```
NPAR TESTS
  /FRIEDMAN=angle circle_area vertical_bar horizontal_curve horizontal_direction horizontal_sli
  /STATISTICS DESCRIPTIVES
  /MISSING LISTWISE.
```

# NPar Tests

**Notes**

| | | |
|---|---|---|
| Output Created | | 06-Jul-2015 10:00:36 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 32 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for all tests are based on cases with no missing data for any variables used. |
| Syntax | | NPAR TESTS<br>  /FRIEDMAN=angle circle_area vertical_bar horizontal_curve horizontal_direction horizontal_slider vertical_curve square_area texture vertical_direction vertical_slider horizontal_bar<br>  /STATISTICS DESCRIPTIVES<br>  /MISSING LISTWISE. |
| Resources | Processor Time | 00 00:00:00.015 |
| | Elapsed Time | 00 00:00:00.008 |
| | Number of Cases Allowed[a] | 46260 |

a. Based on availability of workspace memory.

[DataSet0]

**Descriptive Statistics**

|  | N | Mean | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| angle | 32 | 2.9725 | 1.38797 | 1.10 | 7.22 |
| circle_area | 32 | 3.5047 | 2.83231 | .98 | 15.21 |
| vertical_bar | 32 | 3.3159 | 3.06403 | .85 | 16.39 |
| horizontal_curve | 32 | 3.7900 | 2.81816 | 1.46 | 17.74 |
| horizontal_direction | 32 | 4.6672 | 3.61480 | 1.32 | 17.20 |
| horizontal_slider | 32 | 3.0788 | 1.58846 | .96 | 6.90 |
| vertical_curve | 32 | 4.3259 | 2.48764 | 2.25 | 12.77 |
| square_area | 32 | 5.3016 | 3.77467 | .90 | 16.55 |
| texture | 32 | 10.1253 | 13.33839 | 3.74 | 79.05 |
| vertical_direction | 32 | 3.7284 | 3.40508 | .96 | 17.97 |
| vertical_slider | 32 | 2.7894 | 1.79210 | 1.30 | 9.40 |
| horizontal_bar | 32 | 2.9222 | 1.94137 | .67 | 10.41 |

# Friedman Test

**Ranks**

|  | Mean Rank |
|---|---|
| angle | 4.84 |
| circle_area | 5.28 |
| vertical_bar | 4.66 |
| horizontal_curve | 6.83 |
| horizontal_direction | 8.66 |
| horizontal_slider | 4.95 |
| vertical_curve | 8.23 |
| square_area | 9.00 |
| texture | 11.34 |
| vertical_direction | 6.05 |
| vertical_slider | 4.09 |
| horizontal_bar | 4.06 |

**Test Statistics[a]**

| N | 32 |
|---|---|
| Chi-Square | 146.332 |
| df | 11 |
| Asymp. Sig. | .000 |

a. Friedman Test

```
NPAR TESTS
  /WILCOXON=angle angle angle angle angle angle angle angle angle angle angle WITH circle_area
(PAIRED)
  /STATISTICS DESCRIPTIVES
  /MISSING ANALYSIS.
```

## NPar Tests

**Notes**

| Output Created | | 06-Jul-2015 10:01:35 |
|---|---|---|
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 32 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for each test are based on all cases with valid data for the variable(s) used in that test. |
| Syntax | | NPAR TESTS<br>  /WILCOXON=angle angle angle angle angle angle angle angle angle angle WITH circle_area vertical_bar horizontal_curve horizontal_slider horizontal_direction vertical_curve square_area texture vertical_direction horizontal_bar vertical_slider<br>(PAIRED)<br>  /STATISTICS DESCRIPTIVES<br>  /MISSING ANALYSIS. |
| Resources | Processor Time | 00 00:00:00.000 |
| | Elapsed Time | 00 00:00:00.022 |
| | Number of Cases Allowed[a] | 46260 |

a. Based on availability of workspace memory.

```
[DataSet0]
```

**Descriptive Statistics**

|  | N | Mean | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| angle | 32 | 2.9725 | 1.38797 | 1.10 | 7.22 |
| circle_area | 32 | 3.5047 | 2.83231 | .98 | 15.21 |
| vertical_bar | 32 | 3.3159 | 3.06403 | .85 | 16.39 |
| horizontal_curve | 32 | 3.7900 | 2.81816 | 1.46 | 17.74 |
| horizontal_slider | 32 | 3.0788 | 1.58846 | .96 | 6.90 |
| horizontal_direction | 32 | 4.6672 | 3.61480 | 1.32 | 17.20 |
| vertical_curve | 32 | 4.3259 | 2.48764 | 2.25 | 12.77 |
| square_area | 32 | 5.3016 | 3.77467 | .90 | 16.55 |
| texture | 32 | 10.1253 | 13.33839 | 3.74 | 79.05 |
| vertical_direction | 32 | 3.7284 | 3.40508 | .96 | 17.97 |
| horizontal_bar | 32 | 2.9222 | 1.94137 | .67 | 10.41 |
| vertical_slider | 32 | 2.7894 | 1.79210 | 1.30 | 9.40 |

# Wilcoxon Signed Ranks Test

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| circle_area - angle | Negative Ranks | 14[a] | 15.79 | 221.00 |
| | Positive Ranks | 18[b] | 17.06 | 307.00 |
| | Ties | 0[c] | | |
| | Total | 32 | | |
| vertical_bar - angle | Negative Ranks | 17[d] | 16.26 | 276.50 |
| | Positive Ranks | 15[e] | 16.77 | 251.50 |
| | Ties | 0[f] | | |
| | Total | 32 | | |
| horizontal_curve - angle | Negative Ranks | 9[g] | 13.11 | 118.00 |
| | Positive Ranks | 23[h] | 17.83 | 410.00 |
| | Ties | 0[i] | | |
| | Total | 32 | | |
| horizontal_slider - angle | Negative Ranks | 18[j] | 14.89 | 268.00 |
| | Positive Ranks | 14[k] | 18.57 | 260.00 |
| | Ties | 0[l] | | |
| | Total | 32 | | |
| horizontal_direction - angle | Negative Ranks | 5[m] | 13.60 | 68.00 |
| | Positive Ranks | 27[n] | 17.04 | 460.00 |
| | Ties | 0[o] | | |
| | Total | 32 | | |
| vertical_curve - angle | Negative Ranks | 7[p] | 8.14 | 57.00 |
| | Positive Ranks | 25[q] | 18.84 | 471.00 |
| | Ties | 0[r] | | |
| | Total | 32 | | |
| square_area - angle | Negative Ranks | 6[s] | 7.67 | 46.00 |
| | Positive Ranks | 26[t] | 18.54 | 482.00 |
| | Ties | 0[u] | | |
| | Total | 32 | | |
| texture - angle | Negative Ranks | 1[v] | 3.00 | 3.00 |
| | Positive Ranks | 31[w] | 16.94 | 525.00 |
| | Ties | 0[x] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| vertical_direction - angle | Negative Ranks | 11[y] | 15.18 | 167.00 |
| | Positive Ranks | 21[z] | 17.19 | 361.00 |
| | Ties | 0[aa] | | |
| | Total | 32 | | |
| horizontal_bar - angle | Negative Ranks | 17[ab] | 18.03 | 306.50 |
| | Positive Ranks | 15[ac] | 14.77 | 221.50 |
| | Ties | 0[ad] | | |
| | Total | 32 | | |
| vertical_slider - angle | Negative Ranks | 18[ae] | 18.58 | 334.50 |
| | Positive Ranks | 14[af] | 13.82 | 193.50 |
| | Ties | 0[ag] | | |
| | Total | 32 | | |

a. circle_area < angle
b. circle_area > angle
c. circle_area = angle
d. vertical_bar < angle
e. vertical_bar > angle
f. vertical_bar = angle
g. horizontal_curve < angle
h. horizontal_curve > angle
i. horizontal_curve = angle
j. horizontal_slider < angle
k. horizontal_slider > angle
l. horizontal_slider = angle
m. horizontal_direction < angle
n. horizontal_direction > angle
o. horizontal_direction = angle
p. vertical_curve < angle
q. vertical_curve > angle
r. vertical_curve = angle
s. square_area < angle
t. square_area > angle
u. square_area = angle
v. texture < angle
w. texture > angle
x. texture = angle
y. vertical_direction < angle
z. vertical_direction > angle
aa. vertical_direction = angle
ab. horizontal_bar < angle
ac. horizontal_bar > angle
ad. horizontal_bar = angle
ae. vertical_slider < angle
af. vertical_slider > angle
ag. vertical_slider = angle

