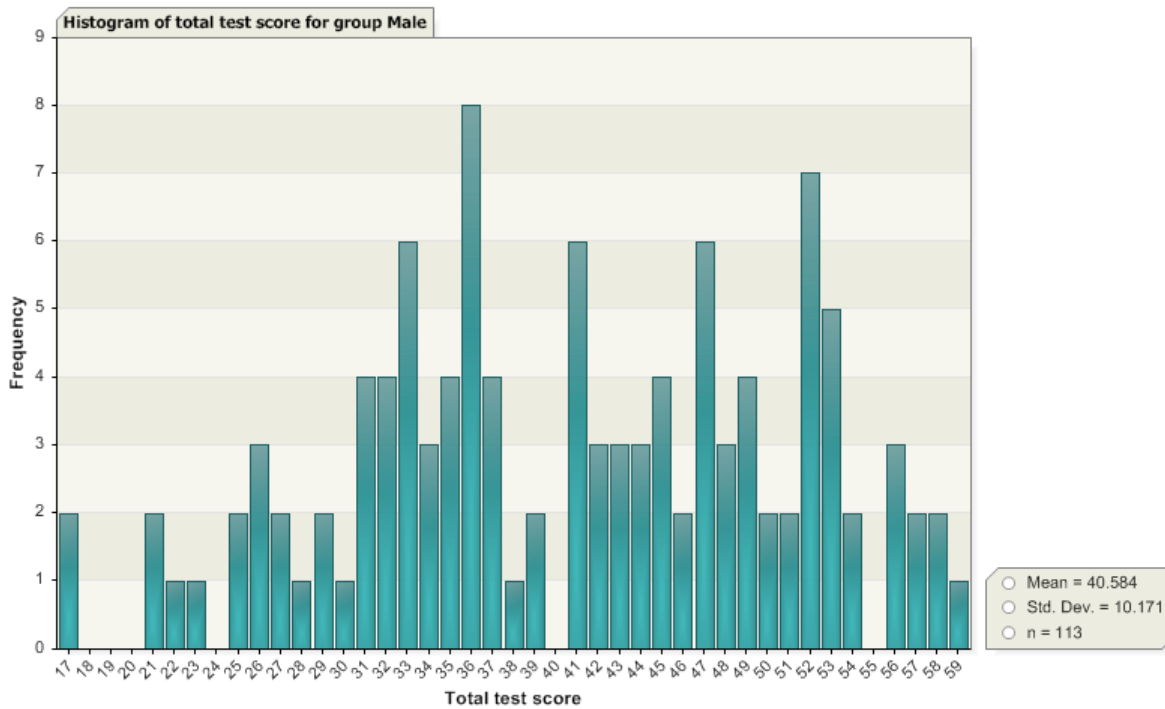
- The means for Male and Female are likely not statistically significantly different as the 95% confidence bands surrounding each mean do overlap.

Table of statistics for group: Male

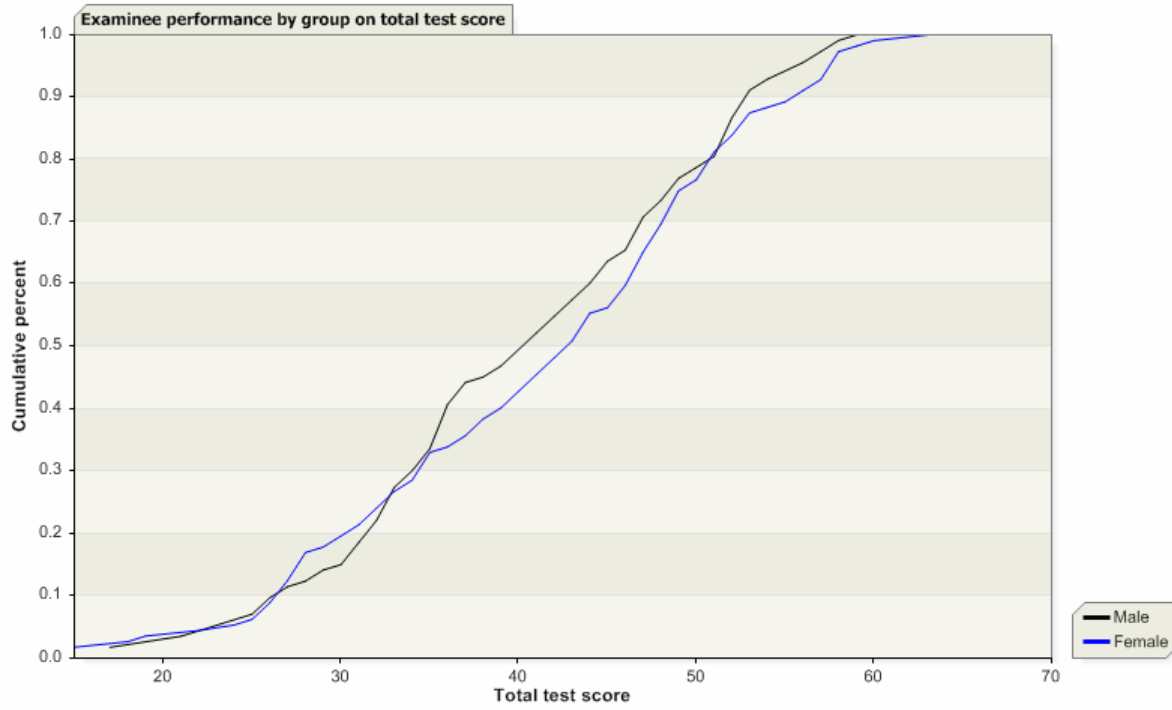
Number of examinees = 225
 Number of items on test = 65
 Mean = 0.957
 Median = 41.000
 Mode = 36.000
 Standard deviation = 10.171
 Variance = 103.442
 Maximum score = 59
 Minimum score = 17

Standard error of the mean = 0.957
 Standard error of measurement = 3.523
 KR-20 reliability = 0.880
 Spearman-Brown split half reliability coefficient = 0.873
 Spearman-Brown prophecy reliability formula = 0.932
 Guttman split-half reliability coefficient = 0.875
 Skewness (total score) = -0.182
 Kurtosis (total score) = -0.784

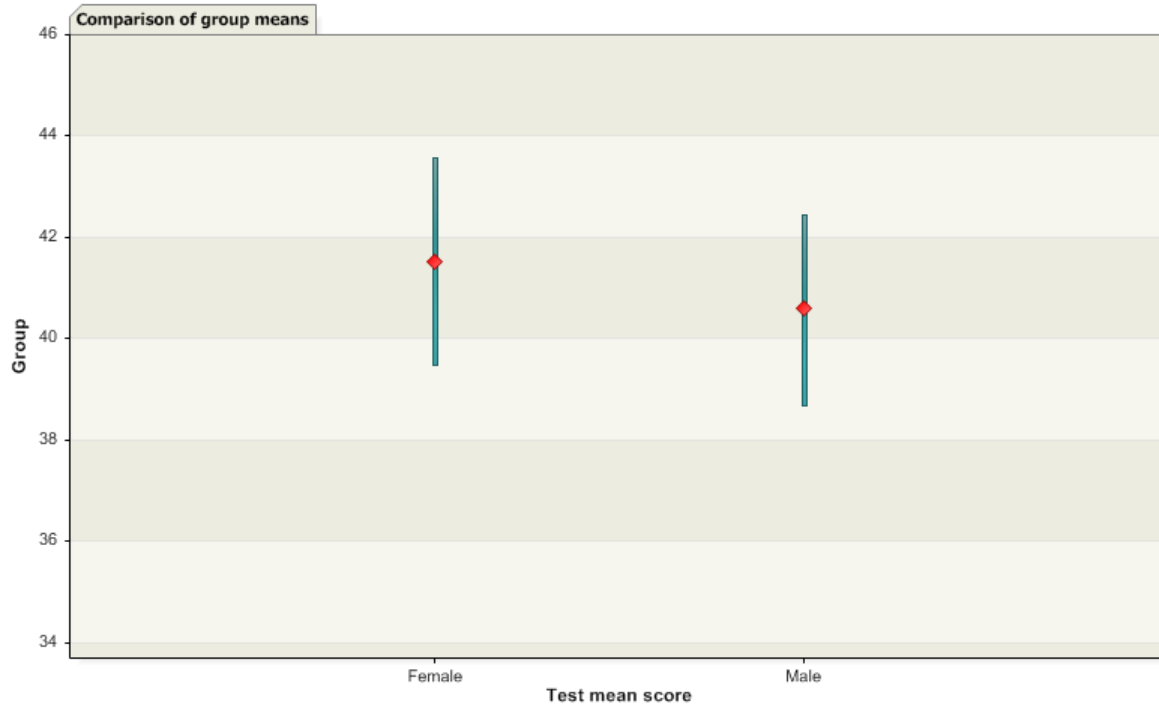
Frequency histogram for group: Male



Graph of cumulative percent by group



Comparison of group means



Subscale analysis

Subscale analysis summary table

<u>Subscale</u>	<u>Number of students</u>	<u>Number of items</u>	<u>Mean</u>	<u>SD</u>	<u>SE Mean</u>	<u>SE Measurement</u>	<u>KR-20</u>
Brain and behavior	225	25	15.533	4.339	0.289	2.181	0.747
Developmental	225	15	10.133	3.091	0.206	1.626	0.723
Social psychology	225	25	15.382	4.355	0.290	2.207	0.743

