Situational Outlook Questionnaire℠

A Summary of the Evidence for the

SOQ

A Technical Resource

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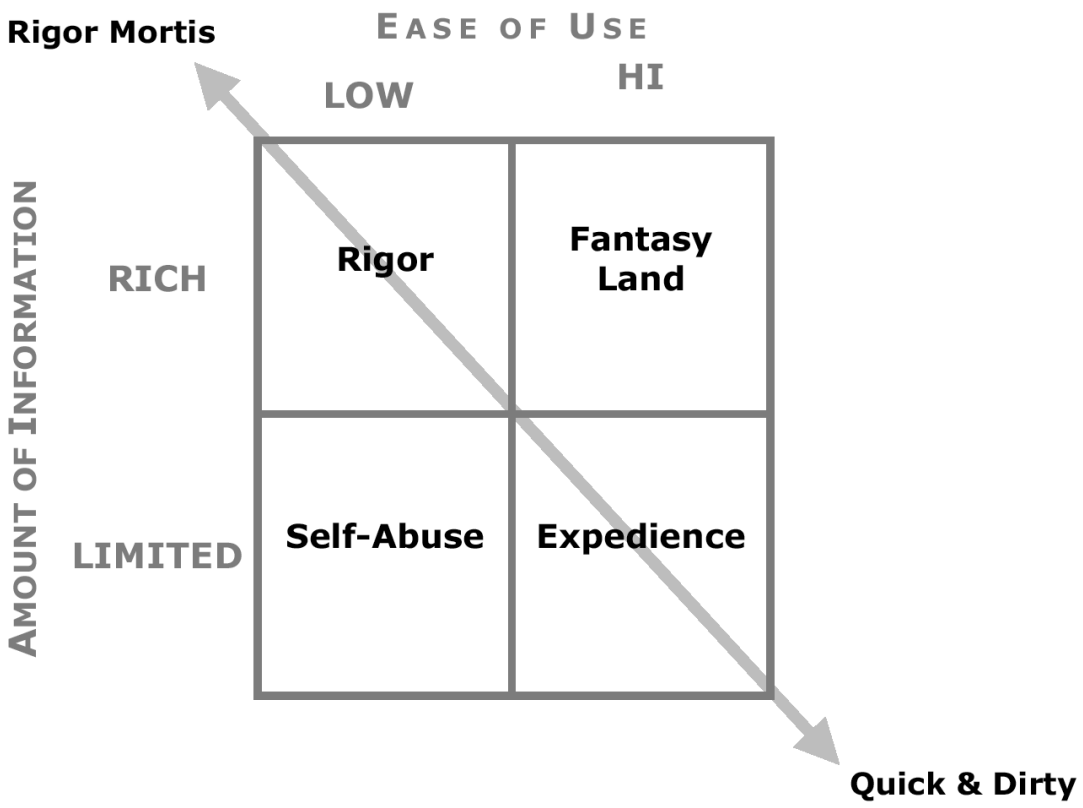
CHAPTER 1

Reliability and Validity

The purpose of this chapter is to provide the reader a high-level and illustrative summary of the evidence to support the reliability and validity of the dimensions of the Situational Outlook Questionnaire® (SOQ). Information about these attributes of the SOQ is provided to introduce you to the instrument, explain how it operates and illustrate the soundness of the measure. If you are already familiar with the behavioral sciences, then you already know about the importance of these attributes. If you are new to this area, it may be helpful to point out why it is important to present this kind of information.

Table 1
Approaches to Assessment



If you examine Table 1 above, you can see that there are many different approaches to assessment. Our colleague, Dr. Don Treffinger frequently shared this two-by-two matrix with his graduate students to illustrate this point. It is possible to focus on providing very limited information and have a measure that is very easy to use. This is identified as expedience in the matrix.

The kind of assessment that is expedient includes those measures you can pick up at the grocery store that include five items, and they try to tell you if you will have a good life. They are easy to complete but provide very limited information. It is also possible to provide very little useful information and have a measure that is very difficult to use. This is referred to as self-abuse. These are the kinds of measures that have many items, and take a long time to complete, but only provide very limited information. A third possibility is to have a measure that provides a great deal of useful information and is very easy to use. This is referred to as fantasyland in the matrix above, because it is highly unlikely that any measure that provides a high level of useful information can do so in a "quick and dirty" way. The fourth quadrant in the matrix is where a measure provides a great deal of useful information and has a degree of rigor to it. It is more likely that any measure or assessment that provides the user with a rich amount of useful information and insight will be relatively harder to administer, score and develop.

The basic tension in the matrix runs between those who desire a "quick and dirty" measure, and those who tend toward "rigor mortis." Usually, the proponents of the quick and dirty end of the tension include practitioners with little patience or interest in science, theory, or conceptual foundations. Academics and researchers are often found at the other end of the spectrum, some of whom have little interest in things practical. As with most things, the truth and best position is somewhere between the two absolute end points.

The reason we believe it is important to present information about the psychometric properties, reliability and validity of the SOQ is that the measure does provide a great deal of useful information. Further, it has been developed over a fifty-year period of research and development. Anyone who wishes to use the SOQ needs to be aware of the support for the measure, as well as its limitations. Further, anyone who wishes to apply the measure to organizational improvement and development, leadership development, or the

improvement of teamwork, needs to be thoroughly familiar with the standards that exist for such an assessment.

When it comes to measurement in the behavioral sciences (and most other sciences), there are two fundamental characteristics for which those who use quantitative measures look. These are reliability and validity (see Pedhazur & Schmelkin, 1991).

Reliability

Reliability refers to the consistency or stability of a measure from one use to the next, with different sets of equivalent items, or under other variable examining conditions. In other words, does the measure assess what it is designed to assess consistently? The concept of reliability underlies the computation of the error of measurement of a single score. Reliability refers to the degree to which scores are free from errors of measurement. Understanding the reliability of a measure enables us to predict the range of fluctuation likely to occur in a single individual's score as a result of irrelevant or chance factors. In its broadest sense, reliability indicates the extent to which individual differences in test scores are attributable to "true" differences in the characteristics under review and the extent to which they are attributable to chance errors or error variance (Anastasi, 1988).

Table 2
Fundamentals of Measurement

VALIDITY

- Degree to which an instrument actually measures the construct it purports to measure

RELIABILITY

- Degree to which an instrument consistently measures the construct

No single observation truly represents a person or climate. To know how trustworthy a measure is, we examine the consistency among administrations. There are many reasons

why scores could be inconsistent. The amount of participant attention or concentration may change from moment to moment. Over longer periods of time scores can change due to physical growth, learning, changes in health and personality, as well as other factors.

A high level of reliability is a required ingredient for any measure that can be considered useful for research or practice. A measure that is reliable can be used with confidence in most settings or time periods. The use of a measure that has a low level of reliability is useless for purposes of carrying out research or for designing change in organizations. Decisions and conclusions that are drawn from measures that have low levels of reliability are built on the types of chance and randomness that typically result in failure. Erroneous and unfavorable decisions, which are unjust, disruptive and damaging, can result when they are influenced by temporary variations in performance or by the choice of questions included on a measure (Cronbach, 1984).