**Test Statistics[c]**

| | circle_area - angle | vertical_bar - angle | horizontal_ curve - angle | horizontal_ slider - angle | horizontal_ direction - angle |
|---|---|---|---|---|---|
| Z | -.804[a] | -.234[b] | -2.730[a] | -.075[b] | -3.665[a] |
| Asymp. Sig. (2-tailed) | .421 | .815 | .006 | .940 | .000 |

**Test Statistics[c]**

| | vertical_curve - angle | square_area - angle | texture - angle | vertical_ direction - angle |
|---|---|---|---|---|
| Z | -3.871[a] | -4.076[a] | -4.881[a] | -1.814[a] |
| Asymp. Sig. (2-tailed) | .000 | .000 | .000 | .070 |

**Test Statistics[c]**

| | horizontal_bar - angle | vertical_slider - angle |
|---|---|---|
| Z | -.795[b] | -1.318[b] |
| Asymp. Sig. (2-tailed) | .427 | .187 |

a. Based on negative ranks.
b. Based on positive ranks.
c. Wilcoxon Signed Ranks Test

```
NPAR TESTS
  /WILCOXON=circle_area circle_area circle_area circle_area circle_area circle_area circle_area
vertical_direction vertical_slider horizontal_bar (PAIRED)
  /MISSING ANALYSIS.
```

# NPar Tests

**Notes**

| | | |
|---|---|---|
| Output Created | | 06-Jul-2015 10:05:21 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 32 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for each test are based on all cases with valid data for the variable(s) used in that test. |
| Syntax | | NPAR TESTS<br>  /WILCOXON=circle_area<br>circle_area circle_area circle_area<br>circle_area circle_area circle_area<br>circle_area circle_area circle_area<br>WITH vertical_bar horizontal_curve<br>horizontal_direction horizontal_slider<br>vertical_curve square_area texture<br>vertical_direction vertical_slider<br>horizontal_bar (PAIRED)<br>  /MISSING ANALYSIS. |
| Resources | Processor Time | 00 00:00:00.016 |
| | Elapsed Time | 00 00:00:00.012 |
| | Number of Cases Allowed[a] | 49152 |

a. Based on availability of workspace memory.

`[DataSet0]`

# Wilcoxon Signed Ranks Test

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| vertical_bar - circle_area | Negative Ranks | 15[a] | 19.80 | 297.00 |
| | Positive Ranks | 17[b] | 13.59 | 231.00 |
| | Ties | 0[c] | | |
| | Total | 32 | | |
| horizontal_curve - circle_area | Negative Ranks | 12[d] | 16.71 | 200.50 |
| | Positive Ranks | 20[e] | 16.38 | 327.50 |
| | Ties | 0[f] | | |
| | Total | 32 | | |
| horizontal_direction - circle_area | Negative Ranks | 7[g] | 17.21 | 120.50 |
| | Positive Ranks | 25[h] | 16.30 | 407.50 |
| | Ties | 0[i] | | |
| | Total | 32 | | |
| horizontal_slider - circle_area | Negative Ranks | 19[j] | 15.89 | 302.00 |
| | Positive Ranks | 13[k] | 17.38 | 226.00 |
| | Ties | 0[l] | | |
| | Total | 32 | | |
| vertical_curve - circle_area | Negative Ranks | 8[m] | 15.25 | 122.00 |
| | Positive Ranks | 24[n] | 16.92 | 406.00 |
| | Ties | 0[o] | | |
| | Total | 32 | | |
| square_area - circle_area | Negative Ranks | 4[p] | 8.13 | 32.50 |
| | Positive Ranks | 28[q] | 17.70 | 495.50 |
| | Ties | 0[r] | | |
| | Total | 32 | | |
| texture - circle_area | Negative Ranks | 1[s] | 4.00 | 4.00 |
| | Positive Ranks | 31[t] | 16.90 | 524.00 |
| | Ties | 0[u] | | |
| | Total | 32 | | |
| vertical_direction - circle_area | Negative Ranks | 15[v] | 14.87 | 223.00 |
| | Positive Ranks | 17[w] | 17.94 | 305.00 |
| | Ties | 0[x] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| vertical_slider - circle_area | Negative Ranks | 20[y] | 17.80 | 356.00 |
| | Positive Ranks | 12[z] | 14.33 | 172.00 |
| | Ties | 0[aa] | | |
| | Total | 32 | | |
| horizontal_bar - circle_area | Negative Ranks | 18[ab] | 18.97 | 341.50 |
| | Positive Ranks | 14[ac] | 13.32 | 186.50 |
| | Ties | 0[ad] | | |
| | Total | 32 | | |

a. vertical_bar < circle_area
b. vertical_bar > circle_area
c. vertical_bar = circle_area
d. horizontal_curve < circle_area
e. horizontal_curve > circle_area
f. horizontal_curve = circle_area
g. horizontal_direction < circle_area
h. horizontal_direction > circle_area
i. horizontal_direction = circle_area
j. horizontal_slider < circle_area
k. horizontal_slider > circle_area
l. horizontal_slider = circle_area
m. vertical_curve < circle_area
n. vertical_curve > circle_area
o. vertical_curve = circle_area
p. square_area < circle_area
q. square_area > circle_area
r. square_area = circle_area
s. texture < circle_area
t. texture > circle_area
u. texture = circle_area
v. vertical_direction < circle_area
w. vertical_direction > circle_area
x. vertical_direction = circle_area
y. vertical_slider < circle_area
z. vertical_slider > circle_area
aa. vertical_slider = circle_area
ab. horizontal_bar < circle_area
ac. horizontal_bar > circle_area
ad. horizontal_bar = circle_area

**Test Statistics[c]**

| | vertical_bar - circle_area | horizontal_ curve - circle_area | horizontal_ direction - circle_area | horizontal_ slider - circle_area | vertical_curve - circle_area |
|---|---|---|---|---|---|
| Z | -.617[a] | -1.187[b] | -2.684[b] | -.711[a] | -2.655[b] |
| Asymp. Sig. (2-tailed) | .537 | .235 | .007 | .477 | .008 |

**Test Statistics[c]**

| | square_area - circle_area | texture - circle_area | vertical_direction - circle_area | vertical_slider - circle_area | horizontal_bar - circle_area |
|---|---|---|---|---|---|
| Z | -4.329[b] | -4.862[b] | -.767[b] | -1.720[a] | -1.449[a] |
| Asymp. Sig. (2-tailed) | .000 | .000 | .443 | .085 | .147 |

a. Based on positive ranks.
b. Based on negative ranks.
c. Wilcoxon Signed Ranks Test

```
NPAR TESTS
  /WILCOXON=horizontal_curve horizontal_curve horizontal_curve horizontal_curve horizontal_curv
vertical_slider horizontal_bar (PAIRED)
  /MISSING ANALYSIS.
```

# NPar Tests

**Notes**

| Output Created | | 06-Jul-2015 10:06:49 |
|---|---|---|
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 32 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for each test are based on all cases with valid data for the variable(s) used in that test. |
| Syntax | | NPAR TESTS<br> /WILCOXON=horizontal_curve horizontal_curve horizontal_curve horizontal_curve horizontal_curve horizontal_curve horizontal_curve horizontal_curve WITH horizontal_direction horizontal_slider vertical_curve square_area texture vertical_direction vertical_slider horizontal_bar (PAIRED)<br> /MISSING ANALYSIS. |
| Resources | Processor Time | 00 00:00:00.016 |
| | Elapsed Time | 00 00:00:00.007 |
| | Number of Cases Allowed[a] | 56173 |

a. Based on availability of workspace memory.