Summary: Brain and behavior

- The KR-20 for this test indicates moderate to low test reliability. The reliability of the test is related to factors such as: 1) low number of test items, 2) small number of examinees, 3) many items that are too difficult or too easy, 4) many items that have low discrimination, 5) the items on the test are not measuring one dominant trait, 6) students do not have enough time to finish all the items on the test. Consider investigating the above factors in order to increase test reliability.
- The distribution of test scores is platykurtic (too flat; see kurtosis value) and therefore not normally distributed. Consider examining the items that compose this test to investigate why this is the case.

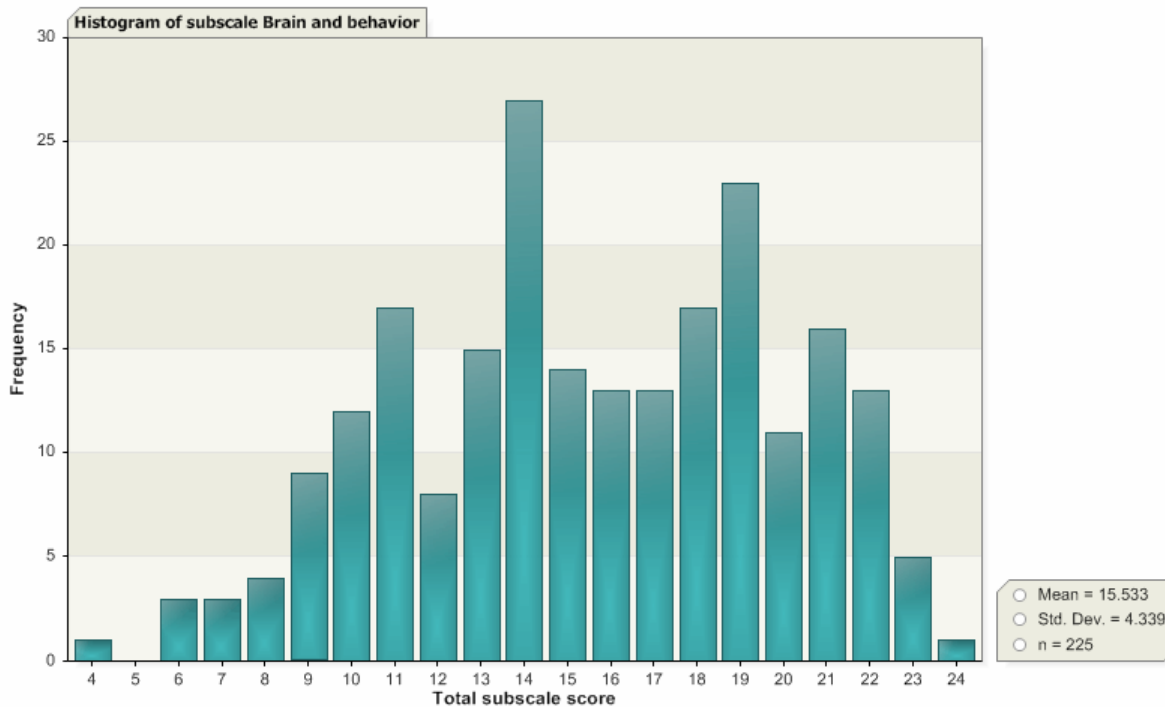
Table of statistics for subscale: Brain and behavior

Number of examinees = 225	Standard error of the mean = 0.289
Number of items on test = 65	Standard error of measurement = 2.181
Mean = 0.289	KR-20 reliability = 0.747
Median = 15.000	Spearman-Brown split half reliability coefficient = 0.746
Mode = 14.000	Spearman-Brown prophecy reliability formula = 0.854
Standard deviation = 4.339	Guttman split-half reliability coefficient = 0.743
Variance = 18.830	Skewness (total score) = -0.192
Maximum score = 24	Kurtosis (total score) = -0.788
Minimum score = 4	

Item level statistics for subscale: Brain and behavior

<u>Item</u>	<u>Difficulty</u>	<u>Discrimination (CPBR)</u>	<u>KR-20 if item deleted</u>
1	0.836	0.243	0.742
2	0.089	-0.075	0.755
3	0.689	0.264	0.741
4	0.573	0.127	0.750
5	0.680	0.251	0.741
6	0.613	0.289	0.739
7	0.578	0.295	0.738
8	0.716	0.109	0.750
9	0.773	0.340	0.736
10	0.756	0.036	0.754
11	0.618	0.415	0.730
12	0.760	0.328	0.737
13	0.542	0.334	0.736
14	0.587	0.243	0.742
15	0.489	0.362	0.734
16	0.578	0.295	0.738
17	0.644	0.368	0.733
18	0.573	0.462	0.727
19	0.804	0.182	0.745
20	0.422	0.211	0.744
21	0.542	0.352	0.734
22	0.627	0.277	0.740
23	0.676	0.382	0.733
24	0.560	0.383	0.732
25	0.809	0.380	0.734

Frequency histogram for subscale: Brain and behavior



Summary: Developmental

- The KR-20 for this test indicates moderate to low test reliability. The reliability of the test is related to factors such as: 1) low number of test items, 2) small number of examinees, 3) many items that are too difficult or too easy, 4) many items that have low discrimination, 5) the items on the test are not measuring one dominant trait, 6) students do not have enough time to finish all the items on the test. Consider investigating the above factors in order to increase test reliability.
- The distribution of test scores is highly negatively skewed and therefore not normally distributed. This indicates that there is a higher density of examinees obtaining lower test scores than moderate or high test scores.
- The distribution of test scores is platykurtic (too flat; see kurtosis value) and therefore not normally distributed. Consider examining the items that compose this test to investigate why this is the case.