Finally, reliability is a necessary but not a sufficient condition for validity. In other words, a measure cannot be valid if it is not reliable.

Kinds of Reliability

There could be as many varieties of test reliability as there are sources for variation and conditions affecting test scores (Anastasi, 1988). The level of a measure's reliability is assessed through a variety of statistical techniques. The two most common categories of reliability are known as consistency over time and internal consistency.

Consistency over time is derived from the correlation of the scores from subjects who took the instrument and then took it again at a later point in time. The main question addressed is: “How likely is it that I will get a similar result when I take this measure again?” The span of time from the first administration to the second can range from weeks to months and is generally known as test-retest reliability. If the correlations between the subjects’ first and second score are greater than .70, the instrument is generally considered reliable over time.

Table 3
Forms of Reliability

CONSISTENCY OVER TIME
• Test-retest reliability
INTERNAL CONSISTENCY
• Split-half or odd-even method
• Kuder-Richardson formula
• Cronbach's alpha

The second form of reliability is known as internal consistency. This kind of reliability addresses the question of how items within the measure consistently relate to each other and the dimensions to which the items belong. The main question is "How well do the items or dimensions hold together?" It is usually derived from three common statistical techniques. The techniques most commonly used are the: 1) Split-half or odd-even method, 2) Kuder-Richardson formula, and 3) Cronbach's alpha. Each of these techniques only requires that the subjects take the instrument once. The methods are briefly explained in the glossary of this manual or can be further explained within any book on statistics. Like the first form of reliability, consistency over time, if the instrument receives a value greater than or equal to .70 it is generally considered to be internally reliable. Since a measure of climate assesses a "state" set of variables, rather than "trait" variables considering internal reliability is an important aspect for both research and practice.

Validity

Validity refers to the accuracy of a measure. In other words, does the measure truly assess what it was designed to assess? Reasonable levels of validity are required for any measure. It determines the extent to which the measure is useful for both research and practice. A measure that is valid provides accurate information that can be used to guide both research and practice. The use of a measure that has limited validity is highly questionable

for purposes of carrying out research or for implementing change in organizations. Decisions and conclusions that are drawn from sources that have questionable validity are built on shaky ground and therefore may be doomed to fail.

The nature of a measure's validity is established over time; a single study is not sufficient in scope to establish the validity of a measure. Rather, it takes a series of investigations that approach the question of validity from different angles to establish the accuracy of a particular measure. In addition, the SOQ has been derived from the CCQ, a measure that has a great deal of evidence including numerous doctoral dissertations and dozens of published studies. In respect to the SOQ, numerous studies have been carried out, and are being presently carried out, to examine its validity. Other technical resources have provided a summary of some of the work that has explored various aspects of the SOQ's validity. Most of the studies cited in these previous sections used earlier versions of the SOQ (i.e., CCQ IA, CCQ IIA, CIQ IIIA).

The issue of validity of any measure is very different than that of reliability. In a way, reliability is an easier issue in that it relies primarily on mathematics. Validity, on the other hand, often requires judgment and insight. In addition, there is no clear consensus on the meaning of forms of validity.

There are no fixed rules for deciding what high levels of validity are versus low levels of validity. Studying a measure’s validity can be primarily based on logic (face or content), or based on statistics or empirical examination (construct or a criterion-related form of validity like concurrent, predictive or criterion-related).

Table 4
Forms of Validity

CONSTRUCT VALIDITY

- Does the inventory measure what it intends to measure?

PREDICTIVE VALIDITY

- Does the measure predict future performance?

CONTENT VALIDITY

- Does the inventory assess the domain it claims to measure?

CONCURRENT VALIDITY

- Is the inventory related to other valid measures of the same construct?

Forms of Validity (The 1985 Standards)

There are various forms of validity. These were put forward by an earlier version of the Standards for Educational and Psychological Tests (1985). One of the "lightest" forms is called face validity. This typically means that the items, dimensions or scales look appropriate. Most researchers would call face validity the least important indicator of a measure's soundness or adequacy.

Construct validity involves an effort to understand the meaningfulness of the instrument and the rationale that lies behind the measure. It attempts to answer the question: Does the assessment measure what it is intended to measure? When it comes to construct validity, there may be no natural criterion upon which to claim validity for a measure. For many, construct validity refers to the entire body of accumulated evidence surrounding a measure.

Content validity is concerned with the degree to which a measure represents knowledge or behaviors from the domain it purports to measure. According to Jaeger (1990) content validity is not determined through statistical procedures but is assessed on the basis of sound judgment. To assess the content validity of a measure, the content (items,

dimensions, scales, etc.) are examined in detail. Some of the ways to examine content validity include Q-sort methods, inter-subjective verification of items, etc. For example, the items within a creative climate measure should be able to be reviewed and classified by reasonably informed groups and should cluster onto the theoretical dimensions. Further, the specific dimensions measured by a creative climate assessment should have support in the published scientific literature on the topic.

Predictive validity is sometimes also referred to as criterion validity, particularly when the focus is on how well scores on one measure relate to some other criterion measure.

When this kind of validity is high, we can use the scores on one measure to predict performance on the criterion variable. Evidence for this form of validity is usually gained by producing a validity coefficient (a correlation between the scores on the measure and a specified criterion). A creative climate measure should be able to predict the level of job satisfaction, reduced levels of work-related stress, increased levels of creative productivity, etc.

Concurrent validity is when a measure demonstrates a clear and significant relationship with another measure for which there is some evidence of validity. If one measure of the climate for creativity can correlate significantly with another measure of climate that has already shown some evidence of validity we can claim concurrent validity for the first measure.

Evidence of Validity (The 1999 Standards)

The new standards published for educational and psychological tests have revised the terminology associated with validity (American Educational Research Association, American Psychological Association, & the National Council on Measurement in Education, 1999). The new terms are designed to reflect the point of view that validity is not something to be "typed." Instead, there are different lines of validity evidence. As a result, this section will use the more current terminology.

These lines of evidence include:

- Evidence based on test content – an analysis on the relationship between a test's content and the construct it is intended to measure.
- Evidence based on response processes – the analysis of response processes concerning the fit between the construct and the detailed nature of performance or response in which respondents engage.
- Evidence based on internal structure – analysis of the internal structure of a test indicating the degree to which the items conform to the construct.
- Evidence based on relations to other variables – analysis of the relationship of test scores to variables external to the test.

Ultimately, any user of an assessment needs to be concerned about the usability of the measure. Of course, there is no point in using a measure unless we can have some confidence in its results, but at some point, a user must consider its functional or application potential. Usability is concerned with several practical issues. Once the user is satisfied that there is sufficient reliability and validity evident, attention must be focused on how long it takes to complete the measure, how easily it is scored and interpreted, the cost of the assessment, etc.

When you think about answering the question: What is a "good" assessment, you will need to know that it makes sense and that it works. Making sense is often a matter of having clear definitions of the concepts that are based on solid frameworks and theory. Having tight definitions provide the borders of the measure so that you know what it assesses, and what it does not assess. Knowing that a measure works is based on how reliable and valid it is, as well as how useful and helpful it is.

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Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design and analysis: An integrated approach*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.

