Situational Outlook Questionnaire℠

# Psychometrics of the Current Version of the

# SOQ

A Technical Resource

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# CHAPTER 1

## PSYCHOMETRICS OF THE SOQ VERSION 7

Version 7 of the SOQ was developed in 2009 following a review of the item distributions, scale reliabilities and factor structure of SOQ version 6. The Trust/Openness scale was a key target for improvement, so some items were prudently edited.

The sample for this version of the SOQ included 3491 individuals. It was composed of individuals from a variety of programs and services provided by the Creative Problem Solving Group. For this study, data from an aggregated set of samples of convenience was collected from June of 2009, through May of 2012. Fifty-two organizations were included with samples ranging from 525 individuals from a university, another 73 individuals from a North American construction and engineering firm, to a sample of nine individuals from a leading manufacturing organization. For the 2077 individuals who indicated their gender, 1295 were males and 782 were females. The ages ranged from 19 to 76, with an average of 41.59 for the 2086 who reported this data. All participants took the SOQ via the web. Like the sample in version 6, the sample in the SOQ version 7 was an international mix. The SOQ version 7 is now offered exclusively online and in six different languages (English, Dutch, Spanish, French, Polish, and Norwegian).

Table 1 illustrates the item means and standard deviations for version 7 of the SOQ.

**Table 1**
**SOQ V 7 Item Norms: Means and Standard Deviations**

| Overall SOQ Item | Mean | Std. Dev. | n |
|---|---|---|---|
| **2** | 213 | 72.5 | 3491 |
| **3** | 174 | 79.1 | 3491 |
| **4** | 127 | 90.1 | 3491 |
| **5** | 207 | 75.5 | 3491 |
| **6** | 180 | 77.8 | 3491 |
| **7** | 217 | 74.3 | 3491 |
| **8** | 82 | 89.1 | 3491 |
| **9** | 197 | 76.5 | 3491 |
| **10** | 191 | 75.3 | 3491 |
| **11** | 241 | 70.6 | 3491 |
| **12** | 140 | 83.4 | 3491 |
| **13** | 180 | 75.9 | 3491 |
| **14** | 193 | 77.0 | 3491 |
| **15** | 188 | 79.4 | 3491 |
| **16** | 228 | 74.3 | 3491 |
| **17** | 186 | 75.9 | 3491 |
| **18** | 175 | 83.4 | 3491 |
| **19** | 130 | 80.9 | 3491 |
| **20** | 197 | 80.5 | 3491 |
| **21** | 182 | 72.8 | 3491 |
| **22** | 162 | 77.9 | 3491 |
| **23** | 230 | 70.7 | 3491 |
| **24** | 53 | 78.5 | 3491 |
| **25** | 129 | 79.4 | 3491 |
| **26** | 183 | 74.4 | 3491 |
| **27** | 236 | 70.0 | 3491 |
| **28** | 137 | 74.9 | 3491 |
| **29** | 139 | 84.7 | 3491 |
| **30** | 108 | 93.5 | 3491 |
| **31** | 188 | 73.7 | 3491 |
| **32** | 138 | 80.7 | 3491 |
| **33** | 178 | 78.3 | 3491 |
| **34** | 138 | 94.0 | 3491 |
| **35** | 122 | 76.8 | 3491 |
| **36** | 186 | 82.4 | 3491 |
| **37** | 186 | 79.0 | 3491 |
| **38** | 196 | 72.8 | 3491 |
| **39** | 239 | 67.8 | 3491 |
| **40** | 160 | 79.5 | 3491 |
| **41** | 158 | 76.3 | 3491 |
| **42** | 161 | 77.6 | 3491 |
| **43** | 167 | 84.2 | 3491 |
| **44** | 110 | 99.2 | 3491 |
| **45** | 191 | 80.1 | 3491 |
| **46** | 62 | 81.0 | 3491 |
| **47** | 180 | 77.9 | 3491 |
| **48** | 161 | 103.6 | 3491 |
| **49** | 201 | 74.7 | 3491 |
| **50** | 136 | 75.7 | 3491 |
| **51** | 203 | 74.3 | 3491 |
| **52** | 156 | 77.9 | 3491 |
| **53** | 200 | 75.3 | 3491 |

Table 2 presents the scale means and standard deviations for the entire sample (n=3491). This table also presents the Standard Error of Measurement (sem) for each of the nine dimensions of the SOQ. This was calculated by multiplying the standard deviation by the square root of one minus the reliability coefficients for each dimension. Thus, given an observed score for Challenge/Involvement, there is a 68.26% probability that the person's true score would be that score ±19.3.

**Table 2**
**SOQ V 7 Scale Norms: Means, Standard Deviations, and Standard Error**

| Dimension | Mean | Std. Dev | Sem | n |
|---|---|---|---|---|
| **Challenge/Involvement** | 223.18 | 55.75 | 19.31 | 3491 |
| **Freedom** | 171.16 | 57.86 | 23.14 | 3491 |
| **Trust/Openness** | 178.47 | 63.46 | 29.08 | 3491 |
| **Idea-Time** | 139.90 | 60.92 | 21.97 | 3491 |
| **Playfulness/Humor** | 180.90 | 63.50 | 22.00 | 3491 |
| **Conflict** | 90.48 | 67.98 | 25.44 | 3491 |
| **Idea-Support** | 187.57 | 64.92 | 20.53 | 3491 |
| **Debate** | 194.02 | 58.12 | 20.13 | 3491 |
| **Risk-Taking** | 153.90 | 59.02 | 25.73 | 3491 |

Comparing version 7 with version 6, the means for all dimensions of version 7, except Idea- Support, are higher. The standard deviations for version 7 are similar to those of version 6.