# Wilcoxon Signed Ranks Test

**Test Statistics[c]**

| | horizontal_ direction - horizontal_ curve | horizontal_ slider - horizontal_ curve | vertical_curve - horizontal_ curve | square_area - horizontal_ curve | texture - horizontal_ curve |
|---|---|---|---|---|---|
| Z | -2.413[a] | -1.950[b] | -2.207[a] | -2.842[a] | -4.376[a] |
| Asymp. Sig. (2-tailed) | .016 | .051 | .027 | .004 | .000 |

**Test Statistics[c]**

| | vertical_ direction - horizontal_ curve | vertical_slider - horizontal_ curve | horizontal_bar - horizontal_ curve |
|---|---|---|---|
| Z | -1.412[b] | -2.487[b] | -2.412[b] |
| Asymp. Sig. (2-tailed) | .158 | .013 | .016 |

a. Based on negative ranks.
b. Based on positive ranks.
c. Wilcoxon Signed Ranks Test

```
NPAR TESTS
  /WILCOXON=horizontal_direction horizontal_direction horizontal_direction horizontal_direction
vertical_slider (PAIRED)
  /MISSING ANALYSIS.
```

# NPar Tests

**Notes**

| | | |
|---|---|---|
| Output Created | | 06-Jul-2015 10:08:01 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 32 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for each test are based on all cases with valid data for the variable(s) used in that test. |
| Syntax | | NPAR TESTS<br>  /WILCOXON=horizontal_direction<br>horizontal_direction<br>horizontal_direction<br>horizontal_direction<br>horizontal_direction<br>horizontal_direction WITH<br>horizontal_slider vertical_curve<br>square_area texture<br>vertical_direction horizontal_bar<br>vertical_slider (PAIRED)<br>  /MISSING ANALYSIS. |
| Resources | Processor Time | 00 00:00:00.000 |
| | Elapsed Time | 00 00:00:00.008 |
| | Number of Cases Allowed[a] | 60494 |

a. Based on availability of workspace memory.

[DataSet0]

# Wilcoxon Signed Ranks Test

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| horizontal_slider - horizontal_direction | Negative Ranks | 27[a] | 16.78 | 453.00 |
| | Positive Ranks | 5[b] | 15.00 | 75.00 |
| | Ties | 0[c] | | |
| | Total | 32 | | |
| vertical_curve - horizontal_direction | Negative Ranks | 18[d] | 18.03 | 324.50 |
| | Positive Ranks | 14[e] | 14.54 | 203.50 |
| | Ties | 0[f] | | |
| | Total | 32 | | |
| square_area - horizontal_direction | Negative Ranks | 13[g] | 16.92 | 220.00 |
| | Positive Ranks | 19[h] | 16.21 | 308.00 |
| | Ties | 0[i] | | |
| | Total | 32 | | |
| texture - horizontal_direction | Negative Ranks | 3[j] | 19.33 | 58.00 |
| | Positive Ranks | 29[k] | 16.21 | 470.00 |
| | Ties | 0[l] | | |
| | Total | 32 | | |
| vertical_direction - horizontal_direction | Negative Ranks | 26[m] | 17.77 | 462.00 |
| | Positive Ranks | 6[n] | 11.00 | 66.00 |
| | Ties | 0[o] | | |
| | Total | 32 | | |
| horizontal_bar - horizontal_direction | Negative Ranks | 30[p] | 16.47 | 494.00 |
| | Positive Ranks | 2[q] | 17.00 | 34.00 |
| | Ties | 0[r] | | |
| | Total | 32 | | |
| vertical_slider - horizontal_direction | Negative Ranks | 27[s] | 17.67 | 477.00 |
| | Positive Ranks | 5[t] | 10.20 | 51.00 |
| | Ties | 0[u] | | |
| | Total | 32 | | |

a. horizontal_slider < horizontal_direction
b. horizontal_slider > horizontal_direction
c. horizontal_slider = horizontal_direction
d. vertical_curve < horizontal_direction
e. vertical_curve > horizontal_direction
f. vertical_curve = horizontal_direction
g. square_area < horizontal_direction
h. square_area > horizontal_direction
i. square_area = horizontal_direction
j. texture < horizontal_direction
k. texture > horizontal_direction
l. texture = horizontal_direction
m. vertical_direction < horizontal_direction

n. vertical_direction > horizontal_direction
o. vertical_direction = horizontal_direction
p. horizontal_bar < horizontal_direction
q. horizontal_bar > horizontal_direction
r. horizontal_bar = horizontal_direction
s. vertical_slider < horizontal_direction
t. vertical_slider > horizontal_direction
u. vertical_slider = horizontal_direction

**Test Statistics[c]**

|  | horizontal_ slider - horizontal_ direction | vertical_curve - horizontal_ direction | square_area - horizontal_ direction | texture - horizontal_ direction | vertical_ direction - horizontal_ direction |
|---|---|---|---|---|---|
| Z | -3.534[a] | -1.131[a] | -.823[b] | -3.852[b] | -3.702[a] |
| Asymp. Sig. (2-tailed) | .000 | .258 | .411 | .000 | .000 |

**Test Statistics[c]**

|  | horizontal_bar - horizontal_ direction | vertical_slider - horizontal_ direction |
|---|---|---|
| Z | -4.301[a] | -3.983[a] |
| Asymp. Sig. (2-tailed) | .000 | .000 |

a. Based on positive ranks.
b. Based on negative ranks.
c. Wilcoxon Signed Ranks Test

```
NPAR TESTS
  /WILCOXON=horizontal_slider horizontal_slider horizontal_slider horizontal_slider horizontal_
  /MISSING ANALYSIS.
```

# NPar Tests

**Notes**

| | | |
|---|---|---|
| Output Created | | 06-Jul-2015 10:10:04 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 32 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for each test are based on all cases with valid data for the variable(s) used in that test. |
| Syntax | | NPAR TESTS<br>  /WILCOXON=horizontal_slider horizontal_slider horizontal_slider horizontal_slider horizontal_slider horizontal_slider WITH square_area vertical_curve texture vertical_direction vertical_slider horizontal_bar (PAIRED)<br>  /MISSING ANALYSIS. |
| Resources | Processor Time | 00 00:00:00.000 |
| | Elapsed Time | 00 00:00:00.005 |
| | Number of Cases Allowed[a] | 65536 |

a. Based on availability of workspace memory.

[DataSet0]

# Wilcoxon Signed Ranks Test

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| square_area - horizontal_slider | Negative Ranks | 5[a] | 9.90 | 49.50 |
| | Positive Ranks | 27[b] | 17.72 | 478.50 |
| | Ties | 0[c] | | |
| | Total | 32 | | |
| vertical_curve - horizontal_slider | Negative Ranks | 7[d] | 11.79 | 82.50 |
| | Positive Ranks | 25[e] | 17.82 | 445.50 |
| | Ties | 0[f] | | |
| | Total | 32 | | |
| texture - horizontal_slider | Negative Ranks | 0[g] | .00 | .00 |
| | Positive Ranks | 32[h] | 16.50 | 528.00 |
| | Ties | 0[i] | | |
| | Total | 32 | | |
| vertical_direction - horizontal_slider | Negative Ranks | 11[j] | 16.45 | 181.00 |
| | Positive Ranks | 21[k] | 16.52 | 347.00 |
| | Ties | 0[l] | | |
| | Total | 32 | | |
| vertical_slider - horizontal_slider | Negative Ranks | 20[m] | 17.80 | 356.00 |
| | Positive Ranks | 12[n] | 14.33 | 172.00 |
| | Ties | 0[o] | | |
| | Total | 32 | | |
| horizontal_bar - horizontal_slider | Negative Ranks | 20[p] | 16.08 | 321.50 |
| | Positive Ranks | 12[q] | 17.21 | 206.50 |
| | Ties | 0[r] | | |
| | Total | 32 | | |

a. square_area < horizontal_slider
b. square_area > horizontal_slider
c. square_area = horizontal_slider
d. vertical_curve < horizontal_slider
e. vertical_curve > horizontal_slider
f. vertical_curve = horizontal_slider
g. texture < horizontal_slider
h. texture > horizontal_slider
i. texture = horizontal_slider
j. vertical_direction < horizontal_slider
k. vertical_direction > horizontal_slider
l. vertical_direction = horizontal_slider
m. vertical_slider < horizontal_slider
n. vertical_slider > horizontal_slider
o. vertical_slider = horizontal_slider
p. horizontal_bar < horizontal_slider
q. horizontal_bar > horizontal_slider
r. horizontal_bar = horizontal_slider

**Test Statistics[c]**

| | square_area - horizontal_slider | vertical_curve - horizontal_slider | texture - horizontal_slider | vertical_direction - horizontal_slider |
|---|---|---|---|---|
| Z | -4.011[a] | -3.394[a] | -4.937[a] | -1.552[a] |
| Asymp. Sig. (2-tailed) | .000 | .001 | .000 | .121 |

**Test Statistics[c]**

| | vertical_slider - horizontal_slider | horizontal_bar - horizontal_slider |
|---|---|---|
| Z | -1.720[b] | -1.075[b] |
| Asymp. Sig. (2-tailed) | .085 | .282 |

a. Based on negative ranks.
b. Based on positive ranks.
c. Wilcoxon Signed Ranks Test

```
NPAR TESTS
  /WILCOXON=vertical_curve vertical_curve vertical_curve vertical_curve vertical_curve WITH squ
  /MISSING ANALYSIS.
```

# NPar Tests

**Notes**

| Output Created | | 06-Jul-2015 10:11:04 |
|---|---|---|
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 32 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for each test are based on all cases with valid data for the variable(s) used in that test. |
| Syntax | | NPAR TESTS /WILCOXON=vertical_curve vertical_curve vertical_curve vertical_curve vertical_curve WITH square_area texture vertical_direction vertical_slider horizontal_bar (PAIRED) /MISSING ANALYSIS. |
| Resources | Processor Time | 00 00:00:00.016 |
| | Elapsed Time | 00 00:00:00.006 |
| | Number of Cases Allowed[a] | 71493 |

a. Based on availability of workspace memory.