Table of statistics for subscale: Developmental

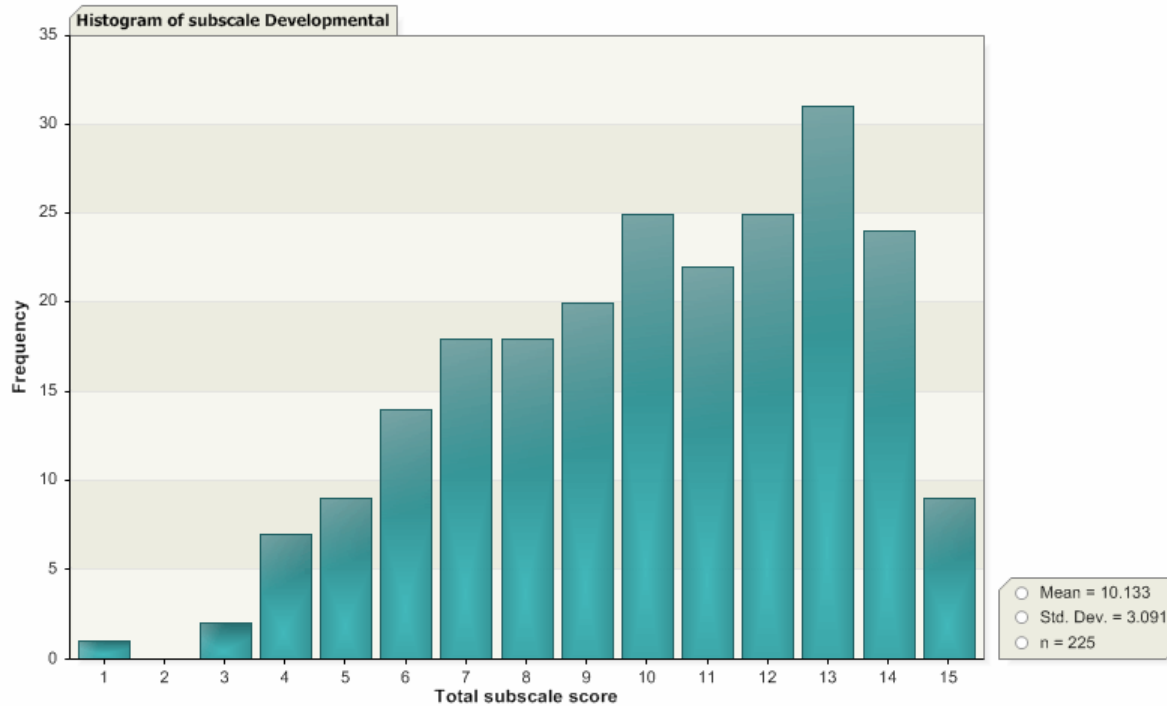
Number of examinees = 225	Standard error of the mean = 0.206
Number of items on test = 65	Standard error of measurement = 1.626
Mean = 0.206	KR-20 reliability = 0.723
Median = 10.000	Spearman-Brown split half reliability coefficient = 0.713
Mode = 13.000	Spearman-Brown prophecy reliability formula = 0.832
Standard deviation = 3.091	Guttman split-half reliability coefficient = 0.708
Variance = 9.554	Skewness (total score) = -0.417
Maximum score = 15	Kurtosis (total score) = -0.662
Minimum score = 1	

Item level statistics for subscale: Developmental

<u>Item</u>	<u>Difficulty</u>	<u>Discrimination (CPBR)</u>	<u>KR-20 if item deleted</u>
51	0.698	0.208	0.696
52	0.800	0.259	0.696
53	0.529	0.423	0.664
54	0.871	0.228	0.705
55	0.631	0.380	0.672

56	0.773	0.328	0.687
57	0.604	0.441	0.663
58	0.538	0.333	0.676
59	0.738	0.468	0.668
60	0.662	0.406	0.670
61	0.773	0.267	0.693
62	0.804	0.267	0.696
63	0.622	0.354	0.675
64	0.493	0.134	0.701
65	0.596	0.345	0.676

Frequency histogram for subscale: Developmental



Summary: Social psychology

- The KR-20 for this test indicates moderate to low test reliability. The reliability of the test is related to factors such as: 1) low number of test items, 2) small number of examinees, 3) many items that are too difficult or too easy, 4) many items that have low discrimination, 5) the items on the test are not measuring one dominant trait, 6) students do not have enough time to finish all the items on the test. Consider investigating the above factors in order to increase test reliability.
- The skewness and kurtosis statistics indicate that the distribution of scores is relatively normally distributed.

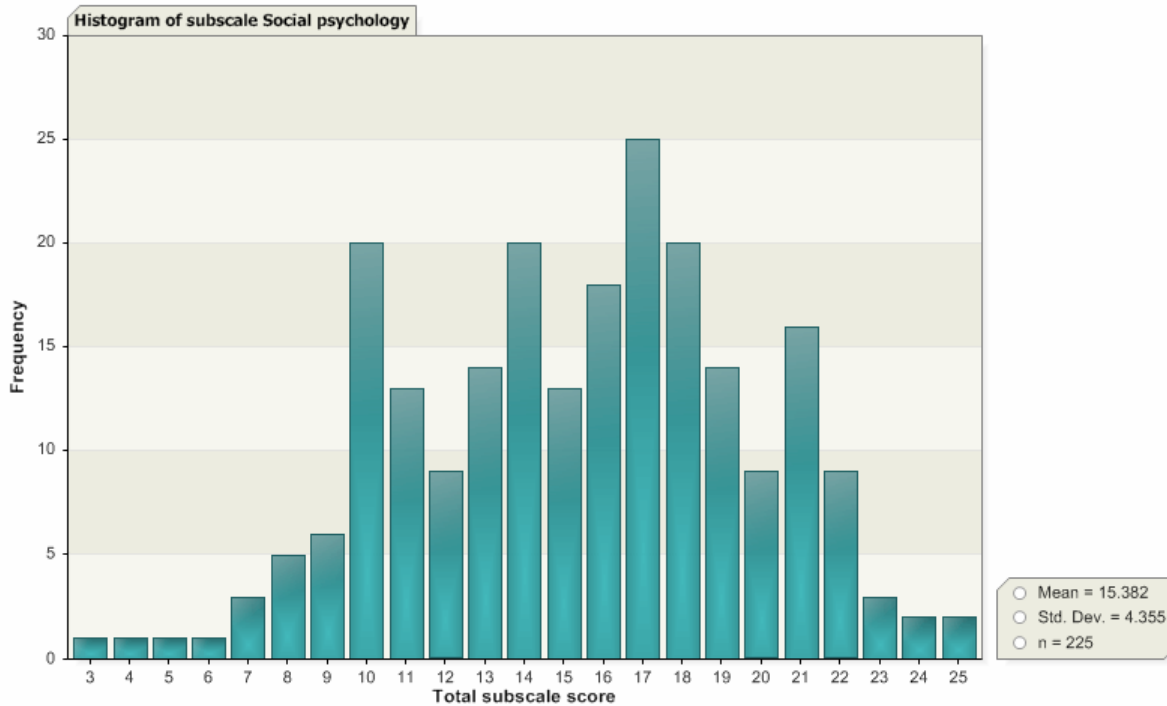
Table of statistics for subscale: Social psychology

Number of examinees = 225	Standard error of the mean = 0.290
Number of items on test = 65	Standard error of measurement = 2.207
Mean = 0.290	KR-20 reliability = 0.743
Median = 16.000	Spearman-Brown split half reliability coefficient = 0.737
Mode = 17.000	Spearman-Brown prophecy reliability formula = 0.849
Standard deviation = 4.355	Guttman split-half reliability coefficient = 0.736
Variance = 18.969	Skewness (total score) = -0.197
Maximum score = 25	Kurtosis (total score) = -0.472
Minimum score = 3	

Item level statistics for subscale: Social psychology

<u>Item</u>	<u>Difficulty</u>	<u>Discrimination (CPBR)</u>	<u>KR-20 if item deleted</u>
26	0.596	0.325	0.717
27	0.618	0.267	0.722
28	0.671	0.285	0.721
29	0.831	0.283	0.727
30	0.640	0.301	0.720
31	0.364	0.127	0.732
32	0.698	0.368	0.716
33	0.542	0.146	0.730
34	0.369	0.272	0.722
35	0.471	0.116	0.732
36	0.458	0.301	0.719
37	0.742	0.335	0.720
38	0.338	0.158	0.730
39	0.924	0.199	0.736
40	0.604	0.332	0.717
41	0.662	0.377	0.715
42	0.582	0.267	0.721
43	0.720	0.190	0.729
44	0.689	0.358	0.717
45	0.631	0.314	0.719
46	0.747	0.378	0.717
47	0.622	0.263	0.722
48	0.671	0.276	0.722
49	0.693	0.440	0.711
50	0.498	0.241	0.723