## Distribution and Performance of Items

The purpose of this section is to describe the distribution results of the SOQ version 7's dimensions and item performance. The intent is to determine to what extent do the responses on the items illustrate acceptable levels of discrimination and relationship to their assigned scale. Such information is useful for solving a variety of problems in inferential statistics (Jaeger, 1990) e.g., eliminating items that caused overly skewed results. These results will be presented and interpretations will be discussed.

**Table 3**
**SOQ V 7 Internal Reliability (n = 3491)**

| Dimension | Cronbach's Alpha |
|---|---|
| **Challenge/Involvement** | .88 |
| **Freedom** | .84 |
| **Trust/Openness** | .79 |
| **Idea-Time** | .87 |
| **Playfulness/Humor** | .88 |
| **Conflict** | .86 |
| **Idea-Support** | .90 |
| **Debate** | .88 |
| **Risk-Taking** | .81 |

The results of Cronbach's alpha for the SOQ version 7 are presented in Table 3. General improvement on the Trust/Openness items was found. More detail on the distribution of items as well as item to scale correlation and internal consistency of the scales follows.

**Table 4**
**Frequency Distribution – Challenge/Involvement**

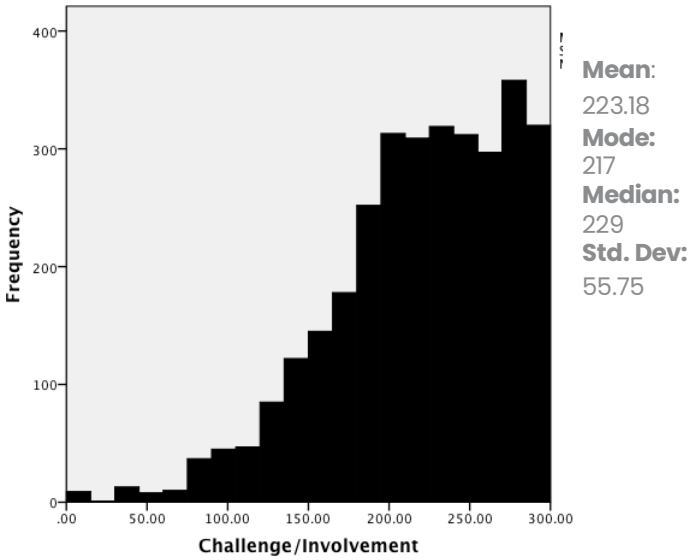



Table 4 presents the frequency distribution for the scores on the Challenge/Involvement scale. This scale has a negative skew indicating that for the samples of convenience used for this analysis, more respondents are choosing higher scores on this dimension. The central tendency results include a mean of 223.2, median of 229, and a mode of 271. This dimension has a standard deviation of 55.8.

**Table 5**
**Frequency Distribution – Freedom**

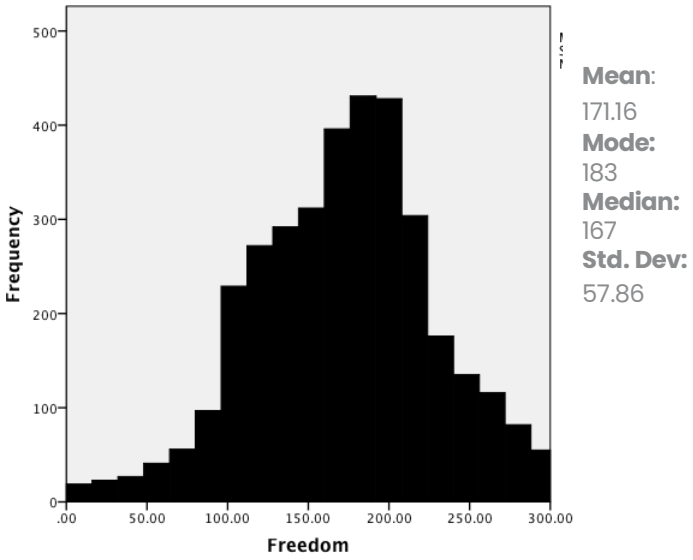



Table 5 presents the frequency distribution for the scores on the Freedom dimension of SOQ version 7. The results indicate a leptokurtic distribution with a slight negative skew. The central tendency results include a mean of 171.2, median of 167, and a mode of 183. This dimension has a standard deviation of 57.9.

Table 6 presents the frequency distribution for the scores on the Trust/Openness dimension of the SOQ version 7.

The results indicate a leptokurtic distribution with a slight negative skew. The central tendency results indicate a mean of 178.5, median of 180, and a mode of 160. This dimension has a standard deviation of 63.5.

**Table 6**
**Frequency Distribution – Trust/Openness**

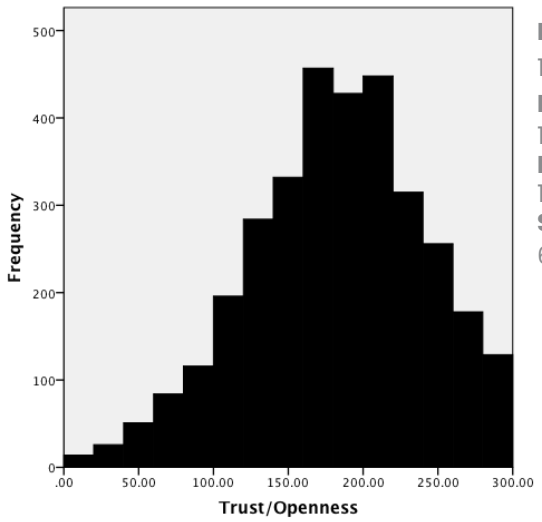


Table 7 presents the frequency distribution for the scores on the Idea-Time dimension of the SOQ version 7. The results indicate a more mesokurtic distribution with a slight positive skew. This suggests that most respondents are scoring lower on this dimension. The central tendency results indicate a mean of 139.9, median of 133, and a mode of 117. This dimension has a standard deviation of 60.9.