[DataSet0]

# Wilcoxon Signed Ranks Test

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| square_area - vertical_curve | Negative Ranks | 14[a] | 12.79 | 179.00 |
| | Positive Ranks | 18[b] | 19.39 | 349.00 |
| | Ties | 0[c] | | |
| | Total | 32 | | |
| texture - vertical_curve | Negative Ranks | 3[d] | 14.33 | 43.00 |
| | Positive Ranks | 29[e] | 16.72 | 485.00 |
| | Ties | 0[f] | | |
| | Total | 32 | | |
| vertical_direction - vertical_curve | Negative Ranks | 22[g] | 17.23 | 379.00 |
| | Positive Ranks | 9[h] | 13.00 | 117.00 |
| | Ties | 1[i] | | |
| | Total | 32 | | |
| vertical_slider - vertical_curve | Negative Ranks | 29[j] | 17.45 | 506.00 |
| | Positive Ranks | 3[k] | 7.33 | 22.00 |
| | Ties | 0[l] | | |
| | Total | 32 | | |
| horizontal_bar - vertical_curve | Negative Ranks | 29[m] | 17.55 | 509.00 |
| | Positive Ranks | 3[n] | 6.33 | 19.00 |
| | Ties | 0[o] | | |
| | Total | 32 | | |

a. square_area < vertical_curve
b. square_area > vertical_curve
c. square_area = vertical_curve
d. texture < vertical_curve
e. texture > vertical_curve
f. texture = vertical_curve
g. vertical_direction < vertical_curve
h. vertical_direction > vertical_curve
i. vertical_direction = vertical_curve
j. vertical_slider < vertical_curve
k. vertical_slider > vertical_curve
l. vertical_slider = vertical_curve
m. horizontal_bar < vertical_curve
n. horizontal_bar > vertical_curve
o. horizontal_bar = vertical_curve

**Test Statistics[c]**

| | square_area - vertical_curve | texture - vertical_curve | vertical_direction - vertical_curve | vertical_slider - vertical_curve | horizontal_bar - vertical_curve |
|---|---|---|---|---|---|
| Z | -1.589[a] | -4.133[a] | -2.567[b] | -4.526[b] | -4.581[b] |
| Asymp. Sig. (2-tailed) | .112 | .000 | .010 | .000 | .000 |

a. Based on negative ranks.
b. Based on positive ranks.
c. Wilcoxon Signed Ranks Test

```
NPAR TESTS
  /WILCOXON=square_area square_area square_area square_area texture texture vertical_direction
vertical_direction (PAIRED)
  /MISSING ANALYSIS.
```

## NPar Tests

**Notes**

| | | |
|---|---|---|
| Output Created | | 06-Jul-2015 10:13:01 |
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 32 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for each test are based on all cases with valid data for the variable(s) used in that test. |
| Syntax | | NPAR TESTS /WILCOXON=square_area square_area square_area square_area texture texture vertical_direction vertical_direction texture WITH texture vertical_direction vertical_slider horizontal_bar vertical_slider horizontal_bar vertical_slider horizontal_bar vertical_direction (PAIRED) /MISSING ANALYSIS. |
| Resources | Processor Time | 00 00:00:00.015 |
| | Elapsed Time | 00 00:00:00.014 |
| | Number of Cases Allowed[a] | 78643 |

a. Based on availability of workspace memory.

```
[DataSet0]
```

**Wilcoxon Signed Ranks Test**

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| texture - square_area | Negative Ranks | 7[a] | 12.71 | 89.00 |
| | Positive Ranks | 25[b] | 17.56 | 439.00 |
| | Ties | 0[c] | | |
| | Total | 32 | | |
| vertical_direction - square_area | Negative Ranks | 25[d] | 16.88 | 422.00 |
| | Positive Ranks | 7[e] | 15.14 | 106.00 |
| | Ties | 0[f] | | |
| | Total | 32 | | |
| vertical_slider - square_area | Negative Ranks | 27[g] | 17.81 | 481.00 |
| | Positive Ranks | 5[h] | 9.40 | 47.00 |
| | Ties | 0[i] | | |
| | Total | 32 | | |
| horizontal_bar - square_area | Negative Ranks | 29[j] | 16.55 | 480.00 |
| | Positive Ranks | 3[k] | 16.00 | 48.00 |
| | Ties | 0[l] | | |
| | Total | 32 | | |
| vertical_slider - texture | Negative Ranks | 32[m] | 16.50 | 528.00 |
| | Positive Ranks | 0[n] | .00 | .00 |
| | Ties | 0[o] | | |
| | Total | 32 | | |
| horizontal_bar - texture | Negative Ranks | 31[p] | 17.00 | 527.00 |
| | Positive Ranks | 1[q] | 1.00 | 1.00 |
| | Ties | 0[r] | | |
| | Total | 32 | | |
| vertical_slider - vertical_direction | Negative Ranks | 24[s] | 17.46 | 419.00 |
| | Positive Ranks | 8[t] | 13.63 | 109.00 |
| | Ties | 0[u] | | |
| | Total | 32 | | |
| horizontal_bar - vertical_direction | Negative Ranks | 22[v] | 18.30 | 402.50 |
| | Positive Ranks | 10[w] | 12.55 | 125.50 |
| | Ties | 0[x] | | |
| | Total | 32 | | |
| vertical_direction - texture | Negative Ranks | 30[y] | 16.13 | 484.00 |
| | Positive Ranks | 2[z] | 22.00 | 44.00 |
| | Ties | 0[aa] | | |
| | Total | 32 | | |

a. texture < square_area
b. texture > square_area
c. texture = square_area
d. vertical_direction < square_area
e. vertical_direction > square_area
f. vertical_direction = square_area
g. vertical_slider < square_area
h. vertical_slider > square_area
i. vertical_slider = square_area
j. horizontal_bar < square_area
k. horizontal_bar > square_area
l. horizontal_bar = square_area
m. vertical_slider < texture
n. vertical_slider > texture
o. vertical_slider = texture
p. horizontal_bar < texture
q. horizontal_bar > texture
r. horizontal_bar = texture
s. vertical_slider < vertical_direction
t. vertical_slider > vertical_direction
u. vertical_slider = vertical_direction
v. horizontal_bar < vertical_direction
w. horizontal_bar > vertical_direction
x. horizontal_bar = vertical_direction
y. vertical_direction < texture
z. vertical_direction > texture
aa. vertical_direction = texture

**Test Statistics[c]**

|  | texture - square_area | vertical_ direction - square_area | vertical_slider - square_area | horizontal_bar - square_area | vertical_slider - texture |
|---|---|---|---|---|---|
| Z | -3.272[a] | -2.954[b] | -4.058[b] | -4.039[b] | -4.937[b] |
| Asymp. Sig. (2-tailed) | .001 | .003 | .000 | .000 | .000 |

**Test Statistics[c]**

|  | horizontal_bar - texture | vertical_slider - vertical_ direction | horizontal_bar - vertical_ direction | vertical_ direction - texture |
|---|---|---|---|---|
| Z | -4.918[b] | -2.898[b] | -2.590[b] | -4.114[b] |
| Asymp. Sig. (2-tailed) | .000 | .004 | .010 | .000 |

a. Based on negative ranks.
b. Based on positive ranks.
c. Wilcoxon Signed Ranks Test

```
NPAR TESTS
  /FRIEDMAN=angle circle_area vertical_bar horizontal_curve horizontal_direction horizontal_sli
  /STATISTICS DESCRIPTIVES
  /MISSING LISTWISE.
```

# NPar Tests

**Notes**

| Output Created | | 06-Jul-2015 10:19:38 |
|---|---|---|
| Comments | | |
| Input | Active Dataset | DataSet0 |
| | Filter | <none> |
| | Weight | <none> |
| | Split File | <none> |
| | N of Rows in Working Data File | 32 |
| Missing Value Handling | Definition of Missing | User-defined missing values are treated as missing. |
| | Cases Used | Statistics for all tests are based on cases with no missing data for any variables used. |
| Syntax | | NPAR TESTS<br>  /FRIEDMAN=angle circle_area vertical_bar horizontal_curve horizontal_direction horizontal_slider vertical_curve square_area texture vertical_direction vertical_slider horizontal_bar<br>  /STATISTICS DESCRIPTIVES<br>  /MISSING LISTWISE. |
| Resources | Processor Time | 00 00:00:00.000 |
| | Elapsed Time | 00 00:00:00.009 |
| | Number of Cases Allowed[a] | 46260 |

a. Based on availability of workspace memory.