Frequency histogram for subscale: Social psychology



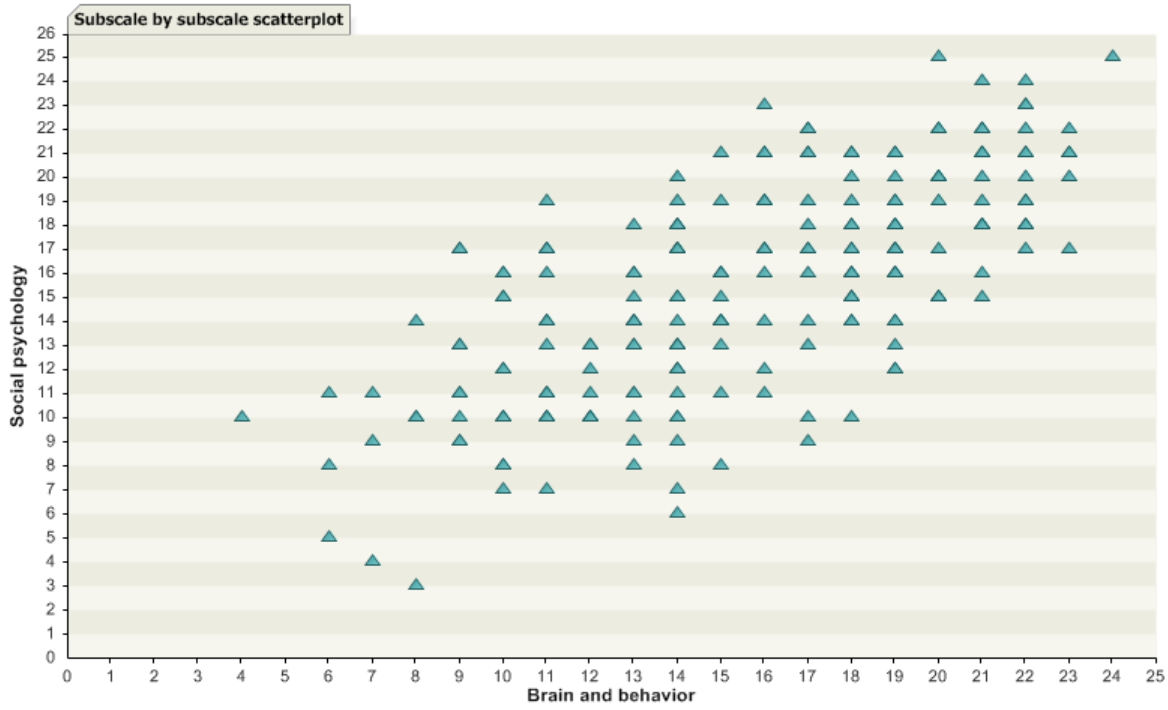
Subscale total score pearson correlation coefficients

- The correlation between subscale Brain and behavior and subscale Social psychology is in the large effect size range.
- The correlation between subscale Brain and behavior and subscale Developmental is in the large effect size range.

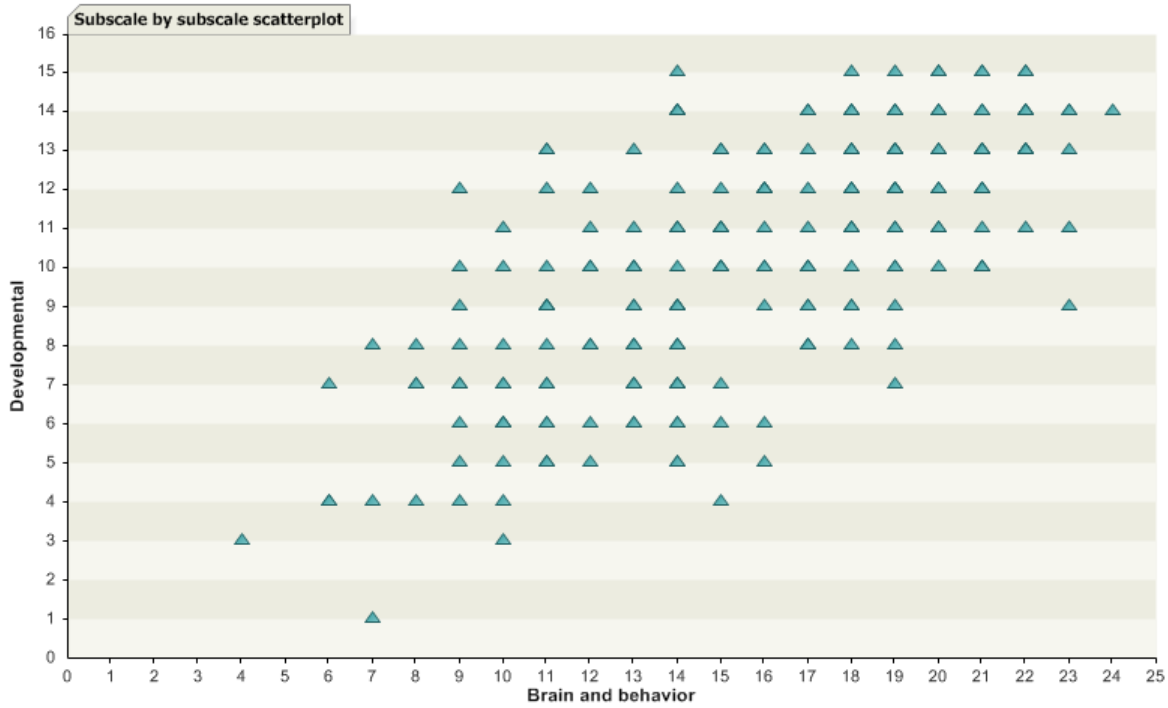
- The correlation between subscale Social psychology and subscale Developmental is in the large effect size range.

	Brain and behavior	Developmental	Social psychology
Brain and behavior	1		
Developmental	0.695 ($p = 0.000$)	1	
Social psychology	0.691 ($p = 0.000$)	0.731 ($p = 0.000$)	1

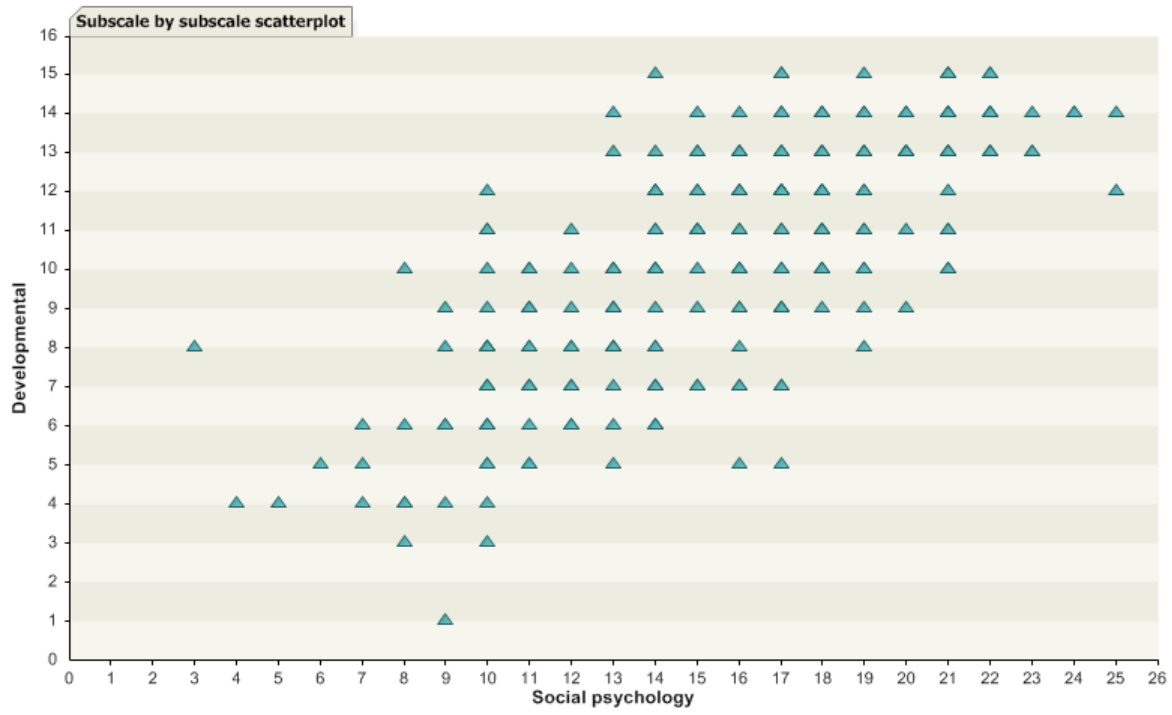
Scatter plot: 1



Scatter plot: 2



Scatter plot: 3



Writing center analysis

Writing center analysis summary table

<u>Writing center</u>	<u>Number of students</u>	<u>Mean</u>	<u>SD</u>	<u>SE Mean</u>	<u>SE Measurement</u>	<u>KR-20</u>
Class 1	113	40.142	11.111	1.045	3.530	0.899
Class 2	54	42.722	9.712	1.322	3.413	0.877
Class 3	58	41.259	10.280	1.350	3.497	0.884