**Table 7**
**Frequency Distribution – Idea-Time**

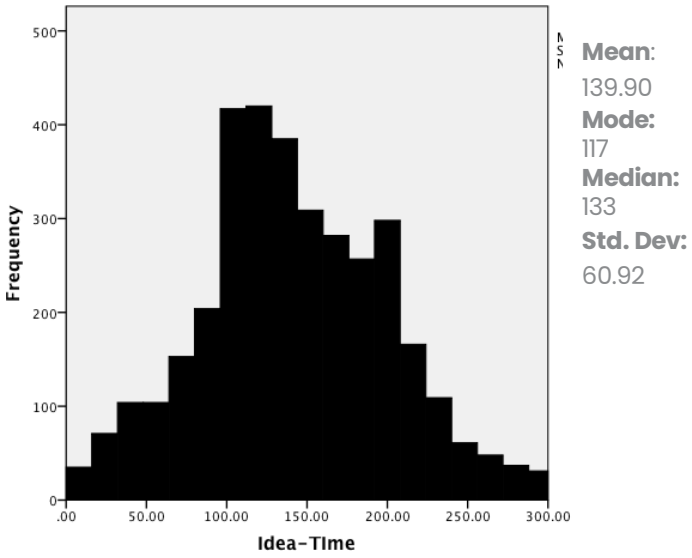


Table 8 presents the frequency distribution for the scores on the Playfulness/Humor dimension of the SOQ version 7.

The results indicate a mesokurtic distribution with a slight negative skew and uneven tails. The central tendency results indicate a mean of 180.9, median of 183, and a mode of 200. This dimension has a standard deviation of 63.5.

**Table 8**
**Frequency Distribution – Playfulness/Humor**

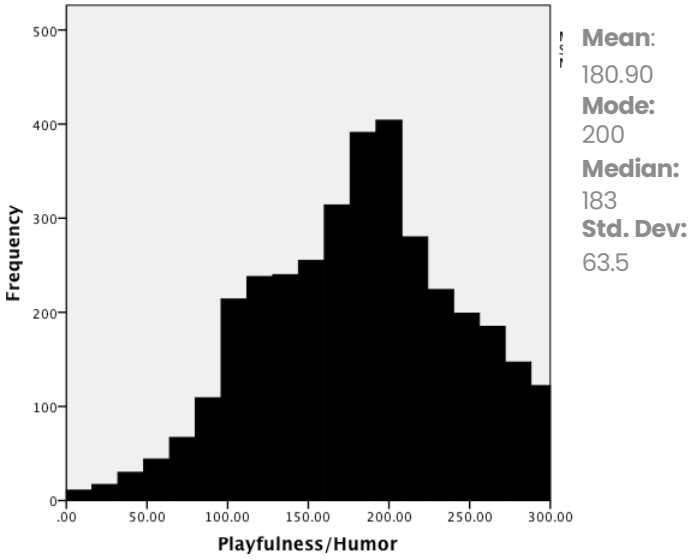


Table 9 presents the frequency distribution for the scores on the Conflict dimension of the SOQ version 7. The Conflict dimension is one that has a negative connotation in comparison to the other eight dimensions of the SOQ. The results indicate distribution with a clear positive skew and uneven tails. The central tendency results indicate a mean of 90.5, median of 83, and a mode of 50. This dimension has a standard deviation of 68. These results indicate that most respondents are providing lower scores on the items within this dimension, particularly relative to the other eight dimensions.

**Table 9**
**Frequency Distribution – Conflict**

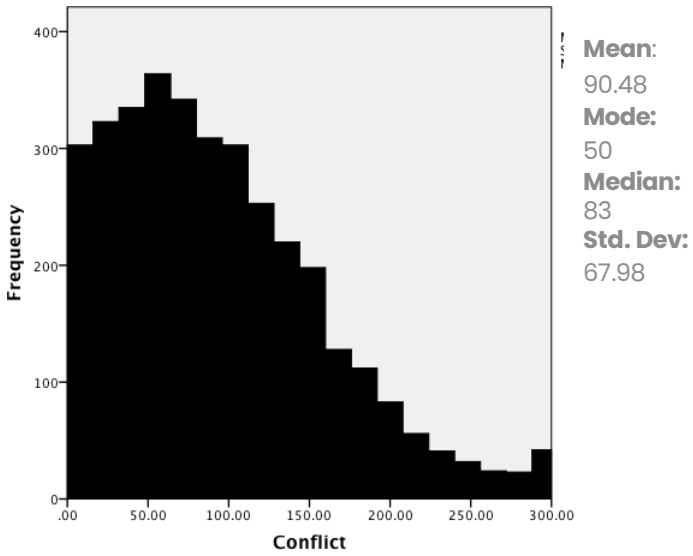


Table 10 presents the frequency distribution for the scores on the Idea-Support dimension  of the SOQ version 7.

The results indicate a mesokurtic distribution with a slight negative skew and uneven tails. The central tendency results indicate a mean of 187.57, median of 200, and a mode of 200. This dimension has a standard deviation of 64.9.