[DataSet0]

**Descriptive Statistics**

| | N | Mean | Std. Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| angle | 32 | 89.5734 | 24.19532 | -33.92 | 99.45 |
| circle_area | 32 | 82.0897 | 15.56654 | 24.49 | 97.88 |
| vertical_bar | 32 | 89.2513 | 13.73304 | 38.90 | 99.24 |
| horizontal_curve | 32 | 93.6513 | 5.48305 | 78.49 | 99.71 |
| horizontal_direction | 32 | 95.5016 | 3.40021 | 84.92 | 99.70 |
| horizontal_slider | 32 | 97.7178 | 3.42332 | 85.70 | 99.96 |
| vertical_curve | 32 | 81.8338 | 46.20741 | -164.91 | 98.93 |
| square_area | 32 | 88.3134 | 11.98689 | 36.27 | 99.73 |
| texture | 32 | .1359 | 62.76170 | -170.47 | 93.96 |
| vertical_direction | 32 | 96.9509 | 4.14557 | 80.83 | 99.99 |
| vertical_slider | 32 | 94.8150 | 12.73228 | 27.72 | 99.94 |
| horizontal_bar | 32 | 94.1188 | 11.19652 | 50.59 | 99.92 |

# Friedman Test

**Ranks**

| | Mean Rank |
|---|---|
| angle | 6.75 |
| circle_area | 3.31 |
| vertical_bar | 5.94 |
| horizontal_curve | 6.59 |
| horizontal_direction | 7.41 |
| horizontal_slider | 10.00 |
| vertical_curve | 5.53 |
| square_area | 5.16 |
| texture | 1.41 |
| vertical_direction | 9.06 |
| vertical_slider | 8.78 |
| horizontal_bar | 8.06 |

**Test Statistics[a]**

| N | 32 |
|---|---|
| Chi-Square | 163.745 |
| df | 11 |
| Asymp. Sig. | .000 |

a. Friedman Test

```
NPAR TESTS
  /WILCOXON=angle angle angle angle angle angle angle angle angle angle angle circle_area circl
vertical_bar vertical_bar vertical_bar vertical_bar vertical_bar horizontal_curve horizontal_cu
horizontal_direction horizontal_direction horizontal_direction horizontal_direction horizontal_
vertical_curve vertical_curve vertical_curve square_area square_area square_area square_area te
horizontal_slider vertical_curve square_area texture vertical_direction vertical_slider horizon
horizontal_bar horizontal_curve horizontal_direction horizontal_slider vertical_curve square_ar
vertical_slider horizontal_bar horizontal_slider vertical_curve square_area texture vertical_di
vertical_direction vertical_slider horizontal_bar texture vertical_direction vertical_slider ho
  /MISSING ANALYSIS.
```