Summary: Class 1

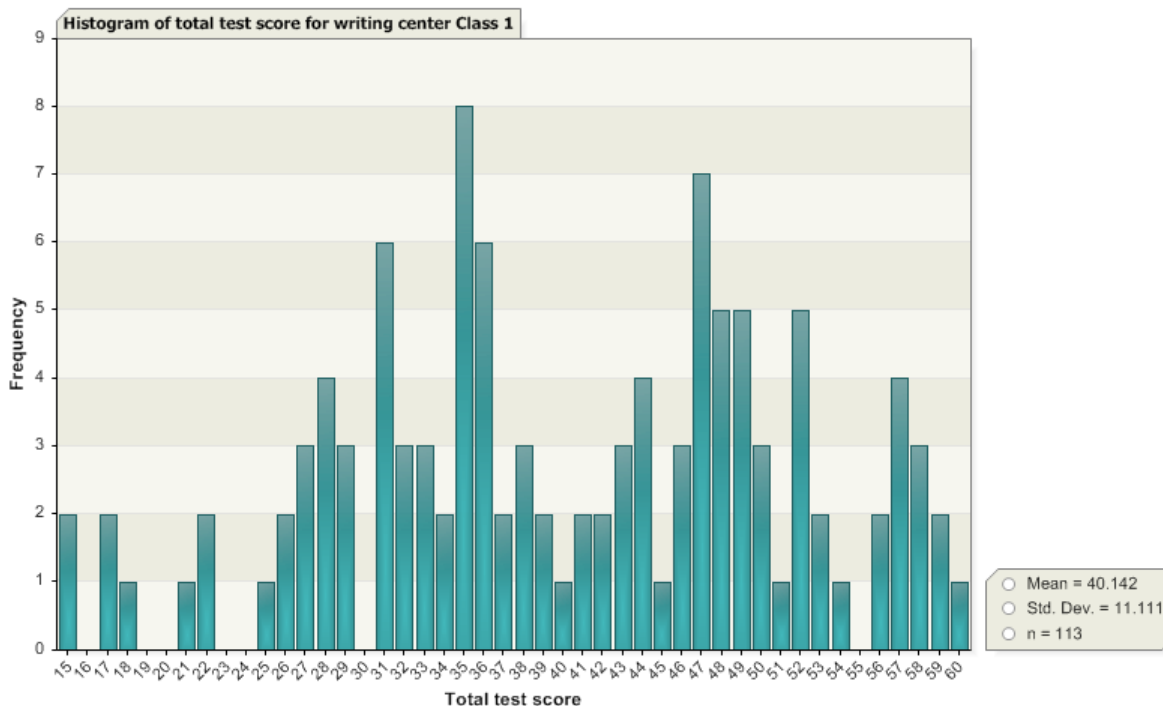
- The skewness and kurtosis statistics indicate that the distribution of scores is relatively normally distributed.
- The means for Class 1 and Class 2 are likely not statistically significantly different as the 95% confidence bands surrounding each mean do overlap.
- The means for Class 1 and Class 3 are likely not statistically significantly different as the 95% confidence bands surrounding each mean do overlap.

Table of statistics for writing center: Class 1

Number of examinees = 225
 Number of items on test = 65
 Mean = 1.045
 Median = 40.000
 Mode = 35.000
 Standard deviation = 11.111
 Variance = 123.444
 Maximum score = 60
 Minimum score = 15

Standard error of the mean = 1.045
 Standard error of measurement = 3.530
 KR-20 reliability = 0.899
 Spearman-Brown split half reliability coefficient = 0.894
 Spearman-Brown prophecy reliability formula = 0.944
 Guttman split-half reliability coefficient = 0.896
 Skewness (total score) = -0.192
 Kurtosis (total score) = -0.697

Frequency histogram for writing center: Class 1



Summary: Class 2

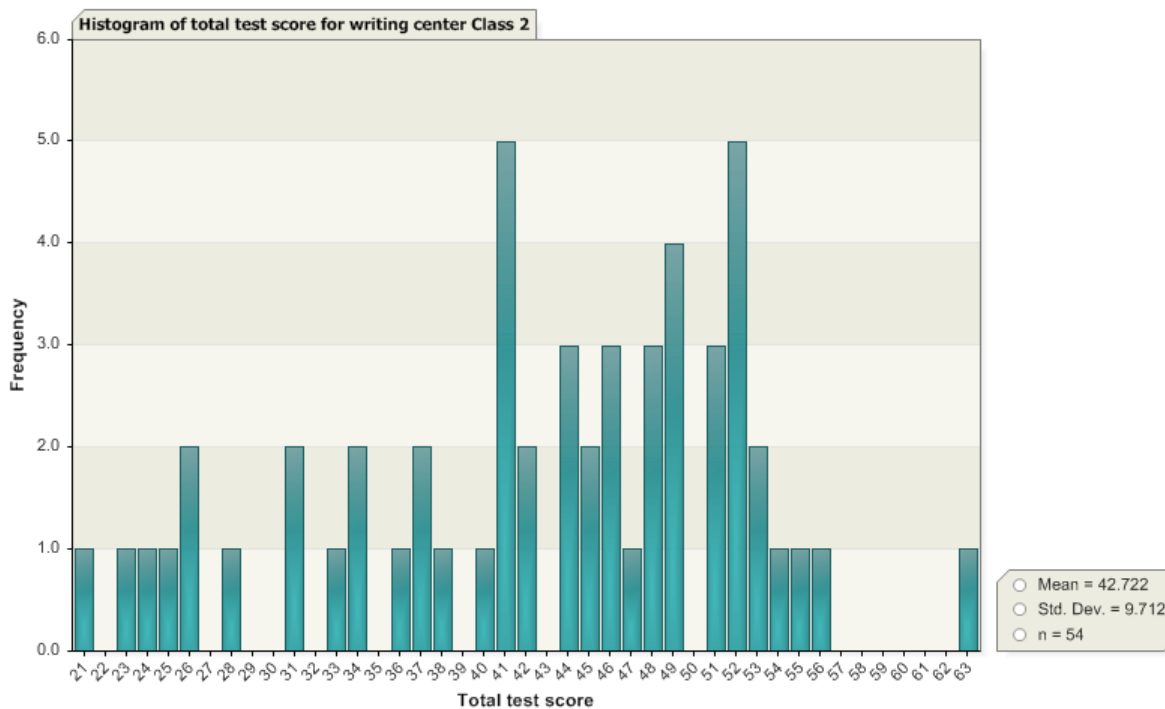
- The skewness and kurtosis statistics indicate that the distribution of scores is relatively normally distributed.
- The means for Class 1 and Class 2 are likely not statistically significantly different as the 95% confidence bands surrounding each mean do overlap.
- The means for Class 2 and Class 3 are likely not statistically significantly different as the 95% confidence bands surrounding each mean do overlap.

Table of statistics for writing center: Class 2

Number of examinees = 225
Number of items on test = 65
Mean = 1.322
Median = 44.500
Mode = 52.000
Standard deviation = 9.712
Variance = 94.318
Maximum score = 63
Minimum score = 21

Standard error of the mean = 1.322
Standard error of measurement = 3.413
KR-20 reliability = 0.877
Spearman-Brown split half reliability coefficient = 0.868
Spearman-Brown prophecy reliability formula = 0.929
Guttman split-half reliability coefficient = 0.874
Skewness (total score) = -0.544
Kurtosis (total score) = -0.366