**Table 10**
**Frequency Distribution – Idea-Support**

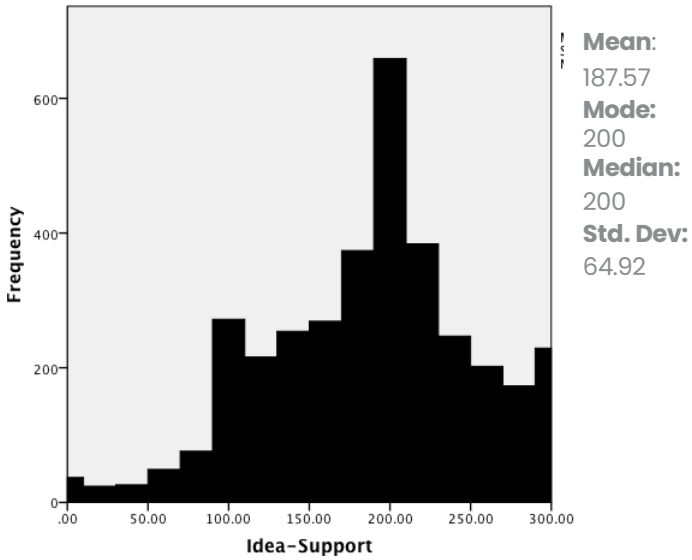


Table 11 presents the frequency distribution for the scores on the Debate dimension of the SOQ version 7. The results indicate a mesokurtic distribution with a slight negative skew and uneven tails. The central tendency results indicate a mean of 194, median of 200, and a mode of 200. This dimension has a standard deviation of 58.12.

**Table 11**
**Frequency Distribution – Debate**

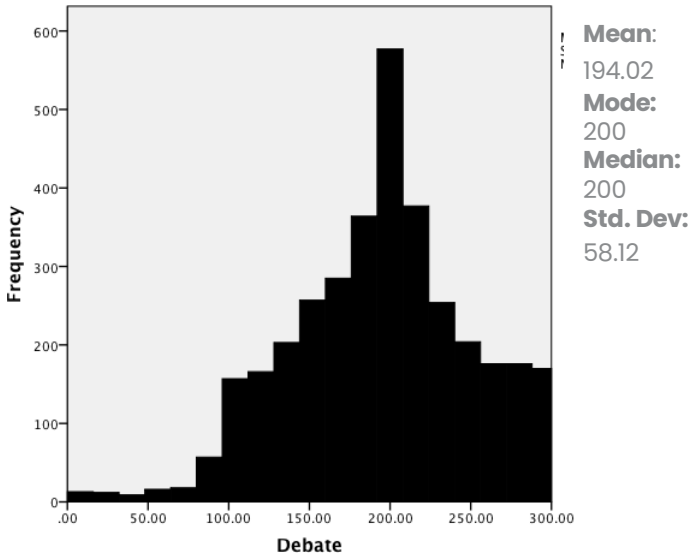
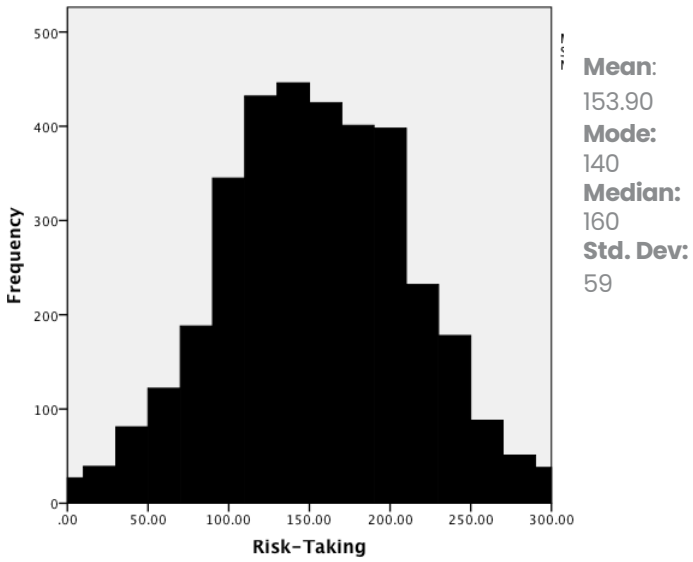


Table 12 presents the frequency distribution for the scores on the Risk-Taking dimension of the SOQ version 7. The results indicate a slightly leptokurtic distribution with a very slight negative skew. The central tendency results indicate a mean of 153.90, median of 160, and a mode of 140. This dimension has a standard deviation of 59.

**Table 12**
**Frequency Distribution – Risk-Taking**




The frequency distributions for the scores on the dimensions of the SOQ version 7 do not reflect purely mesokurtic shapes and are often positively or negatively skewed.

The results are derived from samples of convenience, rather than from a completely random sampling approach, so this is not surprising. This does, however, indicate that care must be taken with many statistical tests requiring the conformance with the assumption of a normal distribution.

## Inter-item Correlations

The following tables report the correlations among items for all nine dimensions of the SOQ version 7. For example, Table 13 presents the correlations among all items for the Challenge/Involvement scale of the SOQ version 7. The table also reports a Cronbach's alpha of .88 for this dimension.