# NPar Tests

# Wilcoxon Signed Ranks Test

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| circle_area - angle | Negative Ranks | 28[a] | 16.57 | 464.00 |
| | Positive Ranks | 4[b] | 16.00 | 64.00 |
| | Ties | 0[c] | | |
| | Total | 32 | | |
| horizontal_curve - angle | Negative Ranks | 18[d] | 16.64 | 299.50 |
| | Positive Ranks | 14[e] | 16.32 | 228.50 |
| | Ties | 0[f] | | |
| | Total | 32 | | |
| vertical_bar - angle | Negative Ranks | 19[g] | 16.26 | 309.00 |
| | Positive Ranks | 13[h] | 16.85 | 219.00 |
| | Ties | 0[i] | | |
| | Total | 32 | | |
| horizontal_direction - angle | Negative Ranks | 14[j] | 17.96 | 251.50 |
| | Positive Ranks | 18[k] | 15.36 | 276.50 |
| | Ties | 0[l] | | |
| | Total | 32 | | |
| horizontal_slider - angle | Negative Ranks | 7[m] | 10.29 | 72.00 |
| | Positive Ranks | 25[n] | 18.24 | 456.00 |
| | Ties | 0[o] | | |
| | Total | 32 | | |
| vertical_curve - angle | Negative Ranks | 19[p] | 17.89 | 340.00 |
| | Positive Ranks | 13[q] | 14.46 | 188.00 |
| | Ties | 0[r] | | |
| | Total | 32 | | |
| square_area - angle | Negative Ranks | 22[s] | 17.14 | 377.00 |
| | Positive Ranks | 10[t] | 15.10 | 151.00 |
| | Ties | 0[u] | | |
| | Total | 32 | | |
| texture - angle | Negative Ranks | 29[v] | 17.79 | 516.00 |
| | Positive Ranks | 3[w] | 4.00 | 12.00 |
| | Ties | 0[x] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| vertical_direction - angle | Negative Ranks | 10[y] | 9.90 | 99.00 |
| | Positive Ranks | 22[z] | 19.50 | 429.00 |
| | Ties | 0[aa] | | |
| | Total | 32 | | |
| vertical_slider - angle | Negative Ranks | 6[ab] | 19.67 | 118.00 |
| | Positive Ranks | 26[ac] | 15.77 | 410.00 |
| | Ties | 0[ad] | | |
| | Total | 32 | | |
| horizontal_bar - angle | Negative Ranks | 12[ae] | 14.83 | 178.00 |
| | Positive Ranks | 20[af] | 17.50 | 350.00 |
| | Ties | 0[ag] | | |
| | Total | 32 | | |
| vertical_bar - circle_area | Negative Ranks | 8[ah] | 15.38 | 123.00 |
| | Positive Ranks | 24[ai] | 16.88 | 405.00 |
| | Ties | 0[aj] | | |
| | Total | 32 | | |
| horizontal_curve - circle_area | Negative Ranks | 5[ak] | 8.60 | 43.00 |
| | Positive Ranks | 27[al] | 17.96 | 485.00 |
| | Ties | 0[am] | | |
| | Total | 32 | | |
| horizontal_direction - circle_area | Negative Ranks | 3[an] | 7.00 | 21.00 |
| | Positive Ranks | 29[ao] | 17.48 | 507.00 |
| | Ties | 0[ap] | | |
| | Total | 32 | | |
| horizontal_slider - circle_area | Negative Ranks | 1[aq] | 3.00 | 3.00 |
| | Positive Ranks | 31[ar] | 16.94 | 525.00 |
| | Ties | 0[as] | | |
| | Total | 32 | | |
| vertical_curve - circle_area | Negative Ranks | 8[at] | 17.38 | 139.00 |
| | Positive Ranks | 24[au] | 16.21 | 389.00 |
| | Ties | 0[av] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| square_area - circle_area | Negative Ranks | 7[aw] | 10.57 | 74.00 |
| | Positive Ranks | 25[ax] | 18.16 | 454.00 |
| | Ties | 0[ay] | | |
| | Total | 32 | | |
| texture - circle_area | Negative Ranks | 31[az] | 16.87 | 523.00 |
| | Positive Ranks | 1[ba] | 5.00 | 5.00 |
| | Ties | 0[bb] | | |
| | Total | 32 | | |
| vertical_direction - circle_area | Negative Ranks | 1[bc] | 2.00 | 2.00 |
| | Positive Ranks | 31[bd] | 16.97 | 526.00 |
| | Ties | 0[be] | | |
| | Total | 32 | | |
| vertical_slider - circle_area | Negative Ranks | 3[bf] | 2.33 | 7.00 |
| | Positive Ranks | 29[bg] | 17.97 | 521.00 |
| | Ties | 0[bh] | | |
| | Total | 32 | | |
| horizontal_bar - circle_area | Negative Ranks | 3[bi] | 22.00 | 66.00 |
| | Positive Ranks | 29[bj] | 15.93 | 462.00 |
| | Ties | 0[bk] | | |
| | Total | 32 | | |
| horizontal_curve - vertical_bar | Negative Ranks | 13[bl] | 12.85 | 167.00 |
| | Positive Ranks | 19[bm] | 19.00 | 361.00 |
| | Ties | 0[bn] | | |
| | Total | 32 | | |
| horizontal_direction - vertical_bar | Negative Ranks | 10[bo] | 15.30 | 153.00 |
| | Positive Ranks | 22[bp] | 17.05 | 375.00 |
| | Ties | 0[bq] | | |
| | Total | 32 | | |
| horizontal_slider - vertical_bar | Negative Ranks | 3[br] | 4.00 | 12.00 |
| | Positive Ranks | 29[bs] | 17.79 | 516.00 |
| | Ties | 0[bt] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| vertical_curve - vertical_bar | Negative Ranks | 17[bu] | 17.35 | 295.00 |
| | Positive Ranks | 15[bv] | 15.53 | 233.00 |
| | Ties | 0[bw] | | |
| | Total | 32 | | |
| square_area - vertical_bar | Negative Ranks | 24[bx] | 14.04 | 337.00 |
| | Positive Ranks | 8[by] | 23.88 | 191.00 |
| | Ties | 0[bz] | | |
| | Total | 32 | | |
| texture - vertical_bar | Negative Ranks | 31[ca] | 16.97 | 526.00 |
| | Positive Ranks | 1[cb] | 2.00 | 2.00 |
| | Ties | 0[cc] | | |
| | Total | 32 | | |
| vertical_direction - vertical_bar | Negative Ranks | 7[cd] | 11.43 | 80.00 |
| | Positive Ranks | 25[ce] | 17.92 | 448.00 |
| | Ties | 0[cf] | | |
| | Total | 32 | | |
| vertical_slider - vertical_bar | Negative Ranks | 9[cg] | 11.78 | 106.00 |
| | Positive Ranks | 23[ch] | 18.35 | 422.00 |
| | Ties | 0[ci] | | |
| | Total | 32 | | |
| horizontal_bar - vertical_bar | Negative Ranks | 7[cj] | 18.29 | 128.00 |
| | Positive Ranks | 25[ck] | 16.00 | 400.00 |
| | Ties | 0[cl] | | |
| | Total | 32 | | |
| horizontal_direction - horizontal_curve | Negative Ranks | 13[cm] | 15.62 | 203.00 |
| | Positive Ranks | 19[cn] | 17.11 | 325.00 |
| | Ties | 0[co] | | |
| | Total | 32 | | |
| horizontal_slider - horizontal_curve | Negative Ranks | 9[cp] | 8.11 | 73.00 |
| | Positive Ranks | 23[cq] | 19.78 | 455.00 |
| | Ties | 0[cr] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| vertical_curve - horizontal_curve | Negative Ranks | 19[cs] | 19.05 | 362.00 |
| | Positive Ranks | 13[ct] | 12.77 | 166.00 |
| | Ties | 0[cu] | | |
| | Total | 32 | | |
| square_area - horizontal_curve | Negative Ranks | 19[cv] | 19.53 | 371.00 |
| | Positive Ranks | 13[cw] | 12.08 | 157.00 |
| | Ties | 0[cx] | | |
| | Total | 32 | | |
| texture - horizontal_curve | Negative Ranks | 30[cy] | 17.47 | 524.00 |
| | Positive Ranks | 2[cz] | 2.00 | 4.00 |
| | Ties | 0[da] | | |
| | Total | 32 | | |
| vertical_direction - horizontal_curve | Negative Ranks | 7[db] | 14.29 | 100.00 |
| | Positive Ranks | 25[dc] | 17.12 | 428.00 |
| | Ties | 0[dd] | | |
| | Total | 32 | | |
| vertical_slider - horizontal_curve | Negative Ranks | 9[de] | 15.44 | 139.00 |
| | Positive Ranks | 23[df] | 16.91 | 389.00 |
| | Ties | 0[dg] | | |
| | Total | 32 | | |
| horizontal_bar - horizontal_curve | Negative Ranks | 13[dh] | 13.77 | 179.00 |
| | Positive Ranks | 19[di] | 18.37 | 349.00 |
| | Ties | 0[dj] | | |
| | Total | 32 | | |
| horizontal_slider - horizontal_direction | Negative Ranks | 7[dk] | 14.14 | 99.00 |
| | Positive Ranks | 25[dl] | 17.16 | 429.00 |
| | Ties | 0[dm] | | |
| | Total | 32 | | |
| vertical_curve - horizontal_direction | Negative Ranks | 22[dn] | 19.86 | 437.00 |
| | Positive Ranks | 10[do] | 9.10 | 91.00 |
| | Ties | 0[dp] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| square_area - horizontal_direction | Negative Ranks | 24[dq] | 18.50 | 444.00 |
| | Positive Ranks | 8[dr] | 10.50 | 84.00 |
| | Ties | 0[ds] | | |
| | Total | 32 | | |
| texture - horizontal_direction | Negative Ranks | 31[dt] | 16.97 | 526.00 |
| | Positive Ranks | 1[du] | 2.00 | 2.00 |
| | Ties | 0[dv] | | |
| | Total | 32 | | |
| vertical_direction - horizontal_direction | Negative Ranks | 10[dw] | 15.50 | 155.00 |
| | Positive Ranks | 22[dx] | 16.95 | 373.00 |
| | Ties | 0[dy] | | |
| | Total | 32 | | |
| vertical_slider - horizontal_direction | Negative Ranks | 10[dz] | 16.60 | 166.00 |
| | Positive Ranks | 22[ea] | 16.45 | 362.00 |
| | Ties | 0[eb] | | |
| | Total | 32 | | |
| horizontal_bar - horizontal_direction | Negative Ranks | 13[ec] | 16.08 | 209.00 |
| | Positive Ranks | 19[ed] | 16.79 | 319.00 |
| | Ties | 0[ee] | | |
| | Total | 32 | | |
| vertical_curve - horizontal_slider | Negative Ranks | 29[ef] | 17.38 | 504.00 |
| | Positive Ranks | 3[eg] | 8.00 | 24.00 |
| | Ties | 0[eh] | | |
| | Total | 32 | | |
| square_area - horizontal_slider | Negative Ranks | 28[ei] | 17.50 | 490.00 |
| | Positive Ranks | 4[ej] | 9.50 | 38.00 |
| | Ties | 0[ek] | | |
| | Total | 32 | | |
| texture - horizontal_slider | Negative Ranks | 32[el] | 16.50 | 528.00 |
| | Positive Ranks | 0[em] | .00 | .00 |
| | Ties | 0[en] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| vertical_direction - horizontal_slider | Negative Ranks | 21[eo] | 16.81 | 353.00 |
| | Positive Ranks | 11[ep] | 15.91 | 175.00 |
| | Ties | 0[eq] | | |
| | Total | 32 | | |
| vertical_slider - horizontal_slider | Negative Ranks | 22[er] | 17.27 | 380.00 |
| | Positive Ranks | 10[es] | 14.80 | 148.00 |
| | Ties | 0[et] | | |
| | Total | 32 | | |
| horizontal_bar - horizontal_slider | Negative Ranks | 23[eu] | 16.13 | 371.00 |
| | Positive Ranks | 9[ev] | 17.44 | 157.00 |
| | Ties | 0[ew] | | |
| | Total | 32 | | |
| square_area - vertical_curve | Negative Ranks | 17[ex] | 16.59 | 282.00 |
| | Positive Ranks | 15[ey] | 16.40 | 246.00 |
| | Ties | 0[ez] | | |
| | Total | 32 | | |
| texture - vertical_curve | Negative Ranks | 30[fa] | 16.50 | 495.00 |
| | Positive Ranks | 2[fb] | 16.50 | 33.00 |
| | Ties | 0[fc] | | |
| | Total | 32 | | |
| vertical_direction - vertical_curve | Negative Ranks | 6[fd] | 9.00 | 54.00 |
| | Positive Ranks | 26[fe] | 18.23 | 474.00 |
| | Ties | 0[ff] | | |
| | Total | 32 | | |
| vertical_slider - vertical_curve | Negative Ranks | 4[fg] | 18.50 | 74.00 |
| | Positive Ranks | 28[fh] | 16.21 | 454.00 |
| | Ties | 0[fi] | | |
| | Total | 32 | | |
| horizontal_bar - vertical_curve | Negative Ranks | 10[fj] | 12.30 | 123.00 |
| | Positive Ranks | 22[fk] | 18.41 | 405.00 |
| | Ties | 0[fl] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| texture - square_area | Negative Ranks | 30[fm] | 17.13 | 514.00 |
| | Positive Ranks | 2[fn] | 7.00 | 14.00 |
| | Ties | 0[fo] | | |
| | Total | 32 | | |
| vertical_direction - square_area | Negative Ranks | 5[fp] | 11.60 | 58.00 |
| | Positive Ranks | 27[fq] | 17.41 | 470.00 |
| | Ties | 0[fr] | | |
| | Total | 32 | | |
| vertical_slider - square_area | Negative Ranks | 8[fs] | 8.88 | 71.00 |
| | Positive Ranks | 24[ft] | 19.04 | 457.00 |
| | Ties | 0[fu] | | |
| | Total | 32 | | |
| horizontal_bar - square_area | Negative Ranks | 7[fv] | 15.64 | 109.50 |
| | Positive Ranks | 25[fw] | 16.74 | 418.50 |
| | Ties | 0[fx] | | |
| | Total | 32 | | |
| vertical_direction - texture | Negative Ranks | 1[fy] | 1.00 | 1.00 |
| | Positive Ranks | 31[fz] | 17.00 | 527.00 |
| | Ties | 0[ga] | | |
| | Total | 32 | | |
| vertical_slider - texture | Negative Ranks | 0[gb] | .00 | .00 |
| | Positive Ranks | 32[gc] | 16.50 | 528.00 |
| | Ties | 0[gd] | | |
| | Total | 32 | | |
| horizontal_bar - texture | Negative Ranks | 0[ge] | .00 | .00 |
| | Positive Ranks | 32[gf] | 16.50 | 528.00 |
| | Ties | 0[gg] | | |
| | Total | 32 | | |
| horizontal_bar - vertical_direction | Negative Ranks | 20[gh] | 17.15 | 343.00 |
| | Positive Ranks | 12[gi] | 15.42 | 185.00 |
| | Ties | 0[gj] | | |
| | Total | 32 | | |