CHAPTER 2

A Summary of the Evidence

The Situational Outlook Questionnaire® (SOQ) is based on clear conceptual foundations and has been the subject of continuous research and development for more than 50 years. This means that the SOQ has more than adequate evidence regarding its reliability and validity. The purpose of this chapter is to provide a representative summary of this evidence.

Two more recent articles provide up-to-date information on the current psychometric qualities, reliability, and validity of the SOQ:

Isaksen, S. G. (2023). Assessing the work environment for creativity and innovation: Building on the review by Mathisen and Einarsen (2004). *Creativity Research Journal, 35*(2), 227-253. https://doi.org/10.1080/10400419.2022.2112837

Isaksen, S. G. (In Preparation). Understanding the climate for creativity and innovation: 40 years of progress in the Situational Outlook Questionnaire.

Evidence of SOQ's Reliability

Reliability refers to the stability or consistency of a measure from one use to the next (test-retest) or the stability of the measure itself (internal reliability). Below you will find a representative listing of research findings for consistency over time and the internal consistency of the SOQ.

Consistency over Time

- A longitudinal study of a product development project in a high-tech company was conducted across a three-year period with the climate being measured every three months. The results showed that the dimensions possessed good reliability using aggregated scores.
- Similar comparisons using the current version of SOQ show good reliability using aggregated scores. Specifically, four different groups of respondents within one global organization took the SOQ as a part of the leadership development initiative over seven months. There were no significant differences in their assessment of the same organization over time.

Internal Reliability

Internal consistency is a measure of precision and deals with how items are related to its own scale rather than to other scales. This is also referred to as internal reliability. We would want the dimensions of the SOQ to be relatively stable over time, as well as have the items consistently correlate with their respective scales.

- The results of analysis with the Scandinavian precursor (CCQ) show very high levels of internal consistency for the version translated into English.
- Analysis for previous versions of the SOQ reports ranges of Cronbach's Alphas: .52-.90; Guttman split-half: .54-.86; and Spearman Brown: .57-.89.
- Analysis for the current version of SOQ reports Cronbach's Alpha ranges for 8 of the 9 dimensions from .79 - .89, which exceeds the accepted criteria of .70 for internal consistency. Trust/Openness is the only dimension not to fall into this range with a reported alpha of .69 - very close to the standard of .70.

Consistency of Format

- Substantial correlations were found between the paper and web-based version of the SOQ. Analysis of Variance on these results showed no significant differences between results from either form of the measure.

Evidence of SOQ's Validity

Validity refers to the accuracy of a measure. A variety of kinds of evidence can and should be collected to support the validity of any measure. The list below summarizes many of the more detailed findings presented in the other technical resources.

Evidence based on test content

Evidence based on test content includes an analysis on the relationship between a test's content and the construct it is intended to measure.

- A comprehensive study of the climate literature focusing on the 50 most pertinent works provided evidence for all the dimensions of the SOQ.
- Multiple Q-sort studies conducted also provide support that the SOQ's items and dimensions measure the domain they are designed to assess.
- Comparison of R&D departments with different kinds of innovation (adaptive or incremental versus innovative and radical) using the dimensions of the SOQ have shown predictable and clear differences.
- Research on best-practice versus normal practice research and development teams has shown the dimensions of the SOQ discriminate between these types of teams.
- Studies on quality of care in primary care centers and day-homes for children have shown that the dimensions of the SOQ have picked up on observed differences.
- Dimensions of the SOQ have demonstrated relationships that sort groups based on their number and kind of rewards given for effective performance on the job.

Evidence based on response processes

Evidence based on response processes includes the analysis of response processes concerning the fit between the construct and the detailed nature of performance or response in which respondents engage.

- Studies to ensure that the dimensions of the SOQ are measuring an organizational attribute, rather than an individual one, have shown consistent significant discrimination among multiple departments within a large industrial company.
- Research studies of patterns of interaction in work-groups – offensive and defensive action – routines, show appropriate and significant correlations between dimensions of the SOQ and perceived patterns of interaction.
- Multiple studies examining the relationship between individual psychological climate (using the SOQ) and other distinct constructs of cognitive style (KAI), problem solving style (VIEW), and psychological type (MBTI) show few modest correlations. This provides support that the interpersonal domain of climate is distinct from the intrapersonal domain of style.
- Comparison studies of various divisions or subsidiaries within organizations has shown that the dimensions of the SOQ can and do discriminate among them; particularly when considering factors relating to creativity, innovation and change.
- The SOQ has been able to discriminate the nature of the working environment between magnet (those having more discretion) and non-magnet hospitals.

Evidence based on internal structure

Evidence based on internal structure includes analysis of the internal structure of a test indicating the degree to which the items conform to the construct.

- Consistent examination of multiple exploratory factor analyses on all versions of the SOQ have shown an increasingly clear factor structure that shows the items of the measure falling on their respective dimensions.

- Confirmatory factor analysis with 225 samples of convenience (N = 7,345) resulted in a GFI of 0.88, an AGFI of 0.87, an NFI of 0.89, and a RMSEA of .047, indicating an adequate fit of the nine-dimensional model.

Evidence based on relations to other variables

Evidence based on relations to other variables includes analysis of the relationship of test scores to variables external to the test.

Dimensions of the SOQ show significant correlations with a number of effect (dependent) variables including:

- Warr's Well-Being Scales, having to do with psychological well-being
- Job-satisfaction
- Sources of Pressure in Your Job (SPIYP), a measure of occupational stress
- Survey of Creative and Innovative Performance (SCIP), a measure of creative productivity and kinds of creative products developed
- Numbers of patents produced
- Numbers of suggestions contributed to suggestion systems

Dimensions of the SOQ show significant correlations with a number of antecedent variables including:

- Organizational Value Scales (multiple studies)
- Leadership Style
- Innovation Strategy

Dimensions of the SOQ show significant correlations with:

- Work Environment Scale, assessing related social factors at work.
- Scales on the Work Environment Inventory (WEI-later named KEYS), another commercially available measure of the work environment for creativity.
- Organizational Value Scales (multiple studies), showing the significant relationship between values relating to structure, people and development and the dimensions assessed by the SOQ.

- Multi-method research comparing the quantitative and qualitative portions of the SOQ have shown confirmatory support for the dimensions of climate.
- Research using Nystrom's method for determining the level of innovation of organizations has shown clear and significant differences on all SOQ dimensions between innovative and stagnated organizations.
- Dimensions of the SOQ clearly separate people's perceptions of the best and worst work environments.
- Dimensions of the SOQ demonstrate clear and significant differences between people's perceptions of their most and least creative teamwork experiences.
- The SOQ shows significant correlations with measures of employee recognition for making new contributions to the organization.
- The SOQ demonstrates statistically significant ability to discriminate on measures of perceived support for creativity on the job.
- The SOQ demonstrates the ability to significantly discriminate levels of leadership support for creating an environment that supports innovation.
- The SOQ demonstrates the ability to significantly discriminate levels of success with both incremental and radical innovation.
- The SOQ demonstrates the ability to significantly discriminate levels of empowerment for making decisions locally (within the meaningful and proximal work unit) about innovation.
- The SOQ demonstrates the ability to significantly discriminate the degree to which people consider consumer insight and needs more than technology push in innovation efforts.
- The SOQ demonstrates the ability to significantly discriminate levels of uncertainty avoidance in the workplace.
- The SOQ demonstrates the ability to significantly discriminate levels of support for implementing new ideas within work units and overall success with innovation.
- The SOQ demonstrates the ability to significantly discriminate the degree to which people in an organization believe in and promote both diversity and inclusion.