**Table 13**
**Correlations among SOQ V 7 Challenge/Involvement Items for Overall Sample (n = 3491) $\alpha$= .8817**

| Challenge/ Involvement Items | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| 1 | 1.00 | | | | | | |
| 2 | .53 | 1.00 | | | | | |
| 3 | .57 | .58 | 1.00 | | | | |
| 4 | .58 | .49 | .50 | 1.00 | | | |
| 5 | .42 | .49 | .49 | .41 | 1.00 | | |
| 6 | .49 | .52 | .52 | .47 | .49 | 1.00 | |
| 7 | .55 | .59 | .65 | .48 | .54 | .55 | 1.00 |

All correlations are significant at p < .01 level

Table 14 presents the correlations among all items for the Freedom scale of the SOQ version 7. The table also reports a Cronbach's alpha of .84 for this dimension

**Table 14**
**Correlations among SOQ V 7 Freedom Items for Overall Sample (n =3491 ) $\alpha$= .8379**

| Freedom Items | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1** | 1.00 | | | | | |
| **2** | .51 | 1.00 | | | | |
| **3** | .47 | .50 | 1.00 | | | |
| **4** | .41 | .42 | .38 | 1.00 | | |
| **5** | .40 | .49 | .50 | .35 | 1.00 | |
| **6** | .47 | .53 | .50 | .47 | .55 | 1.00 |

Table 15 presents the correlations among all items for the Trust/Openness scale of the SOQ version 7. The table also reports a Cronbach's alpha of .79 for this dimension. This represents an improvement on the internal reliability of this scale as the alpha for version 6 of the SOQ was .69

**Table 15**
**Correlations among SOQ V 7 Trust/Openness Items for Overall Sample (n = 3491) $\alpha$= .7879**

| Trust/Openness Items | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **1** | 1.00 | | | | |
| **2** | .42 | 1.00 | | | |
| **3** | .44 | .42 | 1.00 | | |
| **4** | .41 | .66 | .41 | 1.00 | |
| **5** | .32 | .53 | .31 | .55 | 1.00 |

All correlations are significant at p < .01 level

Table 16 presents the correlations among all items for the Idea-Time scale of the SOQ version 7. The table also reports a Cronbach's alpha of .87 for this dimension.

**Table 16**
**Correlations among SOQ V 7 Idea-Time Items**
**for Overall Sample (n = 3491) $\alpha$= .8682**

| Idea-Time Items | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1** | 1.00 | | | | | |
| **2** | .42 | 1.00 | | | | |
| **3** | .47 | .50 | 1.00 | | | |
| **4** | .39 | .44 | .61 | 1.00 | | |
| **5** | .42 | .45 | .63 | .60 | 1.00 | |
| **6** | .44 | .46 | .69 | .69 | .66 | 1.00 |

All correlations are significant at p < .01 leve

Table 17 presents the correlations among all items for the Playfulness/Humor scale of the SOQ version 7. The table also reports a Cronbach's alpha of .88 for this dimension.

**Table 17**
**Correlations among SOQ V 7 Playfulness/Humor Items**
**for Overall Sample (n = 3491) $\alpha$= .8784**

| Playfulness/ Humor Items | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1** | 1.00 | | | | | |
| **2** | .52 | 1.00 | | | | |
| **3** | .66 | .57 | 1.00 | | | |
| **4** | .48 | .54 | .55 | 1.00 | | |
| **5** | .60 | .49 | .65 | .54 | 1.00 | |
| **6** | .49 | .55 | .52 | .56 | .51 | 1.00 |

All correlations are significant at p < .01 level

Table 18 presents the correlations among all items for the Conflict scale of the SOQ version 7. The table also reports a Cronbach's alpha of .86 for this dimension.

**Table 18**
**Correlations among SOQ V 7 Conflict Items for Overall Sample (n = 3491) $\alpha$= .8581**

| Conflict Items | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1** | 1.00 | | | | | |
| **2** | .47 | 1.00 | | | | |
| **3** | .47 | .55 | 1.00 | | | |
| **4** | .51 | .46 | .47 | 1.00 | | |
| **5** | .47 | .50 | .54 | .53 | 1.00 | |
| **6** | .45 | .51 | .63 | .46 | .58 | 1.00 |

All correlations are significant at p < .01 level

Table 19 presents the correlations among all items for the Idea-Support scale of the SOQ version 7. The table also reports a Cronbach's alpha of .90 for this dimension.

**Table 19**
**Correlations among SOQ V 7 Idea-Support Items for Overall Sample (n = 3491) $\alpha$= .8973**

| Idea-Support Items | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **1** | 1.00 | | | | |
| **2** | .69 | 1.00 | | | |
| **3** | .56 | .62 | 1.00 | | |
| **4** | .64 | .68 | .64 | 1.00 | |
| **5** | .60 | .63 | .60 | .70 | 1.00 |

All correlations are significant at p < .01 level

Table 20 presents the correlations among all items for the Debate scale of the SOQ version 7. The table also reports a Cronbach's alpha of .88 for this dimension.

**Table 20**
**Correlations among SOQ V 7 Debate Items for Overall Sample (n = 3491) $\alpha$= .8751**

| Debate Items | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1** | 1.00 | | | | | |
| **2** | .50 | 1.00 | | | | |
| **3** | .49 | .60 | 1.00 | | | |
| **4** | .55 | .55 | .59 | 1.00 | | |
| **5** | .56 | .54 | .59 | .66 | 1.00 | |
| **6** | .49 | .41 | .45 | .50 | .63 | 1.00 |

All correlations are significant at p < .01 level

Table 21 presents the correlations among all items for the Risk-Taking scale of the SOQ version 7. The table also reports a Cronbach's alpha of .81 for this dimension.