Frequency histogram for writing center: Class 2



Summary: Class 3

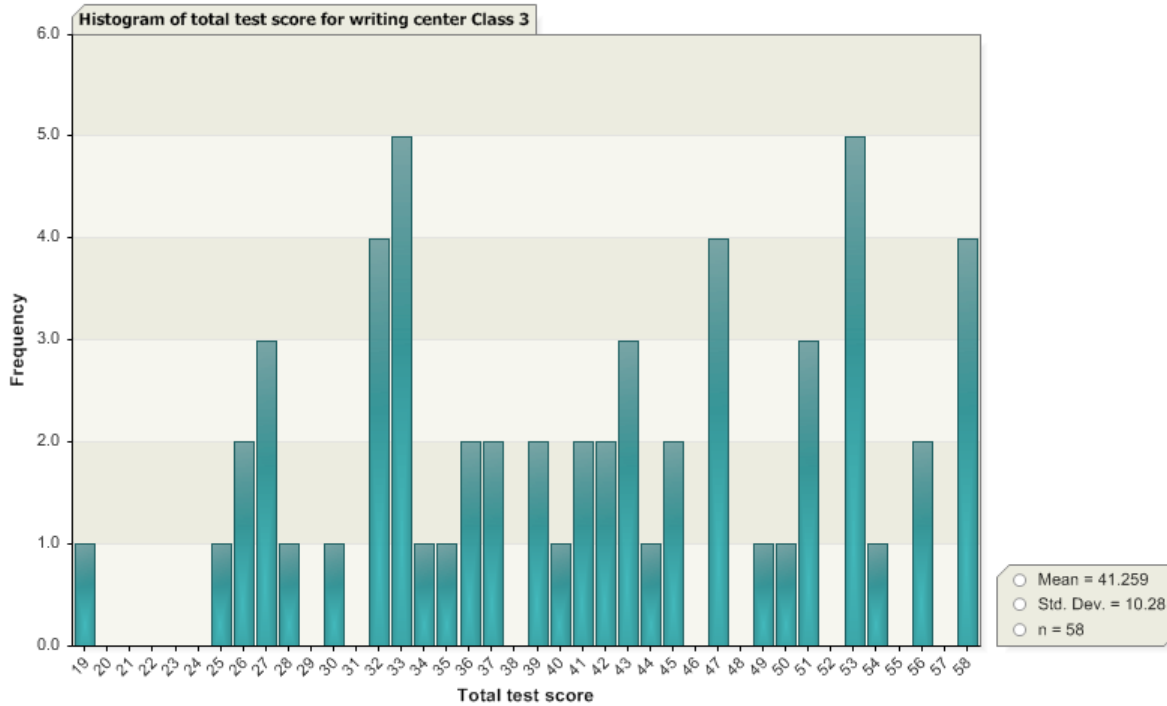
- The skewness and kurtosis statistics indicate that the distribution of scores is relatively normally distributed.
- The means for Class 1 and Class 3 are likely not statistically significantly different as the 95% confidence bands surrounding each mean do overlap.
- The means for Class 2 and Class 3 are likely not statistically significantly different as the 95% confidence bands surrounding each mean do overlap.

Table of statistics for writing center: Class 3

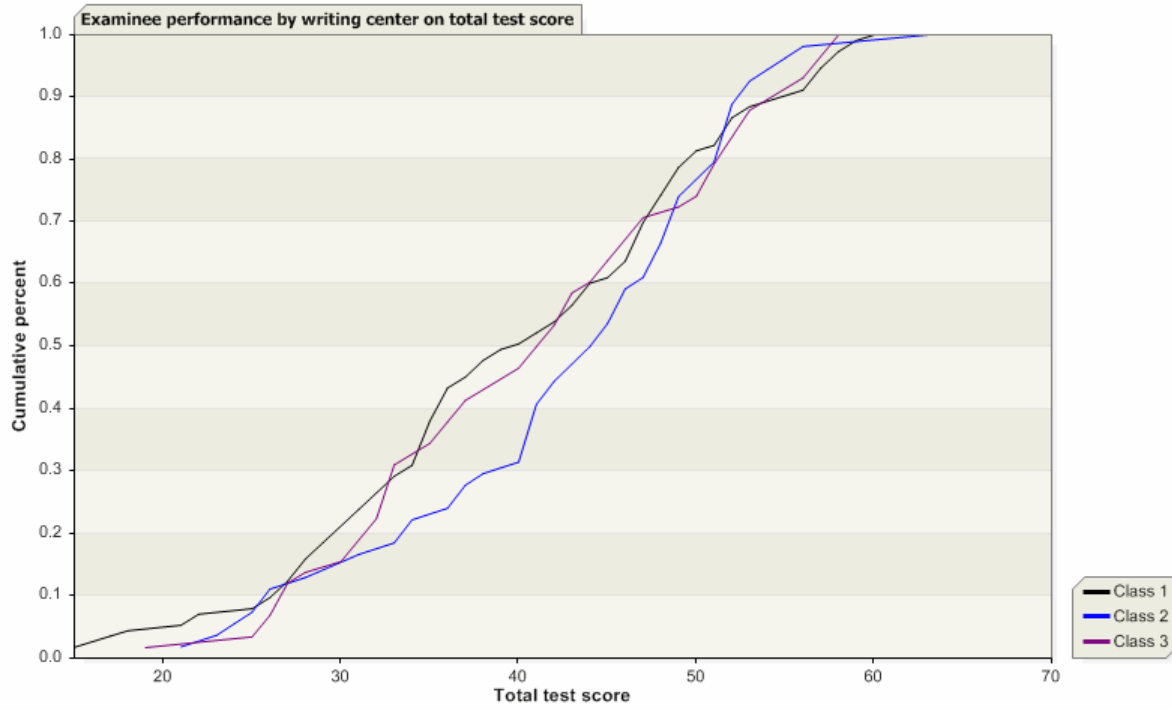
Number of examinees = 225
 Number of items on test = 65
 Mean = 1.350
 Median = 41.500
 Mode = 53.000
 Standard deviation = 10.280
 Variance = 105.669
 Maximum score = 58
 Minimum score = 19

Standard error of the mean = 1.350
 Standard error of measurement = 3.497
 KR-20 reliability = 0.884
 Spearman-Brown split half reliability coefficient = 0.876
 Spearman-Brown prophecy reliability formula = 0.934
 Guttman split-half reliability coefficient = 0.880
 Skewness (total score) = -0.031
 Kurtosis (total score) = -1.026

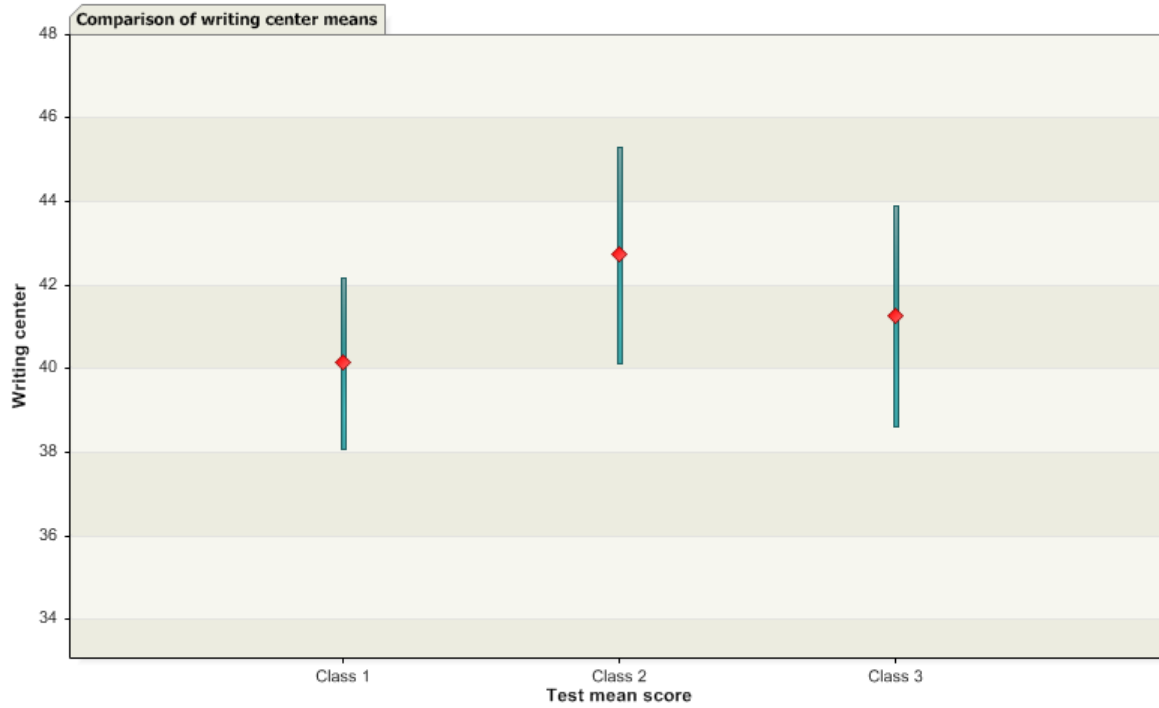
Frequency histogram for writing center: Class 3



Graph of cumulative percent by writing center



Comparison of writing center means



Collusion detection

Summary

The item responses for all examinees have been compared
2 pairs of examinees have been identified by the collusion detection analysis.