Usability

Usability is concerned with a number of practical issues. Once the user is satisfied that there is sufficient reliability and validity evident, attention must be focused on how long it takes to complete the measure, how easily it is scored and interpreted, the cost of the assessment, etc.

Over 50 years of inquiry into the dimensions that capture the perceived patterns of behavior that characterize the work-life and psychosocial environment that supports creativity, innovation, and change has resulted in rather substantial evidence of reliability and validity. The SOQ, along with its Scandinavian precursor, has also demonstrated high levels of usefulness and practical utility for those who lead and manage organizations.

The SOQ has been applied within hundreds of organizations to help them assess their readiness and ability to develop a work environment that supports creativity, innovation and change. More recently, the SOQ has been successfully applied to help cross-functional teams assess their work environment and to help leaders better understand their role in creating a climate that engages and enables people.

Over the years, the dimensions have weathered a variety of versions, statistical evaluations, and structural modifications all designed to improve their accuracy and precision as tools to improve the working climate for creative productivity in all sorts of organizations. The next, and final, chapter in this section outlines the kinds of research and development that will help continue this journey.

CHAPTER 3

Alternative Benchmarks

When using the Situational Outlook Questionnaire (SOQ), you work with your clients to arrange the application the assessment. During this process you learn about the need that is being addressed – the reason for using the assessment. As a result, you acquire quantitative results on the nine dimensions of the SOQ, as well as narrative data that allows for deeper and broader understanding of the work environment.

Benchmarks allow for your clients to examine their results on the dimensions and make comparisons with others so that they can see similarities and differences. This allows for evaluation by putting other results side-by-side to compare their own results.

A natural question your client(s) will ask is: How do my results compare to others?

This is why it is important to have benchmarks. A benchmark is a standard by which something can be measured or judged. The hope is that by using specified standards better comparisons can be made to make improvements.

Usually, a benchmark is selected because it provides a meaningful comparison point. Our benchmarks provide a comparison between high and low levels of innovation, empowerment, and a host of other metrics. Benchmarks help people make comparative judgments, but they are not absolutes!

The most important benchmarks are the ones your clients set for themselves!

In general, benchmarks should be used as:

Points of Reference. Benchmarks provide a point of reference for making comparisons. They function as standards upon which to make appraisals so that those who 'own' the results can see where things are going well, and what might benefit from improvement. Benchmarks provide just one point of reference. It is just as important to focus on the total work environment, the strategy, market, and industry, etc.

A Roadmap, not a Report Card. When we apply the SOQ, we need to remember that the tool should be used to help create a roadmap, rather than being seen as a report card. Burns (1996) found that when he asked clients to think about a report card, they mentioned words like: graded, evaluated, judged, anxious, and failure. This is not the kind of attitude that helps clients act on their results. The idea of a roadmap suggests seeing assessment as a continuous journey, rather than a single event. It also suggests that the aim is to act.

A way to target, target, target. The key here is to help your clients decide which climate dimensions would make the most important difference in their organizational performance. The benefits of targeting are clear. Those organizations that identify a few dimensions upon which to act find that they do improve on those chosen - as well as other dimensions. They also find that their overall performance improves.

Innovative and Stagnated Organizations

The earliest, and most widely applied climate benchmarks have been the work done by Göran Ekvall to illustrate the differences between innovative and stagnated organizations. During the early 1990's, Harry Nyström had developed a comprehensive system to evaluate innovation within organizations. He and his colleagues conducted comprehensive audits that included many key variables associated with productive innovation. These variables included technical products that had novel elements, as well as products and services that were new to the market. These audits could take 10 -18 months and were able to clearly identify those organizations that were innovative versus those that were stagnated.

Innovative organizations invested in and created new products and services that increased the likelihood of long-term survival and growth. Stagnated organizations were unsuccessful in creating new products or services and were in commercial trouble.

Nyström and Ekvall collaborated on a unique, comprehensive international program of research that included a cross-section of 30 organizations located in Scandinavia and Europe during the late 1980's and early 1990's. They included organizations that had already been assessed by Nyström and represented a variety of industries such as food

processing, marketing, finance, technology, and healthcare. Specific names of the organizations have not been made available as they were assured of anonymity.

These are the most widely used benchmarks to compare the innovative with the stagnated climates within organizations. They provide clear directionality for the SOQ dimensions that has been supported by many more recent studies. They can help those who receive their SOQ results decide upon which dimensions to focus. The emphasis should be upon their own strategy and conditions rather than using these benchmarks as "absolutes." You can also review a the 24 other benchmarks provided here to select one that fits the context of your clients' needs more appropriately, and with more relevant and up-to-date research.

Citations:

Burns, G. (1996). Measuring climate to create a roadmap not a report card. *The Journal of Quality and Participation, 19*(1), 46-50.

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Table 5
Innovative and Stagnated Organizations

SOQ Dimensions	Innovative organizations (n=10) Mean	Stagnated organizations (n=5) Mean	ANOVA Sig.
Challenge/Involvement	238	163	<.001
Freedom	210	153	<.001
Trust/Openness	178	128	<.05
Idea-Time	148	97	<.001
Playfulness/Humor	230	140	<.001
Conflict	78	140	<.01
Idea-Support	183	108	<.001
Debate	158	105	<.001
Risk-Taking	195	53	<.01

Leadership Support of Innovation

Participants were asked to respond to an additional question when completing the SOQ. The question was: Leaders and managers I observe are effective in creating an environment that supports innovation. The Akkermans study included 140 participants from 103 companies and 31 industries, Retz included 180 participants from aerospace engineering, and the Adolfsen study included 57 participants from Volvo and Wärtsilä.

Citations:

Isaksen, S. G., & Akkermans, H. (2011). Creative climate: A leadership lever for innovation. *Journal of Creative Behavior, 45*, 161-187.

Akkermans, H. (2008). *Leadership behavior and climate: A multi-method exploratory investigation of SOQ and proximal leadership behaviors that help and hinder innovation.* An unpublished thesis for the Masters degree in Business Economics, VLEKHO Hogeschool for Science and Art. (140 participants)

Retz, K. (2011). *Factors that affect the climate for creativity and innovation in an Aerospace Engineering Organization*. Unpublished Doctoral Dissertation. Doctor of Business Management, Apollos University. (180 participants)

Adolfsen, J., Stojcecski, T., & Lampeskeper J. (2013) *Influence of Leadership Characteristics on Creative Climate In Research and Development Teams*. Executive MBA, Gothenburg University. (57 participants)

Table 6
Leadership Support of Innovation

SOQ Dimensions	LSI "fairly applicable" or "applicable to a high degree" (n=189) Mean	LSI "not at all" or "to some extent" (n=194) Mean	F	ANOVA Sig.
Challenge/Involvement	239	178	130.502	<.001
Freedom	203	147	71.011	<.001
Trust/Openness	213	156	87.526	<.001
Idea-Time	182	112	113.138	<.001
Playfulness/Humor	213	151	102.428	<.001
Conflict	64	116	55.771	<.001
Idea-Support	222	135	210.448	<.001
Debate	223	164	94.420	<.001
Risk-Taking	186	115	141.685	<.001

Most and Least Creative Teams

Participants in a global professional services organization were asked to identify their most and least creative team experience before completing a short form of the SOQ. The definition provided to them regarding the most creative team was one that produced something that was: new, unique, or original; valuable, relevant and useful; and accepted, produced results, and made a positive impact. The least creative team was described for them as one that produced something that was: well within previous practice or standard, where they "reinvented the wheel;" useless or valueless; and was rejected or produced very little or no impact.