**Table 21**
**Correlations among SOQ V 7 Risk-Taking Items for Overall Sample (n = 3491) $\alpha$= .8053**

| Risk-Taking Items | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **1** | 1.00 | | | | |
| **2** | .48 | 1.00 | | | |
| **3** | .39 | .46 | 1.00 | | |
| **4** | .46 | .48 | .53 | 1.00 | |
| **5** | .41 | .47 | .41 | .44 | 1.00 |

All correlations are significant at p < .01 level

The results on the item and item-to-scale performance represent a general trend towards improvement on the psychometrics for the Risk-Taking scale without negative effects on the other scales. Further refinement will be required for the Trust/Openness dimension.

## Inter-Dimension Correlations

The purpose of this section is to describe the results from the correlation analysis of the SOQ's dimensions and items. Table 22 shows the correlations among the dimensions for the entire sample (n=3491). The level of significance for each correlation was very strong, at p<.01. The results showed that the dimensions had positive relationships to each other. For example, the Challenge/Involvement dimension is strongly correlated to Idea-Support, Trust/Openness, and Risk-Taking. Risk-Taking and Idea-Support also show strong inter- relationships. Conflict is negatively correlated with all dimensions except for Challenge/Involvement.

**Table 22**
**Inter-Correlations Among Dimensions of the SOQ V 7 (n = 3491)**

| Dimension | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| **Challenge/Involvement** | 1.00 | | | | | | | | |
| **Freedom** | .482 | 1.00 | | | | | | | |
| **Trust/Openness** | .660 | .396 | 1.00 | | | | | | |
| **Idea-Time** | .523 | .508 | .433 | 1.00 | | | | | |
| **Playfulness/Humor** | .579 | .431 | .525 | .504 | 1.00 | | | | |
| **Conflict** | .479 | -.171 | -.577 | -.260 | -.386 | 1.00 | | | |
| **Idea-Support** | .700 | .501 | .645 | .642 | .617 | -.473 | 1.00 | | |
| **Debate** | .549 | .458 | .465 | .520 | .512 | -.226 | .679 | 1.00 | |
| **Risk-Taking** | .574 | .554 | .477 | .595 | .515 | -.228 | .681 | .596 | 1.00 |

## Gender Differences

Lauer and Isaksen (2001) reported a number of significant differences in sub-climates using the SOQ. One of the most meaningful results from this study was the occurrence of differences in climate scores for males and females. The published study used data from approximately 1,000 individuals so further analysis was conducted using the current data available for SOQ version 7.

**Table 23**
**Descriptive Statistics V 7 - Female**

| Dimension | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| **Challenge/Involvement** | 782 | 29 | 300 | 222.42 | 53.60 |
| **Freedom** | 782 | 0 | 300 | 173.62 | 57.16 |
| **Trust/Openness** | 782 | 0 | 300 | 180.43 | 61.57 |
| **Idea-Time** | 782 | 0 | 300 | 138.91 | 58.98 |
| **Playfulness/Humor** | 782 | 0 | 300 | 183.50 | 62.94 |
| **Conflict** | 782 | 0 | 300 | 80.82 | 62.20 |
| **Idea-Support** | 782 | 0 | 300 | 194.32 | 61.68 |
| **Debate** | 782 | 67 | 300 | 192.64 | 54.48 |
| **Risk-Taking** | 782 | 0 | 300 | 158.29 | 57.25 |

The descriptive statistics for those who reported their gender as female are included in Table 23. Of the total sample of 3491, 1414 individuals did not report their gender. Of the 2077 who did report their gender, 782 were females and 1295 were males.

The descriptive statistics for those who reported their gender as male are included in Table 24 below.

**Table 24 Descriptive Statistics V 7 - Male**

| Dimension | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| **Challenge/Involvement** | 1295 | 14 | 300 | 225.16 | 50.63 |
| **Freedom** | 1295 | 0 | 300 | 175.39 | 56.33 |
| **Trust/Openness** | 1295 | 0 | 300 | 182.58 | 56.97 |
| **Idea-Time** | 1295 | 0 | 300 | 147.36 | 60.18 |
| **Playfulness/Humor** | 1295 | 0 | 300 | 179.49 | 59.73 |
| **Conflict** | 1295 | 0 | 300 | 87.80 | 61.58 |
| **Idea-Support** | 1295 | 0 | 300 | 192.22 | 60.01 |
| **Debate** | 1295 | 17 | 300 | 199.71 | 55.07 |
| **Risk-Taking** | 1295 | 0 | 300 | 158.08 | 56.17 |

An Analysis of Variance was conducted to test the significance of the difference between the means for males and females. These results are reported in Table 25 below.

**Table 25**
**ANOVA on Differences in Gender SOQ V 7**

| Dimension | df | F | Sig. |
|---|---|---|---|
| **Challenge/Involvement** | 2481 | 1.365 | .243 |
| **Freedom** | (1,2075) | .476 | .490 |
| **Trust/Openness** | (1,2075) | .650 | .420 |
| **Idea-Time** | (1,2075) | 9.747 | .002 |
| **Playfulness/Humor** | (1,2075) | 2.103 | .147 |
| **Conflict** | (1,2075) | 6.219 | .013 |
| **Idea-Support** | (1,2075) | .588 | .443 |
| **Debate** | (1,2075) | 8.097 | .004 |
| **Risk-Taking** | (1,2075) | .006 | .937 |

It appears that there are some significant differences in the way males and females view their climate. Males tend to have a higher score on the Idea-Time, Conflict, and Debate dimensions of the SOQ version 7. To some degree, the level of significance may be influenced by the relatively large sample size. When comparing the actual means for each gender, the actual differences are relatively small. For example, the actual difference in the means for Idea-Time is 8.45 points (on a theoretic scale of 300 points). Whatever the case, those who use the SOQ should carefully consider the gender differences that may exist within certain organizations and levels of analysis.

