

2009 – TECHNICAL UPDATE

Situational Outlook Questionnaire®

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Our current technical manual for the SOQ (Isaksen & Ekvall, 2007) offers a fairly comprehensive summary of the history, development, and current status of reliability and validity of the measure. We have reviewed the current database of over 7,300 participants in order to update the psychometrics and prepare an improved version of the SOQ. Some organizations and doctoral studies did not allow us to include their data in our analyses, but this represents a much larger number of participants than was used in the 2007 manual.

This document provides you an update to the existing manual (particularly Chapter 4 – Section 3: Reliability and Psychometric Properties of the SOQ). These results are for Version Six of the SOQ, the version used until early 2009. We will, of course, keep you informed of how Version Seven performs when we have sufficient data.

Descriptive Statistics

The following table displays the descriptive statistics for Version 6 of the SOQ.

Table 1: SOQ Means, Standard Deviations, and Standard Error of the Measure

Dimension	Mean	Std. Dev	SEM	n
Challenge/Involvement	220.52	53.266	19.93	7345
Freedom	176.09	57.355	22.94	7345
Trust/Openness	179.66	55.017	30.63	7345
Idea-Time	136.99	58.951	22.83	7345
Playfulness/Humor	172.04	62.787	21.75	7345
Conflict	91.77	65.597	25.37	7345
Idea-Support	182.54	60.615	20.11	7345
Debate	191.06	57.075	19.77	7345
Risk-Taking	152.09	56.394	25.22	7345

Internal Reliability

The internal reliabilities of the SOQ Version 6 are all above the .70 standard, except for the Trust/Openness dimension (which is pretty close!). When we examined the item

performance through factor analysis, we focused on improving the two items that did not load well on this factor.

Table 2: Internal Reliability of the SOQ Version Six
(n = 7345)

Dimension	Cronbach's Alpha
Challenge/Involvement	.86
Freedom	.84
Trust/Openness	.69
Idea-Time	.85
Playfulness/Humor	.88
Conflict	.85
Idea-Support	.89
Debate	.88
Risk-Taking	.80

We are hopeful that by making the minor editing changes to the two problematic items that the Cronbach's Alphas will improve on Trust/Openness.

Inter-item Correlations

Another way to assess the internal reliability of a measure is to compute the inter-item correlations of each item on the scale to the other items on the same scale. These should correlate well and significantly.

Table 3: Correlations among Challenge/Involvement Items
(n = 7345) $\alpha = .86$

Challenge/ Involvement Items	1	2	3	4	5	6	7
1	1.00						
2	.46	1.00					
3	.47	.52	1.00				
4	.57	.47	.49	1.00			
5	.34	.46	.45	.36	1.00		
6	.43	.50	.49	.45	.45	1.00	
7	.44	.55	.62	.45	.50	.52	1.00

All correlations are significant at $p < .01$ level

Table 4: Correlations among Freedom Items**(n = 7345) $\alpha = .83$**

Freedom Items	1	2	3	4	5	6
1	1.00					
2	.54	1.00				
3	.49	.50	1.00			
4	.44	.45	.43	1.00		
5	.46	.51	.53	.40	1.00	
6	.39	.45	.49	.33	.51	1.00

All correlations are significant at $p < .01$ level**Table 5: Correlations among Trust/Openness Items****(n = 7345) $\alpha = .69$**

Trust/Openness Items	1	2	3	4	5
1	1.00				
2	.18	1.00			
3	.43	.21	1.00		
4	.38	.36	.38	1.00	
5	.25	.28	.24	.45	1.00

All correlations are significant at $p < .01$ level**Table 6: Correlations among Idea-Time Items****(n = 7345) $\alpha = .85$**

Idea-Time Items	1	2	3	4	5	6
1	1.00					
2	.35	1.00				
3	.52	.36	1.00			
4	.43	.34	.63	1.00		
5	.47	.32	.63	.61	1.00	
6	.46	.35	.64	.69	.65	1.00