Citation:

Isaksen, S. G., & Lauer, K. J. (2002). The climate for creativity and change in teams. *Creativity and Innovation Management Journal, 11*, 74-86.

Table 7
Most and Least Creative Teams

SOQ Dimensions	Most creative teams (n=154) Mean	Least creative teams (n=154) Mean	F	ANOVA Sig.
Challenge/Involvement	256	94	410.34	<.001
Freedom	193	101	946.68	<.001
Trust/Openness	248	79	494.59	<.001
Idea-Time	219	59	461.34	<.001
Playfulness/Humor	230	68	360.96	<.001
Conflict	16	113	131.02	<.001
Idea-Support	213	65	421.72	<.001
Debate	228	77	453.02	<.001
Risk-Taking	208	61	322.94	<.001

Best and Worst-Case Workplaces

Two studies examined the differences in people's perceptions of the climate in their best and worst-case work experiences. Participants reflected on their previous work experiences and were given the following written instructions: "The purpose of this questionnaire is to examine your experience working in a situation you would consider to be the most supportive of your creativity. From your memory of that 'best case' situation, please rate that environment on the following statements by circling the appropriate number on the scale below the statement." Similar instructions phrased for "least supportive" and "worst-case" were provided on another form. To ensure that the participants had a clear

retrospective focus, they were asked to write down a description of the specific work situation before completing the climate assessments.

Citations:

Aerts, W. (2008). *An exploratory investigation into the relationships between VIEW An Assessment of Problem-Solving Style and Best and Worst-case work climates.* An unpublished thesis for the Masters degree in Business Economics, VLEKHO Hogeschool for Science and Art. Brussels, Belgium.

Isaksen, S. G., & Aerts, W. S. (2011). Linking problem-solving style and creative organizational climate: An exploratory interactionist study. *The International Journal of Creativity & Problem Solving, 21*, 7-38.

Isaksen, S. G., Aerts, W. S., & Isaksen, E. J. (2009). *Creating More Innovative Workplaces: Linking Problem-Solving Style and Organizational Climate.* Orchard Park, NY: The Creativity Research Unit of the Creative Problem-Solving Group, Inc.

Isaksen, S. G., Lauer, K. J., Ekvall, G., & Britz, A. (2001). Perceptions of the best and worst climates for creativity: Preliminary validation evidence for the Situational Outlook Questionnaire. *Creativity Research Journal, 13*, 171-184.

Table 8
Best and Worst-Case Workplaces (N=459)

SOQ Dimensions (n=459)	Best-case (n=459) Mean	Worst-case (n=459) Mean	F	ANOVA Sig.
Challenge/Involvement	240	107	899.48	<.001
Freedom	208	105	463.93	<.001
Trust/Openness	222	91	699.57	<.001
Idea-Time	200	73	830.55	<.001
Playfulness/Humor	234	88	892.94	<.001
Conflict	65	161	289.82	<.001
Idea-Support	219	73	1118.72	<.001
Debate	213	98	644.93	<.001
Risk-Taking	200	70	697.59	<.001

Since these earlier studies were conducted additional data has been collected on subjects by three master of science theses (Hoßbach, 2019; Johansson & Kirkeby, 2024; Myhre & Skovli, 2015), a published research study (Isaksen & Aerts, 2011), as well as project team members as they have taught classes and workshops. This resulted in a final sample size of 1262 individuals. For those who provided their age (N=789), the average was 32 years. For those who provided their gender (N=696), there were 256 males, and 440 females.

Table 9
New Best and Worst-Case Workplaces (N=1262)

SOQ Dimensions	Best Case (n=1262) Mean	Worst Case (n=1262) Mean	F	ANOVA *p*
Challenge/Involvement	239	111	2771.7	<.001
Freedom	202	111	1223.9	<.001
Trust/Openness	218	99	2035.5	<.001
Idea-Time	186	75	1888.3	<.001
Playfulness/Humor	232	103	2305.9	<.001
Conflict	65	164	1024	<.001
Idea-Support	217	81	3078.1	<.001
Debate	209	108	1573.2	<.001
Risk-Taking	188	78	1739.7	<.001

References

Hoßbach, C. (2019). *Organizational climate for creativity: Exploring the influence of distinct types of individual differences*. Wiesbaden, Germany: Springer Gabler.

Isaksen, S. G., & Aerts, W. (2011). Linking problem-solving style and creative organizational climate: An exploratory interactionist study. *International Journal of Creativity and Problem Solving, 21*(2), 7-38.

Johansson, E. & Kirkeby, M. H. (2024). *Leading creativity: Nurturing creativity in internals and externals*. Unpublished Master Thesis. Bergen, Norway: BI-Norwegian Business School.

Myhre, P. O. & Skovli, T. (2015). *An examination of problem-solving style differences in best and worst-case work environments.* Unpublished Master Thesis. Oslo, Norway: BI-Norwegian Business School.

Perceived Support of Creativity

The relationship between mean ratings of the nine dimensions that make up the Situational Outlook Questionnaire and the self-perception of the organizational climate as conducive (or not conducive) to creativity was tested with a sample of 1,830 individuals from a variety of organizations. Participants were categorized on their level of perceived support for creativity. The results indicated that the means of all nine dimensions of the Situational Outlook Questionnaire were different for each level of perceived support for creativity in the work environment. The difference was statistically significant for each level. The results of this study indicated that the Situational Outlook Questionnaire is able to discriminate effectively among different levels of perceived support for creativity in the immediate work environment.

Citation:

Isaksen, S. G. & Lauer, K. J. (2001). Convergent validity of the Situational Outlook Questionnaire: Discriminating levels of perceived support for creativity. *North American Journal of Psychology, 3*, 31-40.

Table 10
Perceived Support of Creativity

SOQ Dimensions	Not supportive (n=201) Mean	To Some Extent (n=609) Mean	Fairly Supportive (n=702) Mean	Highly Supportive (n=318) Mean	ANOVA Sig.
Challenge /Involvement	149	187	224	258	<.001
Freedom	136	169	205	238	<.001
Trust/Openness	98	141	176	215	<.001
Idea-Time	78	115	151	199	<.001
Playfulness/Humor	103	144	180	216	<.001
Conflict	178	136	108	77	<.001
Idea-Support	110	168	213	251	<.001
Debate	128	167	201	233	<.001
Risk-Taking	112	140	167	194	<.001

Successful Incremental Innovation

One hundred and eighty participants in the aerospace industry completed the full SOQ and an additional question: "In general, my organization is successful at incremental innovation."