## Age Differences

Lauer & Isaksen (2001) noted that for some organizations, there were significant differences on climate scores based on age. For the existing sample, 2086 individuals provided their age when they took the SOQ version 7.

Table 26 shows the correlation results for climate dimension scores and age. Four dimensions show a significant correlation with age. These significance levels could be due to the size of the sample, as the *r*-values are rather small.

**Table 26**
**Correlation SOQ V 7 Dimensions & Age (n = 2086)**

| Dimension | Pearson Correlation | Sig. |
|---|---|---|
| **Challenge/Involvement** | .129 | .000 |
| **Freedom** | .026 | .239 |
| **Trust/Openness** | .059 | .007 |
| **Idea-Time** | .019 | .376 |
| **Playfulness/Humor** | -.093 | .000 |
| **Conflict** | -.091 | .000 |
| **Idea-Support** | .034 | .123 |
| **Debate** | -.002 | .926 |
| **Risk-Taking** | .015 | .498 |

The next step to examine age differences was to place the respondent into one of nine, five- year intervals. Table 27 presents the correlation results for each interval.

## Table 27
## Correlation SOQ V 7 Dimensions & Age Ranges

| | | Age 17-24 n = 69 | Age 25-29 n = 131 | Age 30-34 n = 276 | Age 35-39 n = 390 | Age 40-44 n = 418 | Age 45-49 n = 389 | Age 50-54 n = 262 | Age 55-59 n = 103 | Age 60+ n = 48 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Challenge/ Involvement** | Pearson Correlation | -.041 | -.059 | .047 | .121* | .005 | -.144** | .010 | .055 | -.170 |
| | Sig. | .736 | .506 | .435 | .017 | .927 | .004 | .876 | .580 | .248 |
| **Freedom** | Pearson Correlation | -.045 | .002 | .034 | .077 | -.041 | -.041 | .050 | .048 | -.039 |
| | Sig. | .715 | .980 | .577 | .128 | .402 | .425 | .423 | .632 | .790 |
| **Trust/ Openness** | Pearson Correlation | -.055 | -.080 | .028 | .124* | -.020 | -.070 | .038 | -.026 | -.177 |
| | Sig. | .653 | .363 | .645 | .015 | .684 | .168 | .539 | .798 | .228 |
| **Idea-Time** | Pearson Correlation | -.278* | .070 | .048 | .073 | .001 | -.097 | .032 | .070 | -.039 |
| | Sig. | .021 | .427 | .429 | .150 | .982 | .056 | .608 | .480 | .793 |
| **Playfulness/ Humor** | Pearson Correlation | .043 | -.102 | .020 | .115* | -.061 | -.126* | .039 | .081 | -.156 |
| | Sig. | .725 | .246 | .739 | .023 | .214 | .013 | .529 | .417 | .290 |
| **Conflict** | Pearson Correlation | -.120 | .000 | .004 | -.177** | .065 | .076 | -.038 | -.064 | -.017 |
| | Sig. | .325 | .996 | .953 | .000 | .183 | .137 | .539 | .520 | .911 |
| **Idea-Support** | Pearson Correlation | .058 | .064 | .043 | .102* | -.078 | -.097 | .030 | -.036 | -.065 |
| | Sig. | .635 | .466 | .474 | .044 | .110 | .055 | .628 | .720 | .663 |
| **Debate** | Pearson Correlation | -.114 | .101 | .046 | .078 | -.091 | -.065 | .079 | .048 | -.289* |
| | Sig. | .350 | .249 | .451 | .124 | .064 | .199 | .200 | .629 | .047 |
| **Risk-Taking** | Pearson Correlation | -.145 | -.019 | .059 | .079 | -.005 | -.099 | .123* | .033 | -.188 |
| | Sig. | .234 | .831 | .332 | .119 | .915 | .052 | .046 | .740 | .201 |

**Correlation is significant at p < .01 level (2-tailed).
* Correlation is significant at p < .05 level (2-tailed).

The results from the analysis of the relationship between these age intervals and each of the nine dimensions of climate show generally negligible correlations, yet one age group (35-39) has five significant relationships. The age group (45-49) shows two significant relationships. The age groups (17-24), (50-54), and (60+) each show one significant relationship. In general, the low r values indicate a very slight relationship between scores on the SOQ version 7 and age. Again, these data do indicate that those who use the SOQ may wish to look at age and the amount of time (tenure) within the organization as other factors to consider when interpreting results.

**Table 28**
**ANOVA on Differences in Age Intervals – SOQ V 7**

| | df | F | Sig. |
|---|---|---|---|
| **Challenge/Involvement** | 8 | 7.488 | .000 |
| **Freedom** | 8 | 2.223 | .023 |
| **Trust/Openness** | 8 | 3.608 | .000 |
| **Idea-Time** | 8 | 2.018 | .041 |
| **Playfulness/Humor** | 8 | 4.438 | .000 |
| **Conflict** | 8 | 3.609 | .000 |
| **Idea-Support** | 8 | 1.953 | .049 |
| **Debate** | 8 | 1.423 | .182 |
| **Risk-Taking** | 8 | 1.411 | .187 |

A final level of analysis for exploring age differences was to conduct an Analysis of Variance using the age intervals to see if we could find significant differences among the intervals (see Table 28). Again, significant differences between age groupings were found among seven dimensions identified above. To some extent, these may be due to the large sample size.

## Internal Factor Structure

Table 29 shows the SOQ version 7 results of the principal component (Promax rotation) that was restricted to nine factors accounting for 62.8% of the variance.