All correlations are significant at $p < .01$ level

Table 7: Correlations among Playfulness/Humor Items**(n = 7345) $\alpha = .88$**

Playfulness/ Humor Items	1	2	3	4	5	6
1	1.00					
2	.52	1.00				
3	.67	.56	1.00			
4	.47	.52	.55	1.00		
5	.60	.49	.66	.55	1.00	
6	.46	.51	.51	.58	.50	1.00

All correlations are significant at $p < .01$ level**Table 8: Correlations among Conflict Items****(n = 7345) $\alpha = .85$**

Conflict Items	1	2	3	4	5	6
1	1.00					
2	.46	1.00				
3	.43	.53	1.00			
4	.50	.45	.45	1.00		
5	.48	.47	.53	.51	1.00	
6	.40	.50	.59	.44	.55	1.00

All correlations are significant at $p < .01$ level**Table 9: Correlations among Idea-Support Items****(n = 7345) $\alpha = .89$**

Idea-Support Items	1	2	3	4	5
1	1.00				
2	.66	1.00			
3	.56	.59	1.00		
4	.60	.64	.60	1.00	
5	.58	.61	.57	.66	1.00

All correlations are significant at $p < .01$ level

Table 10: Correlations among Debate Items**(n = 7345) $\alpha = .88$**

Debate Items	1	2	3	4	5	6
1	1.00					
2	.50	1.00				
3	.50	.60	1.00			
4	.55	.56	.60	1.00		
5	.56	.56	.61	.66	1.00	
6	.47	.42	.44	.51	.59	1.00

All correlations are significant at $p < .01$ level**Table 11: Correlations among Risk-Taking Items****(n = 7345) $\alpha = .80$**

Risk-Taking Items	1	2	3	4	5
1	1.00				
2	.47	1.00			
3	.34	.44	1.00		
4	.40	.49	.50	1.00	
5	.44	.49	.41	.43	1.00

All correlations are significant at $p < .01$ level

Inter-Dimensional Correlations

Although each dimension of the SOQ is factorially independent, we would expect some degree of inter-correlation among the nine dimensions. These are reported below.

Table 12: Inter-Correlations among SOQ Dimensions**(n = 7345)**

Dimension	1	2	3	4	5	6	7	8	9
Challenge/Involvement	1.00								
Freedom	.50	1.00							
Trust/Openness	.62	.41	1.00						
Idea-Time	.46	.50	.39	1.00					
Playfulness/Humor	.52	.42	.51	.48	1.00				
Conflict	-.36	-.15	-.47	-.19	-.32	1.00			
Idea-Support	.65	.51	.59	.61	.59	-.40	1.00		
Debate	.52	.45	.46	.47	.49	-.19	.67	1.00	
Risk-Taking	.55	.58	.47	.57	.49	-.16	.66	.60	1.00

All correlations are significant at $p < .01$ level

Gender Differences

We already know that gender is one variable to consider when measuring climate. The tables below report descriptive statistics for females and males. Table 15 reports the results of a MANOVA illustrating that there are a few significant differences in how males and females score on five of the nine dimensions of the SOQ.

Table 13: Descriptive Statistics for Females

Dimension	N	Min	Max	Mean	SD	IRR
Challenge/Involvement	1246	0	300	223.52	52.42	0.91
Freedom	1246	0	300	179.44	57.87	0.86
Trust/Openness	1246	20	300	180.05	55.51	0.80
Idea-Time	1246	0	300	131.88	59.96	0.86
Playfulness/Humor	1246	0	300	179.20	63.91	0.84
Conflict	1246	0	300	86.41	66.09	0.80
Idea-Support	1246	0	300	185.99	62.37	0.86
Debate	1246	0	300	193.63	58.41	0.89
Risk-Taking	1246	0	300	150.56	58.17	0.85