Citation:

Retz, K. (2011). *Factors that affect the climate for innovation and creativity in aerospace organizations (Unpublished doctoral dissertation).* Apollos University, Huntington Beach, CA. (180 participants)

Table 11
Successful Incremental Innovation

SOQ Dimensions	Not at all applicable (n=22) Mean	Applicable to some extent (n=67) Mean	Fairly applicable (n=63) Mean	Applicable to a high degree (n=28) Mean	F	ANOVA Sig.
Challenge /Involvement	144	166	194	257	25.12	<.001
Freedom	92	139	160	234	25.47	<.001
Trust/Openness	106	155	171	224	18.14	<.001
Idea-Time	50	111	144	227	53.60	<.001
Playfulness/Humor	112	133	184	245	39.60	<.001
Conflict	145	108	87	80	4.04	.008
Idea-Support	64	130	175	244	52.52	<.001
Debate	91	156	196	254	45.58	<.001
Risk-Taking	48	108	146	219	52.07	<.001

Successful Radical Innovation

One hundred and eighty participants in the aerospace industry completed the full SOQ and an additional question: "In general, my organization is successful at radical innovation."

Citation:

Retz, K. (2011). *Factors that affect the climate for innovation and creativity in aerospace organizations (Unpublished doctoral dissertation).* Apollos University, Huntington Beach, CA. (180 participants)

Table 12
Successful Radical Innovation

SOQ Dimensions	SRI "fairly applicable" or applicable to a high degree" (n=50) Mean	SRI "not at all" or "to some extent" (n=130) Mean	F	ANOVA Sig.
Challenge/Involvement	243	166	79.28	<.001
Freedom	205	136	40.42	<.001
Trust/Openness	210	148	38.77	<.001
Idea-Time	201	107	93.47	<.001
Playfulness/Humor	227	142	83.07	<.001
Conflict	75	111	7.85	.006
Idea-Support	219	131	70.36	<.001
Debate	232	156	54.58	<.001
Risk-Taking	193	108	76.19	<.001

Empowerment for Innovation

Three hundred and thirty-four employees of a global pharmaceutical company were surveyed as a part of a global innovation audit. A question was added to the full SOQ to determine the extent to which employees felt empowered to make decisions "in the trenches" about their work on innovation.

Citation:

Isaksen, S. G., & Isaksen, E. J. (2010). *The climate for creativity and innovation: And its relationship to empowerment, consumer insight, and ambiguity.* A technical report from the Creativity Research Unit of the Creative Problem-Solving Group, Inc.

Table 13
Empowerment for Innovation

SOQ Dimensions	Not at all applicable (n=24) Mean	Applicable to some extent (n=109) Mean	Fairly applicable (n=152) Mean	Applicable to a high degree (n=49) Mean	F	ANOVA Sig.
Challenge /Involvement	236	224	240	271	14.72	<.001
Freedom	147	154	194	233	41.61	<.001
Trust/Openness	178	185	199	225	6.48	<.001
Idea-Time	97	110	152	186	36.04	<.001
Playfulness/Humor	189	173	206	226	12.89	<.001
Conflict	90	76	88	88	1.07	.362
Idea-Support	153	169	209	246	36.13	<.001
Debate	173	181	213	250	27.13	<.001
Risk-Taking	98	119	167	197	57.95	<.001

Consumer Insight Driving Innovation

Three hundred thirty-four employees of a global pharmaceutical company were surveyed as a part of a global innovation audit. A question was added to the full SOQ to determine the extent to which employees considered consumer insights and needs more than technology when driving innovation.

Citation:

Isaksen, S. G., & Isaksen, E. J. (2010). *The climate for creativity and innovation: And its relationship to empowerment, consumer insight, and ambiguity*. A technical report from the Creativity Research Unit of the Creative Problem-Solving Group, Inc.

Table 14
Consumer Insight Driving Innovation

SOQ Dimensions	Not at all applicable (n=15) Mean	Applicable to some extent (n=97) Mean	Fairly applicable (n=158) Mean	Applicable to a high degree (n=64) Mean	F	ANOVA Sig.
Challenge /Involvement	224	229	237	261	8.61	<.001
Freedom	150	169	182	215	13.26	<.001
Trust/Openness	195	184	193	224	6.56	<.001
Idea-Time	106	116	149	159	12.21	<.001
Playfulness/Humor	183	186	198	215	3.48	.016
Conflict	97	79	92	71	2.53	.053
Idea-Support	149	174	204	228	18.11	<.001
Debate	189	189	210	223	6.12	<.001
Risk-Taking	111	129	160	171	14.32	<.001

Uncertainty Avoidance

Three hundred thirty-four employees of a global pharmaceutical company were surveyed as a part of a global innovation audit. A question was added to the full SOQ to determine the extent to which employees tended to avoid innovation projects filled with ambiguity. This question is negatively framed, so that lower scores on it should reflect more positive climate scores (as they do).

Citation:

Isaksen, S. G., & Isaksen, E. J. (2010). *The climate for creativity and innovation: And its relationship to empowerment, consumer insight, and ambiguity.* A technical report from the Creativity Research Unit of the Creative Problem-Solving Group, Inc.

Table 15
Uncertainty Avoidance

SOQ Dimensions	Not at all applicable (n=65) Mean	Applicable to some extent (n=161) Mean	Fairly applicable (n=79) Mean	Applicable to a high degree (n=29) Mean	F	ANOVA Sig.
Challenge /Involvement	254	235	235	233	3.29	.021
Freedom	203	178	181	175	3.88	.010
Trust/Openness	208	194	192	194	1.10	.351
Idea-Time	168	136	133	111	8.97	<.001
Playfulness/Humor	218	196	194	167	5.73	.001
Conflict	62	80	103	105	8.23	<.001
Idea-Support	224	195	192	166	8.46	<.001
Debate	221	206	195	194	3.12	.025
Risk-Taking	179	146	149	118	11.08	<.001

Note: Uncertainty avoidance has to do with a natural bias against creativity. See: Mueller, J. S., Melwani, S., & Goncalo, J. A. (2012). The bias against creativity: Why people desire but reject creative ideas. *Psychological Science, 23,* 13-17.

Successful Implementation of New Ideas

For the purposes of this study, the SOQ was modified to include an additional question to assess the level of proximal innovation. The question was: We are successful in implementing new ideas to obtain results in my work unit. The aim of this question was to assess the level of success with innovation within the more immediate working climate.

Citations:

Isaksen, S. G., & Akkermans, H. (2011). Creative climate: A leadership lever for innovation. *Journal of Creative Behavior, 45*, 161-187.