**Ranks**

| | | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| vertical_slider - vertical_direction | Negative Ranks | 18[gk] | 16.64 | 299.50 |
| | Positive Ranks | 14[gl] | 16.32 | 228.50 |
| | Ties | 0[gm] | | |
| | Total | 32 | | |
| horizontal_bar - vertical_slider | Negative Ranks | 18[gn] | 16.78 | 302.00 |
| | Positive Ranks | 14[go] | 16.14 | 226.00 |
| | Ties | 0[gp] | | |
| | Total | 32 | | |

a. circle_area < angle
b. circle_area > angle
c. circle_area = angle
d. horizontal_curve < angle
e. horizontal_curve > angle
f. horizontal_curve = angle
g. vertical_bar < angle
h. vertical_bar > angle
i. vertical_bar = angle
j. horizontal_direction < angle
k. horizontal_direction > angle
l. horizontal_direction = angle
m. horizontal_slider < angle
n. horizontal_slider > angle
o. horizontal_slider = angle
p. vertical_curve < angle
q. vertical_curve > angle
r. vertical_curve = angle
s. square_area < angle
t. square_area > angle
u. square_area = angle
v. texture < angle
w. texture > angle
x. texture = angle
y. vertical_direction < angle
z. vertical_direction > angle
aa. vertical_direction = angle
ab. vertical_slider < angle
ac. vertical_slider > angle
ad. vertical_slider = angle
ae. horizontal_bar < angle
af. horizontal_bar > angle
ag. horizontal_bar = angle
ah. vertical_bar < circle_area
ai. vertical_bar > circle_area
aj. vertical_bar = circle_area
ak. horizontal_curve < circle_area
al. horizontal_curve > circle_area
am. horizontal_curve = circle_area
an. horizontal_direction < circle_area
ao. horizontal_direction > circle_area
ap. horizontal_direction = circle_area
aq. horizontal_slider < circle_area
ar. horizontal_slider > circle_area
as. horizontal_slider = circle_area
at. vertical_curve < circle_area
au. vertical_curve > circle_area
av. vertical_curve = circle_area
aw. square_area < circle_area

ax. square_area > circle_area
ay. square_area = circle_area
az. texture < circle_area
ba. texture > circle_area
bb. texture = circle_area
bc. vertical_direction < circle_area
bd. vertical_direction > circle_area
be. vertical_direction = circle_area
bf. vertical_slider < circle_area
bg. vertical_slider > circle_area
bh. vertical_slider = circle_area
bi. horizontal_bar < circle_area
bj. horizontal_bar > circle_area
bk. horizontal_bar = circle_area
bl. horizontal_curve < vertical_bar
bm. horizontal_curve > vertical_bar
bn. horizontal_curve = vertical_bar
bo. horizontal_direction < vertical_bar
bp. horizontal_direction > vertical_bar
bq. horizontal_direction = vertical_bar
br. horizontal_slider < vertical_bar
bs. horizontal_slider > vertical_bar
bt. horizontal_slider = vertical_bar
bu. vertical_curve < vertical_bar
bv. vertical_curve > vertical_bar
bw. vertical_curve = vertical_bar
bx. square_area < vertical_bar
by. square_area > vertical_bar
bz. square_area = vertical_bar
ca. texture < vertical_bar
cb. texture > vertical_bar
cc. texture = vertical_bar
cd. vertical_direction < vertical_bar
ce. vertical_direction > vertical_bar
cf. vertical_direction = vertical_bar
cg. vertical_slider < vertical_bar
ch. vertical_slider > vertical_bar
ci. vertical_slider = vertical_bar
cj. horizontal_bar < vertical_bar
ck. horizontal_bar > vertical_bar
cl. horizontal_bar = vertical_bar
cm. horizontal_direction < horizontal_curve
cn. horizontal_direction > horizontal_curve
co. horizontal_direction = horizontal_curve
cp. horizontal_slider < horizontal_curve
cq. horizontal_slider > horizontal_curve
cr. horizontal_slider = horizontal_curve
cs. vertical_curve < horizontal_curve
ct. vertical_curve > horizontal_curve
cu. vertical_curve = horizontal_curve
cv. square_area < horizontal_curve
cw. square_area > horizontal_curve
cx. square_area = horizontal_curve
cy. texture < horizontal_curve
cz. texture > horizontal_curve
da. texture = horizontal_curve
db. vertical_direction < horizontal_curve
dc. vertical_direction > horizontal_curve
dd. vertical_direction = horizontal_curve
de. vertical_slider < horizontal_curve
df. vertical_slider > horizontal_curve
dg. vertical_slider = horizontal_curve
dh. horizontal_bar < horizontal_curve
di. horizontal_bar > horizontal_curve
dj. horizontal_bar = horizontal_curve
dk. horizontal_slider < horizontal_direction
dl. horizontal_slider > horizontal_direction
dm. horizontal_slider = horizontal_direction