Detailed collusion detection report (all examinees)

	<u>Examinee ID</u>	<u>Writing center</u>	<u>B-Index</u>	<u>PAIR1</u>	<u>PAIR2</u>	<u>MESA</u>	<u>g2</u>
Pair 1	666	Class	High	High	High	High	High
	669	3	14.772	2535.000	3900.000	1.212E-017	12.324
		Class					12.324
		3					
Pair 2	672	Class	High	Moderate	High	N/A	Moderate
	675	3	9.536	1170.000	1800.000		6.742
		Class					6.742
		3					

Number of identical responses for examinee pair: 1

<u>Item Number</u>	<u>Examinee 666</u>	<u>Examinee 669</u>	<u>Correct answer</u>
1	1	1	3
2	3	3	2
3	4	4	4
4	4	4	3
5	3	3	3
6	2	2	2
7	2	2	1
8	4	4	4
9	2	2	1
10	3	3	3
11	3	3	1
12	2	2	2
13	4	4	4
14	4	4	3
15	2	2	4
16	3	3	2
17	4	4	3
18	2	2	4
19	1	1	1
20	2	2	3
21	3	3	1
22	3	3	3
23	4	4	4
24	3	3	1
25	1	1	4
26	2	2	1
27	3	3	4
28	2	2	4
29	4	4	2
30	1	1	2
31	3	3	3
32	1	1	1
33	4	4	4
34	2	2	2
35	4	4	2
36	2	2	4
37	4	4	3
38	2	2	2
39	1	1	1

40	4	4	1
41	1	1	2
42	3	3	3
43	3	3	3
44	2	2	2
45	2	2	3
46	1	1	4
47	2	2	3
48	4	4	4
49	4	4	1
50	1	1	3
51	2	2	2
52	2	2	4
53	3	3	1
54	1	1	4
55	3	3	2
56	4	4	4
57	4	4	2
58	1	1	2
59	2	2	1
60	1	1	1
61	4	4	4
62	1	1	1
63	2	2	2
64	1	1	3
65	3	3	4

Note: Cells shaded in red indicate an incorrect response. Cells shaded in green indicate a correct response.
 Identical correct responses = 26
 Identical incorrect responses = 39

Number of identical responses for examinee pair: 2

<u>Item Number</u>	<u>Examinee 672</u>	<u>Examinee 675</u>	<u>Correct answer</u>
1	3	3	3
2	1	1	2
3	4	4	4
4	4	4	3
5	3	3	3
6	1	1	2
7	1	1	1
8	4	4	4
9	1	1	1
10	3	3	3
11	1	1	1
12	2	2	2
13	4	4	4
14	3	3	3
15	3	3	4
16	2	2	2
17	2	2	3
18	4	4	4
19	1	1	1
20	3	3	3
21	1	1	1
22	3	3	3
23	2	2	4
24	1	1	1
25	4	4	4
26	1	1	1
27	4	4	4
28	4	4	4
29	2	2	2
30	1	1	2

31	4	4	3
32	4	4	1
33	2	2	4
34	3	3	2
35	3	3	2
36	4	4	4
37	3	3	3
38	3	3	2
39	1	1	1
40	1	1	1
41	2	2	2
42	3	3	3
43	3	3	3
44	3	3	2
45	3	3	3
46	4	4	4
47	3	3	3
48	4	4	4
49	1	1	1
50	4	4	3
51	1	1	2
52	4	4	4
53	1	1	1
54	4	4	4
55	2	2	2
56	4	4	4
57	4	4	2
58	2	2	2
59	1	1	1
60	1	1	1
61	1	1	4
62	1	1	1
63	2	2	2
64	3	3	3
65	4	4	4

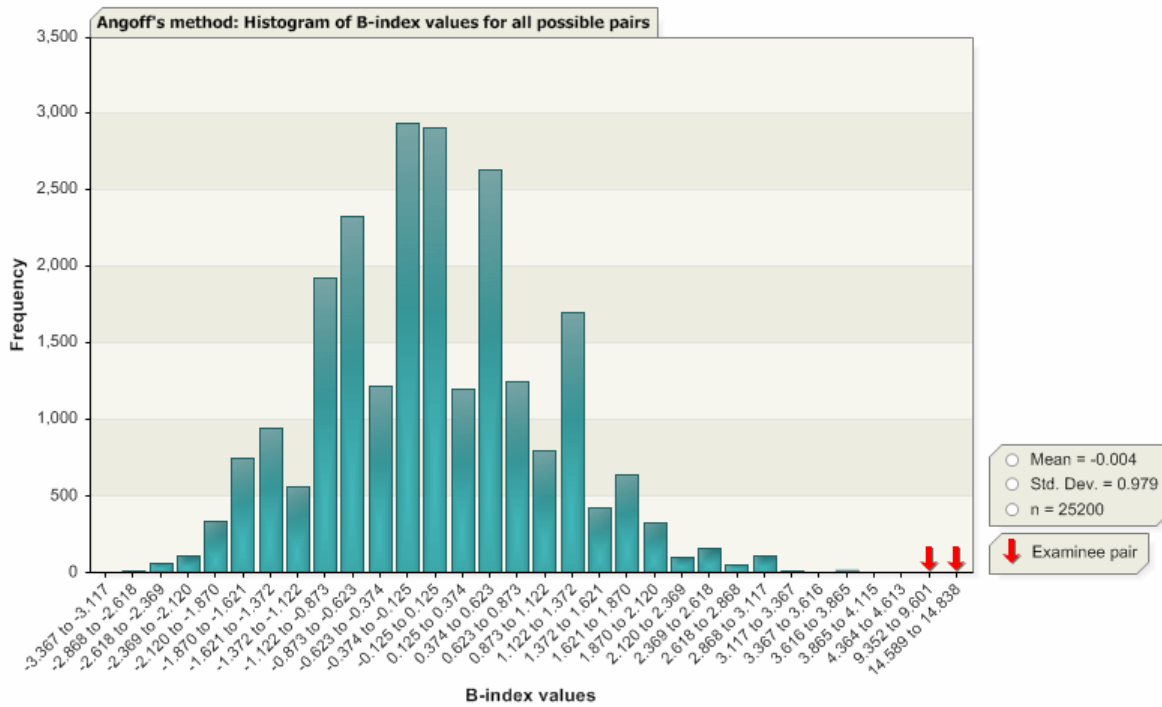
Note: Cells shaded in red indicate an incorrect response. Cells shaded in green indicate a correct response.
 Identical correct responses = 47
 Identical incorrect responses = 18

Angoff's B-Index collusion detection method

Examinee pairs that exceeded collusion detection threshold for this method:

	<u>Examinee ID</u>	<u>Writing center</u>	<u>B-Index</u>	<u>Statistical certainty</u>
Examinee pair 1	666	Class	14.772	High
	669	3		
Examinee pair 2	672 675	Class	9.536	High
		3		
		Class		
		3		

Histogram of B-index values for all possible pairs

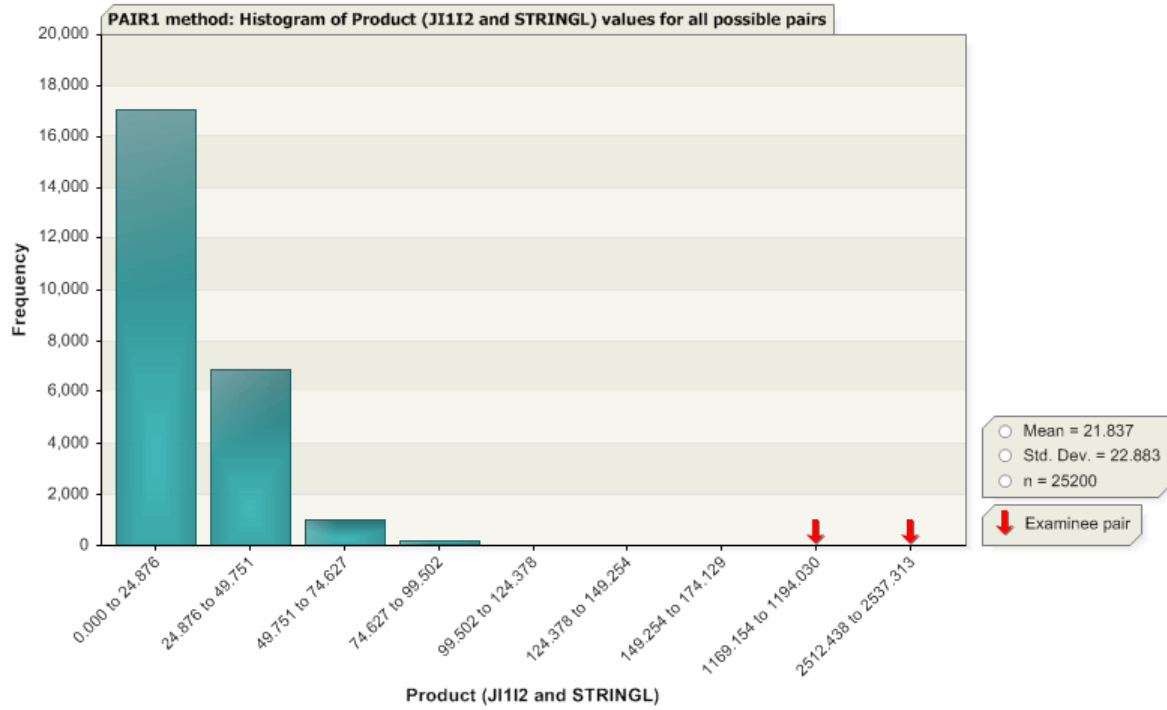


PAIR1 collusion detection method

Examinee pairs that exceeded collusion detection threshold for this method:

	<u>Examinee ID</u>	<u>Writing center</u>	<u>J112</u>	<u>STRINGL value</u>	<u>Prod</u>	<u>Statistical certainty</u>
Examinee pair 1	666 669	Class 3 Class 3	39.000	65.000	2535	High
Examinee pair 2	672 675	Class 3 Class 3	18.000	65.000	1170	Moderate

Histogram of PAIR1 method values for all possible pairs

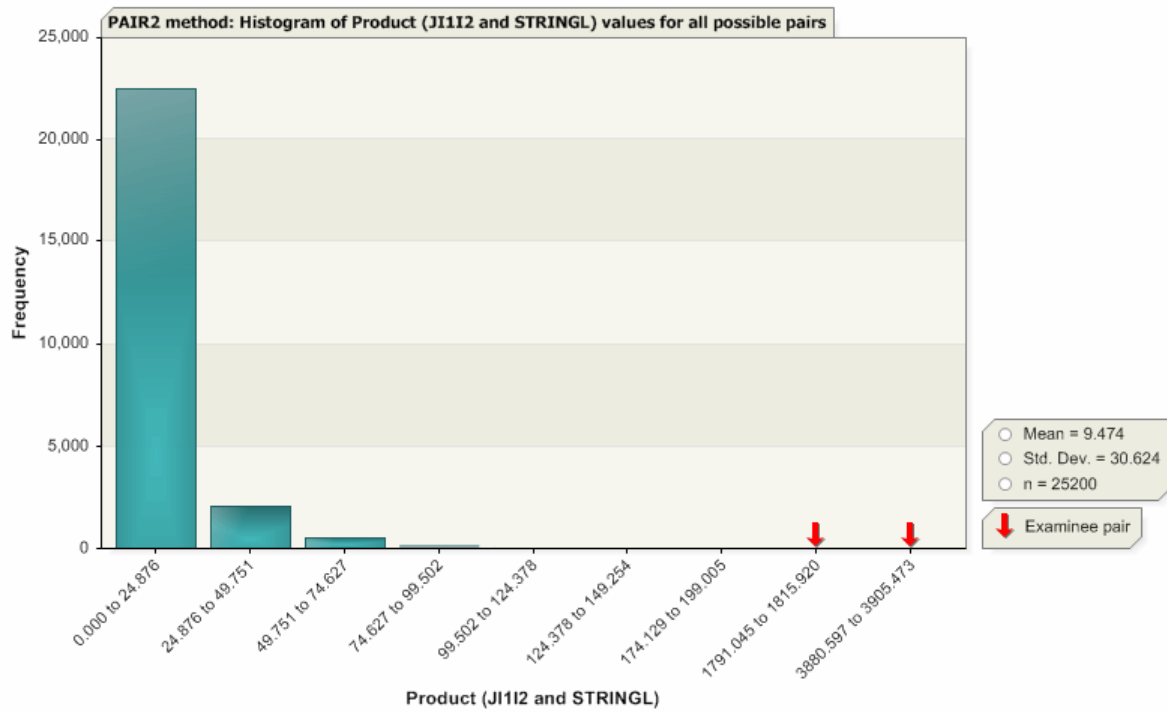


PAIR2 collusion detection method

Examinee pairs that exceeded collusion detection threshold for this method:

	<u>Examinee ID</u>	<u>Writing center</u>	<u>JI112</u>	<u>STRINGL value</u>	<u>Prod</u>	<u>Statistical certainty</u>
Examinee pair 1	666	Class	100.000	39.000	3900	High
	669	3				
Examinee pair 2	672 675	Class	100.000	18.000	1800	High
		3				
		Class				
		3				

Histogram of PAIR2 method values for all possible pairs

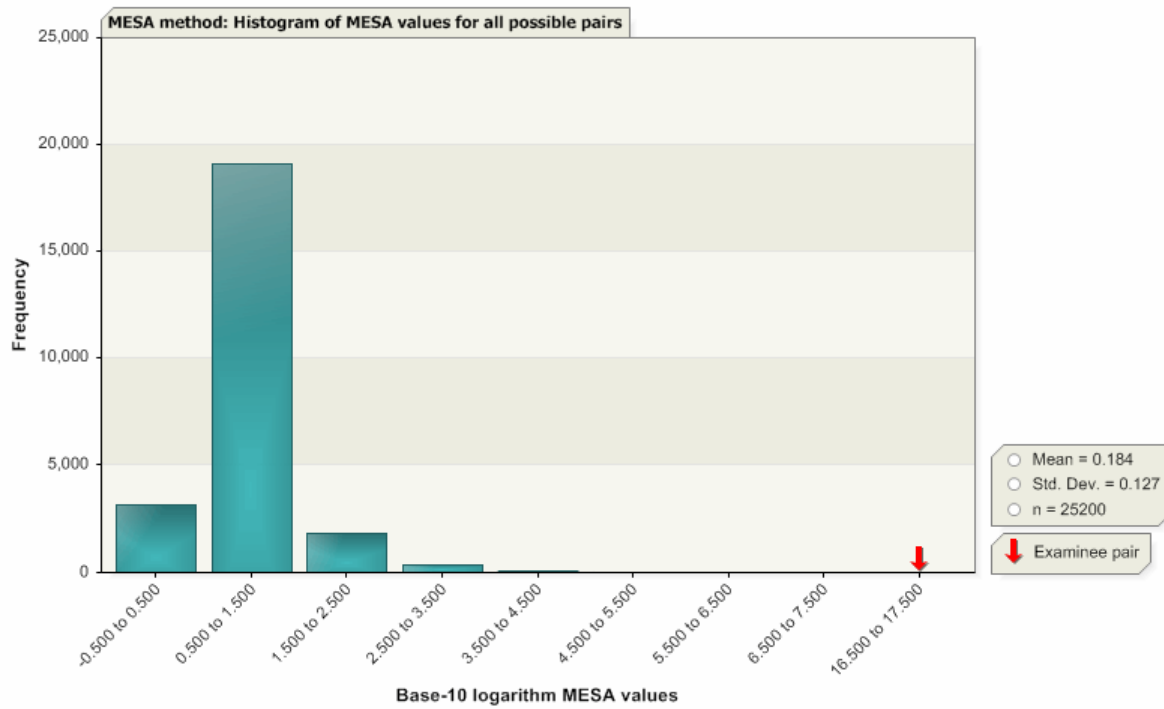


MESA collusion detection method

Examinee pairs that exceeded collusion detection threshold for this method:

	<u>Examinee ID</u>	<u>Writing center</u>	<u>MESA value</u>	<u>Statistical certainty</u>
Examinee pair 1	666 669	Class 3 Class 3	1.212E-017	High

Histogram of MESA method values for all possible pairs



g2 collusion detection method

Examinee pairs that exceeded collusion detection threshold for this method:

	<u>Examinee ID</u>	<u>Writing center</u>	<u>g2 value</u>	<u>Statistical certainty</u>
Examinee pair 1	666	Class	12.324	High
	669	3 Class 3	12.324	
Examinee pair 2	672	Class	6.742	Moderate
	675	3 Class 3	6.742	

Histogram of g2 method values for all possible pairs