Akkermans, H. (2008). *Leadership behavior and climate: A multi-method exploratory investigation of SOQ and proximal leadership behaviors that help and hinder innovation*. An unpublished thesis for the Masters degree in Business Economics, VLEKHO Hogeschool for Science and Art. Brussels, Belgium. (140 participants)

Table 16
Successful Implementation of New Ideas

SOQ Dimensions	Not at all successful (n=4) Mean	Successful to some extent (n=35) Mean	Fairly successful (n=58) Mean	Successful to a high degree (n=43) Mean	F	ANOVA Sig.
Challenge /Involvement	146	201	221	269	24.523	<.001
Freedom	188	153	200	233	10.054	<.001
Trust/Openness	130	164	181	233	14.844	<.001
Idea-Time	88	130	162	213	11.853	<.001
Playfulness/Humor	113	156	187	239	17.630	<.001
Conflict	175	116	95	46	10.925	<.001
Idea-Support	95	148	197	246	23.064	<.001
Debate	209	190	207	243	6.529	<.001
Risk-Taking	110	129	162	213	15.976	<.001

Successful Innovation

Omnibus Innovation was assessed by a closed-ended question: In general, my organization has been successful at innovation. The aim of this question was to anchor the distal perceptions of the respondents regarding the overall level of innovation success of their organization.

Citations:

Isaksen, S. G., & Akkermans, H. (2011). Creative climate: A leadership lever for innovation. *Journal of Creative Behavior, 45,* 161-187.

Akkermans, H. (2008). *Leadership behavior and climate: A multi-method exploratory investigation of SOQ and proximal leadership behaviors that help and hinder innovation.* An unpublished thesis for the Masters degree in Business Economics, VLEKHO Hogeschool for Science and Art. Brussels, Belgium. (140 participants)

Table 17
Successful Innovation

SOQ Dimensions	Not at all successful (n=4) Mean	Successful to some extent (n=35) Mean	Fairly successful (n=58) Mean	Successful to a high degree (n=43) Mean	F	ANOVA Sig.
Challenge /Involvement	204	200	226	264	14.774	<.001
Freedom	171	158	201	238	11.671	<.001
Trust/Openness	130	169	182	235	13.663	<.001
Idea-Time	59	128	170	215	15.197	<.001
Playfulness/Humor	154	159	192	235	11.717	<.001
Conflict	167	108	90	55	6.257	<.001
Idea-Support	110	150	201	248	23.514	<.001
Debate	175	190	210	247	8.548	<.001
Risk-Taking	100	124	169	219	22.900	<.001

More versus Less Innovative Organizations

We aggregated the results from three studies that related to innovative productivity. Isaksen and Isaksen (2010) examined the levels of empowerment for innovation, consumer insight driving innovation, and uncertainty avoidance (reverse scored) within an international pharmaceutical research and development organization (N=334). Isaksen and Akkermans (2011) conducted a global survey on general success at innovation and successful implementation of new ideas (N=140). Retz (2011) studied the level of success at

radical and incremental innovation with aerospace engineers in North America (N=180). These last two studies also included a metric for leadership support for innovation. This resulted in a total sample size of 654 individuals from 204 different organizations. The average age of respondents was 45 years with a range from 23 to 66. The sample included 114 females and 202 males for the 316 people who provided their gender.

Table 18
More versus Less Innovative Organizations

SOQ Dimensions	More Innovative (n=389) Mean	Less Innovative (n=265) Mean	F	ANOVA *p*
Challenge/Involvement	244	190	192.1	<.001
Freedom	203	142	181.6	<.001
Trust/Openness	206	159	99.2	<.001
Idea-Time	170	105	193.1	<.001
Playfulness/Humor	211	153	164.2	<.001
Conflict	77	107	33.5	<.001
Idea-Support	218	137	344.5	<.001
Debate	221	167	150.2	<.001
Risk-Taking	177	108	271.9	<.001

Magnet and Non-Magnet Hospitals

The SOQ was applied to study nurses' perceptions of climate in magnet versus non-magnet Veterans Administration hospitals. Nurses in magnet hospitals experience more empowerment, better support for clinical decision-making, and better patient outcomes. Hospitals that achieve magnet status must demonstrate compliance with standards of care and professional performance.

Citation:

Erickson, D. (2010). *The climate for nursing creativity and risk-taking: A magnet environment versus non-magnet environment.* (Unpublished doctoral dissertation.) Capella University, Minneapolis, MN.

Table 19
Magnet and Non-Magnet Hospitals

SOQ Dimensions	Magnet (n=30) Mean	Non-Magnet (n=41) Mean	F	ANOVA Sig.
Challenge/Involvement	219	205	0.895	.347
Freedom	193	169	2.485	.120
Trust/Openness	164	164	0.001	.980
Idea-Time	177	113	15.744	<.001
Playfulness/Humor	198	185	0.543	.464
Conflict	109	108	0.004	.950
Idea-Support	195	151	6.257	.015
Debate	213	182	5.445	.023
Risk-Taking	172	125	8.815	.004

Belief in Diversity

An SOQ intervention was undertaken in 2010 at a large American university. The total sample was 525 individuals across a wide variety of roles in the university. One of the main focuses of the intervention was to gauge their diversity and inclusion efforts. This allowed CPSB to also look into the relationships between these efforts and the perceived climate for creativity and innovation. The additional question was: "People here believe the staff is diverse."

Table 20
Belief in Diversity

SOQ Dimensions	Not at all applicable (n=15) Mean	Applicable to some extent (n=101) Mean	Fairly applicable (n=181) Mean	Applicable to a high degree (n=228) Mean	F	ANOVA Sig.
Challenge /Involvement	140	169	197	204	9.78	<.001
Freedom	118	150	158	165	3.418	.017
Trust/Openness	89	128	154	157	7.673	<.001
Idea-Time	89	119	141	152	7.824	<.001
Playfulness/Humor	112	152	171	178	6.756	<.001
Conflict	169	138	106	104	6.244	<.001
Idea-Support	84	133	167	167	9.503	<.001
Debate	132	148	174	183	7.939	<.001
Risk-Taking	99	111	139	138	6.305	<.001

Promoting Diversity

An SOQ intervention was undertaken in a large American university. The total sample was 525 individuals across a wide variety of roles in the university. One of the main focuses of the intervention was to gauge their diversity and inclusion efforts. This allowed CPSB to also look into the relationships between these efforts and the perceived climate for creativity and innovation. The additional question was: "People here strongly promote diversity."

Table 21
Promoting Diversity

SOQ Dimensions	Not at all applicable (n=25) Mean	Applicable to some extent (n=85) Mean	Fairly applicable (n=201) Mean	Applicable to a high degree (n=214) Mean	F	ANOVA Sig.
Challenge /Involvement	131	142	190	223	45.93	<.001
Freedom	120	128	155	179	17.78	.017
Trust/Openness	68	106	147	176	35.95	<.001
Idea-Time	81	90	137	169	38.59	<.001
Playfulness/Humor	118	132	162	196	27.75	<.001
Conflict	185	156	109	91	18.85	<.001
Idea-Support	62	96	159	193	55.31	<.001
Debate	107	129	166	201	38.87	<.001
Risk-Taking	71	90	131	156	35.85	<.001

Promoting Inclusion

An SOQ intervention was undertaken in a large American university. The total sample was 525 individuals across a wide variety of roles in the university. One of the main focuses of the intervention was to gauge their diversity and inclusion efforts. This allowed CPSB to also look into the relationships between these efforts and the perceived climate for creativity and innovation. The additional question was: "People here strongly promote inclusion."