dn. vertical_curve < horizontal_direction
do. vertical_curve > horizontal_direction
dp. vertical_curve = horizontal_direction
dq. square_area < horizontal_direction
dr. square_area > horizontal_direction
ds. square_area = horizontal_direction
dt. texture < horizontal_direction
du. texture > horizontal_direction
dv. texture = horizontal_direction
dw. vertical_direction < horizontal_direction
dx. vertical_direction > horizontal_direction
dy. vertical_direction = horizontal_direction
dz. vertical_slider < horizontal_direction
ea. vertical_slider > horizontal_direction
eb. vertical_slider = horizontal_direction
ec. horizontal_bar < horizontal_direction
ed. horizontal_bar > horizontal_direction
ee. horizontal_bar = horizontal_direction
ef. vertical_curve < horizontal_slider
eg. vertical_curve > horizontal_slider
eh. vertical_curve = horizontal_slider
ei. square_area < horizontal_slider
ej. square_area > horizontal_slider
ek. square_area = horizontal_slider
el. texture < horizontal_slider
em. texture > horizontal_slider
en. texture = horizontal_slider
eo. vertical_direction < horizontal_slider
ep. vertical_direction > horizontal_slider
eq. vertical_direction = horizontal_slider
er. vertical_slider < horizontal_slider
es. vertical_slider > horizontal_slider
et. vertical_slider = horizontal_slider
eu. horizontal_bar < horizontal_slider
ev. horizontal_bar > horizontal_slider
ew. horizontal_bar = horizontal_slider
ex. square_area < vertical_curve
ey. square_area > vertical_curve
ez. square_area = vertical_curve
fa. texture < vertical_curve
fb. texture > vertical_curve
fc. texture = vertical_curve
fd. vertical_direction < vertical_curve
fe. vertical_direction > vertical_curve
ff. vertical_direction = vertical_curve
fg. vertical_slider < vertical_curve
fh. vertical_slider > vertical_curve
fi. vertical_slider = vertical_curve
fj. horizontal_bar < vertical_curve
fk. horizontal_bar > vertical_curve
fl. horizontal_bar = vertical_curve
fm. texture < square_area
fn. texture > square_area
fo. texture = square_area
fp. vertical_direction < square_area
fq. vertical_direction > square_area
fr. vertical_direction = square_area
fs. vertical_slider < square_area
ft. vertical_slider > square_area
fu. vertical_slider = square_area
fv. horizontal_bar < square_area
fw. horizontal_bar > square_area
fx. horizontal_bar = square_area
fy. vertical_direction < texture
fz. vertical_direction > texture
ga. vertical_direction = texture
gb. vertical_slider < texture
gc. vertical_slider > texture

gd. vertical_slider = texture
ge. horizontal_bar < texture
gf. horizontal_bar > texture
gg. horizontal_bar = texture
gh. horizontal_bar < vertical_direction
gi. horizontal_bar > vertical_direction
gj. horizontal_bar = vertical_direction
gk. vertical_slider < vertical_direction
gl. vertical_slider > vertical_direction
gm. vertical_slider = vertical_direction
gn. horizontal_bar < vertical_slider
go. horizontal_bar > vertical_slider
gp. horizontal_bar = vertical_slider

**Test Statistics[c]**

|  | circle_area - angle | horizontal_ curve - angle | vertical_bar - angle | horizontal_ direction - angle | horizontal_ slider - angle |
|---|---|---|---|---|---|
| Z | -3.740[a] | -.664[a] | -.841[a] | -.234[b] | -3.590[b] |
| Asymp. Sig. (2-tailed) | .000 | .507 | .400 | .815 | .000 |

**Test Statistics[c]**

|  | vertical_curve - angle | square_area - angle | texture - angle | vertical_ direction - angle | vertical_slider - angle |
|---|---|---|---|---|---|
| Z | -1.421[a] | -2.113[a] | -4.712[a] | -3.085[b] | -2.730[b] |
| Asymp. Sig. (2-tailed) | .155 | .035 | .000 | .002 | .006 |

**Test Statistics[c]**

|  | horizontal_bar - angle | vertical_bar - circle_area | horizontal_ curve - circle_area | horizontal_ direction - circle_area | horizontal_ slider - circle_area |
|---|---|---|---|---|---|
| Z | -1.608[b] | -2.637[b] | -4.132[b] | -4.544[b] | -4.880[b] |
| Asymp. Sig. (2-tailed) | .108 | .008 | .000 | .000 | .000 |

**Test Statistics[c]**

|  | vertical_curve - circle_area | square_area - circle_area | texture - circle_area | vertical_ direction - circle_area | vertical_slider - circle_area |
|---|---|---|---|---|---|
| Z | -2.337[b] | -3.553[b] | -4.843[a] | -4.899[b] | -4.806[b] |
| Asymp. Sig. (2-tailed) | .019 | .000 | .000 | .000 | .000 |

**Test Statistics[c]**

|  | horizontal_bar - circle_area | horizontal_ curve - vertical_bar | horizontal_ direction - vertical_bar | horizontal_ slider - vertical_bar | vertical_curve - vertical_bar |
|---|---|---|---|---|---|
| Z | -3.702[b] | -1.814[b] | -2.076[b] | -4.712[b] | -.580[a] |
| Asymp. Sig. (2-tailed) | .000 | .070 | .038 | .000 | .562 |

**Test Statistics[c]**

| | square_area - vertical_bar | texture - vertical_bar | vertical_ direction - vertical_bar | vertical_slider - vertical_bar | horizontal_bar - vertical_bar |
|---|---|---|---|---|---|
| Z | -1.365[a] | -4.899[a] | -3.441[b] | -2.954[b] | -2.543[b] |
| Asymp. Sig. (2-tailed) | .172 | .000 | .001 | .003 | .011 |

**Test Statistics[c]**

| | horizontal_ direction - horizontal_ curve | horizontal_ slider - horizontal_ curve | vertical_curve - horizontal_ curve | square_area - horizontal_ curve | texture - horizontal_ curve |
|---|---|---|---|---|---|
| Z | -1.141[b] | -3.571[b] | -1.832[a] | -2.001[a] | -4.862[a] |
| Asymp. Sig. (2-tailed) | .254 | .000 | .067 | .045 | .000 |

**Test Statistics[c]**

| | vertical_ direction - horizontal_ curve | vertical_slider - horizontal_ curve | horizontal_bar - horizontal_ curve | horizontal_ slider - horizontal_ direction | vertical_curve - horizontal_ direction |
|---|---|---|---|---|---|
| Z | -3.067[b] | -2.337[b] | -1.589[b] | -3.085[b] | -3.235[a] |
| Asymp. Sig. (2-tailed) | .002 | .019 | .112 | .002 | .001 |

**Test Statistics[c]**

| | square_area - horizontal_ direction | texture - horizontal_ direction | vertical_ direction - horizontal_ direction | vertical_slider - horizontal_ direction | horizontal_bar - horizontal_ direction |
|---|---|---|---|---|---|
| Z | -3.366[a] | -4.899[a] | -2.038[b] | -1.832[b] | -1.028[b] |
| Asymp. Sig. (2-tailed) | .001 | .000 | .042 | .067 | .304 |

**Test Statistics[c]**

| | vertical_curve - horizontal_ slider | square_area - horizontal_ slider | texture - horizontal_ slider | vertical_ direction - horizontal_ slider | vertical_slider - horizontal_ slider |
|---|---|---|---|---|---|
| Z | -4.488[a] | -4.226[a] | -4.937[a] | -1.664[a] | -2.169[a] |
| Asymp. Sig. (2-tailed) | .000 | .000 | .000 | .096 | .030 |

**Test Statistics[c]**

| | horizontal_bar - horizontal_ slider | square_area - vertical_curve | texture - vertical_curve | vertical_ direction - vertical_curve | vertical_slider - vertical_curve |
|---|---|---|---|---|---|
| Z | -2.001[a] | -.337[a] | -4.319[a] | -3.927[b] | -3.553[b] |
| Asymp. Sig. (2-tailed) | .045 | .736 | .000 | .000 | .000 |

**Test Statistics<sup>c</sup>**

| | horizontal_bar - vertical_curve | texture - square_area | vertical_ direction - square_area | vertical_slider - square_area | horizontal_bar - square_area |
|---|---|---|---|---|---|
| Z | -2.637<sup>b</sup> | -4.675<sup>a</sup> | -3.852<sup>b</sup> | -3.609<sup>b</sup> | -2.889<sup>b</sup> |
| Asymp. Sig. (2-tailed) | .008 | .000 | .000 | .000 | .004 |

**Test Statistics<sup>c</sup>**

| | vertical_ direction - texture | vertical_slider - texture | horizontal_bar - texture | horizontal_bar - vertical_ direction |
|---|---|---|---|---|
| Z | -4.918<sup>b</sup> | -4.937<sup>b</sup> | -4.937<sup>b</sup> | -1.477<sup>a</sup> |
| Asymp. Sig. (2-tailed) | .000 | .000 | .000 | .140 |

**Test Statistics<sup>c</sup>**

| | vertical_slider - vertical_ direction | horizontal_bar - vertical_slider |
|---|---|---|
| Z | -.664<sup>a</sup> | -.711<sup>a</sup> |
| Asymp. Sig. (2-tailed) | .507 | .477 |

a. Based on positive ranks.
b. Based on negative ranks.
c. Wilcoxon Signed Ranks Test