The first factor Challenge/Involvement, accounted for 34.7% of the variance with an Eigenvalue of 18.03. Six of its items load strongly and clearly on its theoretical dimension, with one item sharing a stronger loading on the Idea-Support factor.

The second factor, Conflict, accounted for 7.4% of the variance and had an Eigenvalue of 3.83. All of its items load appropriately on the theoretical dimension.

The third factor, Playfulness/Humor, accounted for 4.1% of the variance with an Eigenvalue of 2.11. All of its items also load appropriately on the theoretical dimension.

The fourth factor, Idea-time, accounted for 3.9% of the variance with an Eigenvalue of 2.01. .....Five of its items load appropriately on the theoretical dimension, with one item loading more strongly on the Idea-Support factor.

The fifth factor, Debate, accounted for 3.5% of the variance with an Eigenvalue of 1.84. Four of its items load appropriately on the theoretical dimension. One item shares a moderate loading on the Idea-Support factor. Another item of the Debate dimension shares a stronger loading on the Idea-Support factor.

The sixth factor, Freedom, accounted for 3.0% of the variance with an Eigenvalue of 1.53. Five of its items load strongly and clearly on its theoretical dimension. One of the Freedom dimension item shares a moderate loading with the Risk-Taking factor.

The seventh factor, Idea-Support, accounts for 2.49% of the variance with an Eigenvalue of 1.29. Four of its items clearly and strongly load on the theoretical dimension, with one item only moderately sharing a loading with the Risk-Taking factor. One item shows a loading of 1.07, suggesting that there may be high levels of multi-collinearity in the SOQ version 7 data (Babakus, Ferguson, & Joreskog, 1987).

The eighth factor, Risk-Taking, accounts for 2.1% of the variance with an Eigenvalue of 1.10. Its five items load strongly on the theoretical dimension, with one item sharing a moderate loading with the Risk-Taking factor.

The ninth factor, Trust/Openness, accounts for 1.8% of the variance with an Eigenvalue of .93. Three of its items load clearly and appropriately on the theoretical dimension. One item shows a stronger loading with the Challenge/Involvement factor. Another item shares a moderate loading with the Idea-Support factor.

Overall, the factor structure of the SOQ version 7 shows an improvement over the factor structure of version 6. Further developmental work will be needed to address the multicollinearity issues of the Idea-Support dimension.

## Table 29
## Principal Component (Promax Rotation) Analysis SOQ version 7 items (n = 3491)

| Theoretic scale | Component | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Challenge/Involvement | .936 | | | | | | | | |
| Challenge/Involvement | .934 | | | | | | | | |
| Challenge/Involvement | .799 | | | | | | | | |
| Challenge/Involvement | .766 | | | | | | | | |
| Challenge/Involvement | .700 | | | | | | | | |
| Challenge/Involvement | .665 | | | | | | | | |
| Challenge/Involvement | .253 | | | | | | .451 | | |
| Conflict | | -.844 | | | | | | | |
| Conflict | | -.802 | | | | | | | |
| Conflict | | -.791 | | | | | | | |
| Conflict | | -.773 | | | | | | | |
| Conflict | | -.758 | | | | | | | |
| Conflict | | -.681 | | | | | | | |
| Playfulness/Humor | | | .903 | | | | | | |
| Playfulness/Humor | | | .899 | | | | | | |
| Playfulness/Humor | | | .847 | | | | | | |
| Playfulness/Humor | | | .755 | | | | | | |
| Playfulness/Humor | | | .651 | | | | | | |
| Playfulness/Humor | | | .536 | | | | | | |
| Idea-Time | | | | .956 | | | | | |
| Idea-Time | | | | .904 | | | | | |
| Idea-Time | | | | .850 | | | | | |
| Idea-Time | | | | .846 | | | | | |
| Idea-Time | | | | .374 | | | | | |
| Idea-Time | | | | .306 | | | .453 | | |
| Debate | | | | | .849 | | | | |
| Debate | | | | | .816 | | | | |
| Debate | | | | | .725 | | | | |
| Debate | | | | | .644 | | | | |
| Debate | | | | | .627 | | .276 | | |
| Debate | | | | | .349 | | .553 | | |
| Freedom | | | | | | .815 | | | |
| Freedom | | | | | | .813 | | | |
| Freedom | | | | | | .737 | | | |
| Freedom | | | | | | .721 | | | |
| Freedom | | | | | | .672 | | | |
| Freedom | | | | | | .562 | | .324 | |
| Idea-Support | | | | | | | 1.069 | | |
| Idea-Support | | | | | | | .994 | | |
| Idea-Support | | | | | | | .792 | | |
| Idea-Support | | | | | | | .754 | | |
| Idea-Support | | | | | | | .626 | .260 | |
| Risk-Taking | | | | | | | | .793 | |
| Risk-Taking | | | | | | | | .736 | |
| Risk-Taking | | | | | | | | .714 | |
| Risk-Taking | | | | | | | .267 | .492 | |
| Risk-Taking | | | | | | | | .479 | |
| Trust/Openness | .396 | | | | | | | | .292 |
| Trust/Openness | | | | | | | | | .895 |
| Trust/Openness | | | | | | | | | .867 |
| Trust/Openness | | | | | | | | | .359 |
| Trust/Openness | | | | | | | .287 | | .334 |
| Eigenvalues | 18.025 | 3.830 | 2.107 | 2.005 | 1.837 | 1.534 | 1.293 | 1.100 | .931 |
| % Variance Accounted for by Factors | 34.663 | 7.365 | 4.052 | 3.855 | 3.532 | 2.950 | 2.486 | 2.116 | 1.791 |

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