Table 14: Descriptive Statistics for Males

Dimension	N	Min	Max	Mean	SD	IRR
Challenge/Involvement	2853	0	300	224.96	50.98	0.92
Freedom	2853	0	300	180.43	55.08	0.88
Trust/Openness	2853	0	300	185.83	53.55	0.82
Idea-Time	2853	0	300	140.06	54.93	0.88
Playfulness/Humor	2853	0	300	173.75	60.65	0.87
Conflict	2853	0	300	89.38	62.13	0.82
Idea-Support	2853	0	300	185.85	56.73	0.89
Debate	2853	0	300	195.74	54.39	0.90
Risk-Taking	2853	0	300	158.36	53.88	0.87

Table 15: MANOVA on Gender Differences

Dimension	df	F	Sig.	η^2	Observed Power
Challenge/Involvement	4098	0.678	.410	0.010	0.131
Freedom	4098	0.275	.600	0.005	0.082
Trust/Openness	4098	9.894	.002	0.161	0.882
Idea-Time	4098	18.186	.000	0.323	0.989
Playfulness/Humor	4098	6.776	.009	0.143	0.740
Conflict	4098	1.911	.167	0.043	0.282
Idea-Support	4098	0.005	.944	0.000	0.051
Debate	4098	1.242	.265	0.021	0.200
Risk-Taking	4098	17.295	.000	0.293	0.986

Age Differences

We also know that age can make a difference in climate scores. The following table reports the correlations between age and each of the nine dimensions of the SOQ. The levels of significance are influenced by the relatively large sample size. Table 17 reports the results of the examination of different age ranges and the dimensions of the SOQ.

Table 16: Correlation of SOQ Dimensions and Age

(n = 2863)		
Dimension	Pearson Correlation	Sig.
Challenge/Involvement	.153	.000
Freedom	.059	.000
Trust/Openness	.090	.000
Idea-Time	.028	.061
Playfulness/Humor	-.074	.000
Conflict	-.043	.004
Idea-Support	.029	.056
Debate	.039	.009
Risk-Taking	.058	.000

Table 17

Correlation SOQ Dimensions & Age Ranges

		Age 17-24 n = 141	Age 25-29 n = 411	Age 30-34 n = 705	Age 35-39 n = 1028	Age 40-44 n = 988	Age 45-49 n = 638	Age 50-54 n = 368	Age 55-59 n = 169	Age 60+ n = 42
Challenge/ Involvement	Pearson Correlation	-.228**	.002	.076*	.065*	-.003	-.022	.057	-.036	-.174
	Sig.	.006	.972	.044	.039	.936	.583	.278	.645	.270
Freedom	Pearson Correlation	-.194*	-.007	.087*	.004	-.001	-.110**	.059	-.015	-.248
	Sig.	.021	.892	.020	.910	.971	.005	.257	.844	.113
Trust/ Openness	Pearson Correlation	-.155	.025	.105**	.078*	.014	.032	.069	.080	-.350*
	Sig.	.066	.607	.005	.012	.664	.426	.187	.303	.023
Idea-Time	Pearson Correlation	-.122	-.027	.021	.067*	.042	-.057	.093	.013	-.187
	Sig.	.149	.582	.579	.032	.189	.149	.073	.869	.236
Playfulness/ Humor	Pearson Correlation	-.201*	.012	.059	.008	-.006	-.008	.014	-.030	-.170
	Sig.	.017	.803	.117	.804	.860	.831	.788	.698	.282
Conflict	Pearson Correlation	.211*	.025	-.043	-.026	.030	.014	-.056	.002	-.066
	Sig.	.012	.620	.250	.406	.347	.719	.285	.981	.680
Idea Support	Pearson Correlation	-.266**	-.061	.057	-.002	.048	.012	.082	.003	-.213
	Sig.	.001	.216	.133	.956	.131	.756	.117	.972	.176
Debate	Pearson Correlation	-.110	-.025	.072	.017	.041	.052	.020	-.049	-.025
	Sig.	.194	.614	.055	.581	.199	.193	.697	.529	.875
Risk-Taking	Pearson Correlation	-.122	-.001	.041	.006	-.004	-.063	.084	.012	-.183
	Sig.	.149	.983	.280	.858	.901	.110	.107	.873	.247

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

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

Table 18: MANOVA on Difference in Age Intervals

Dimension	df	F	Sig.	η^2	Observed Power
Challenge/Involvement	8	15.368	.000	.281	1.000
Freedom	8	4.157	.000	.092	0.995
Trust/Openness	8	6.725	.000	.137	1.000
Idea-Time	8	3.183	.001	.074	0.971
Playfulness/Humor	8	5.113	.000	.138	0.999
Conflict	8	4.124	.000	.120	0.994
Idea-Support	8	1.659	.103	.040	0.737
Debate	8	1.665	.102	.037	0.739
Risk-Taking	8	3.739	.000	.081	0.989

As we can see, certain age intervals appear to have significantly different perceptions of their working climates. These results supplement those published in the technical manual.

The following table reports the results of factor analysis on the larger sample.

Table 19: Principal Component (Promax Rotation) Analysis (n = 7345)

Theoretic scale	Component								
	1	2	3	4	5	6	7	8	9
Challenge/Involvement	.851								
Challenge/Involvement	.770								
Challenge/Involvement	.708								
Challenge/Involvement	.682								
Challenge/Involvement	.644								
Challenge/Involvement	.465							.610	
Challenge/Involvement	.297							.617	
Debate		.831							
Debate		.796							
Debate		.723							
Debate		.722							
Debate		.694							
Debate		.478							
Playfulness/Humor			.899						
Playfulness/Humor			.862						
Playfulness/Humor			.784						
Playfulness/Humor			.727						
Playfulness/Humor			.637						
Playfulness/Humor			.541					.361	
Conflict				.833					
Conflict				.768					
Conflict				.767					
Conflict				.752					
Conflict				.683					
Conflict				.641					
Idea-Time					.950				
Idea-Time					.890				
Idea-Time					.834				
Idea-Time					.801				
Idea-Time					.433			.384	
Idea-Time								.307	
Freedom						.866			
Freedom						.788			
Freedom						.741			
Freedom						.710			
Freedom						.682			
Freedom						.345	.322		
Risk-Taking							.911		
Risk-Taking							.744		
Risk-Taking							.710		
Risk-Taking							.497		
Risk-Taking							.478		
Idea-Support								.823	
Idea-Support								.775	
Idea-Support								.627	
Idea-Support								.585	
Idea-Support								.531	
Trust/Openness									.874
Trust/Openness									.864
Trust/Openness									.322
Trust/Openness	.729								
Trust/Openness			.391						
Eigenvalues	16.41	3.71	2.34	2.22	2.00	1.65	1.23	1.07	0.97
% Variance Accounted for by Factors	31.57	7.14	4.50	4.26	3.77	3.16	2.39	2.06	1.86

Planned Improvements

Overall, the results of the analyses using the larger sample were very similar to those reported in 2007 on Version Six of the SOQ.

As a result of these analyses, certain items were targeted for improvement to be incorporated into Version Seven of the SOQ. The aim was to improve the clarity of the factor structure and either maintain or improve the internal reliabilities of the scales.

Two items on theoretical dimension of Challenge and Involvement loaded more heavily on the Idea-Support dimension – even though they still had loadings on their theoretical “home” dimension. These items were reviewed in light of the dimensional definition and their inter-correlations and item reliabilities. As a result, edits were made to these two items.

Two items on the Idea-Time dimension were not performing as well as hoped. One bled over to Idea-Support, and the other loaded entirely on Idea-Support. Again, these items were reviewed and edited.

One item on the Freedom dimension bled over to the Risk-Taking dimension. After reviewing the results, it was quite clear why this was happening, so again an edit was made.

Two items on the Trust/Openness scale were not loading strongly enough, and loaded more strongly on either the Challenge/Involvement or Playfulness/Humor factors. To some extent, this was the explanation for the relatively lower Cronbach’s Alpha for this scale. These items were carefully examined and edited.

We are hopeful that these relatively minor improvements will yield even better results on future factor analyses.

As we reported in an earlier research update, similar changes and improvements have already been made to the Dutch SOQ translation (Isaksen, De Schryver, Aerts, & Isaksen, 2008).

References

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