Table 22
Promoting Inclusion

SOQ Dimensions	Not at all applicable (n=44) Mean	Applicable to some extent (n=110) Mean	Fairly applicable (n=216) Mean	Applicable to a high degree (n=155) Mean	F	ANOVA Sig.
Challenge /Involvement	124	147	198	238	78.91	<.001
Freedom	106	125	165	188	36.80	<.001
Trust/Openness	65	100	156	196	86.20	<.001
Idea-Time	60	97	158	181	69.95	<.001
Playfulness/Humor	103	136	169	211	50.36	<.001
Conflict	194	168	101	67	57.01	<.001
Idea-Support	55	101	170	212	109.70	<.001
Debate	93	138	147	214	66.02	<.001
Risk-Taking	65	96	137	169	60.38	<.001

Considering Viewpoints from Diverse Populations

An SOQ intervention was undertaken in a large American university. The total sample was 525 individuals across a wide variety of roles in the university. One of the main focuses of the intervention was to gauge their diversity and inclusion efforts. This allowed CPSB to also look into the relationships between these efforts and the perceived climate for creativity and innovation. The additional question was: "People here consider viewpoints from diverse populations when making decisions."

Table 23
Considering Viewpoints from Diverse Populations

SOQ Dimensions	Not at all applicable (n=44) Mean	Applicable to some extent (n=110) Mean	Fairly applicable (n=216) Mean	Applicable to a high degree (n=155) Mean	F	ANOVA Sig.
Challenge /Involvement	100	152	204	250	168.17	<.001
Freedom	94	133	163	200	60.35	<.001
Trust/Openness	60	106	161	202	117.98	<.001
Idea-Time	53	103	152	189	102.12	<.001
Playfulness/Humor	105	132	174	218	72.39	<.001
Conflict	211	147	100	64	64.76	<.001
Idea-Support	42	103	175	227	223.53	<.001
Debate	89	140	178	222	98.69	<.001
Risk-Taking	64	95	145	172	83.77	<.001

Work Engagement

This study applied the SOQ and the Utrecht Work Engagement Scale with 95 employees of a major Ministry in Bergen, Norway. All dimensions of the SOQ correlated significantly with work engagement, with Challenge and Involvement having the highest r value of .71 ($p<.0001$). Regression analysis showed that higher scores on Challenge and Involvement and slightly lower scores on Debate were good predictors of engagement ($B = .831$; $F=50.63$, $p<0001$).

Citations:

Dahl, T. J., & Nyland, R. B. (2013). *Climate for job engagement: A win-win situation.* (Unpublished Master of Management Thesis on Human Resource Management). Bergen, Norway: Norwegian Business School.

Lofquist, E. A., Isaksen, S. G., & Dahl, T. J. (2018). Something fishy: Exploring change, job engagement, and work environment in the Norwegian Directorate of Fisheries. *Journal of Change Management, 18,* 281-303.

Schaufeli, W. B., & Bakker, A. B. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66,* 7-1-716.

Table 24
Work Engagement

SOQ Dimensions	Low (n=11) Mean	Medium (n=59) Mean	High (n=25) Mean	F	ANOVA Sig.
Challenge /Involvement	130	191	234	32.56	<.001
Freedom	136	155	189	7.66	.001
Trust/Openness	122	164	193	7.96	.001
Idea-Time	118	118	152	5.19	.007
Playfulness/Humor	115	175	205	11.82	<.001
Conflict	117	87	83	1.46	n.s.
Idea-Support	113	151	176	5.40	.006
Debate	145	188	210	5.11	.008
Risk-Taking	102	128	160	8.37	<.001

Level of Collaboration

This study applied the SOQ and a collaborative relationship survey with 222 employees working in the third-part logistics industry. Collaboration was defined as occurring when two or more independent companies work jointly to plan and execute operations with greater success than when acting alone (Nyaga, Whipple, & Lynch, 2010). Collaborative relationships stress an exchange of information, knowledge, complementary resources and capabilities, and relational asset specific investments (Klein & Rai, 2009).

Citations:

Bushart, R. (2015). *Examining the relationships between collaborative relationships and organizational innovation within the third-part logistics industry.* Unpublished Doctoral Dissertation. Phoenix, Arizona: Northcentral University.

Klein, R. & Rai, A. (2009). Inter-firm strategic information flows in logistics supply chain relationships. *MIS Quarterly, 33(1),* 4-19.

Nygaga, G. N., Whipple, J. M., & Lynch, D. F. (2010). Examining supply-chain relationships: Do buyer and supplier collaborative relationships differ? *Journal of Operations Management, 28,* 101-114.

Table 25
Level of Collaboration

SOQ Dimensions	Low (n=30) Mean	High (n=41) Mean	F	ANOVA Sig.
Challenge/Involvement	182	219	31.339	<.001
Freedom	152	195	24.569	<.001
Trust/Openness	182	206	17.101	<.001
Idea-Time	149	186	23.321	<.001
Playfulness/Humor	190	208	4.287	.04
Conflict	132	111	3.589	.059
Idea-Support	155	205	31.131	<.001
Debate	169	192	11.523	.001
Risk-Taking	149	191	26.449	<.001

Effectiveness of Talent Development

A credit union service organization contacted a total of 651 participants from 11 Credit Unions and one CUSO. A total of 497 returned complete questionnaires that were included in our analysis (76.3% response rate). We collected the data between June of 2018, and November of 2019. The majority of participants (78.3%) responded in 2019. The participating individuals represented credit unions across the United States (Florida, Wisconsin, Washington DC) and Canada and from all levels of staff (22.1% of the respondents were working in middle- or upper-level management positions in the respective credit unions). We developed and applied a scale including 6 items to assess talent development effectiveness.

Table 26
Talent Development Effectiveness

SOQ Dimensions	Talent (n=49) 0-100	Development (n=190) 101-200	Scale (n=258) 201-300	F	ANOVA Sig.
Challenge /Involvement	142	205	262	155.3	.01
Freedom	110	163	196	59.3	.01
Trust/Openness	106	161	215	98.4	.01
Idea-Time	98	147	238	96.1	.01
Playfulness/Humor	149	187	238	77.6	.01
Conflict	146	99	57	37.0	.01
Idea-Support	109	180	246	153.0	.01
Debate	135	182	215	50.2	.01
Risk-Taking	94	134	174	56.2	.01

Citations:

Isaksen, S. G., Stangl, J., & Hoßbach, C. (2021). *Creating the work environment for talent development: A technical report on the use of the Situational Outlook Questionnaire – Talent Development Version.* Prepared for the Credit Union Executive Society, Madison, Wisconsin.

Isaksen, S. G., Hoßbach, C., & Stangl, J. (2024). Creating better workplaces: Linking the work environment for creativity, innovation and change to talent development. *Kindai Management Review, 12*.

Safety

A practical study was conducted in 2016 with a manufacturing facility within a large consumer products organization interested in how focusing on safety can also encourage creativity and innovation (N=299).

Table 27
More and Less Safe Employees

SOQ Dimensions	More Safe (n=255) Mean	Less Safe (n=44) Mean	F	ANOVA *p*
Challenge/Involvement	188	149	18.4	<.001
Freedom	144	114	10.5	<.001
Trust/Openness	148	109	18.4	<.001
Idea-Time	150	109	18.6	<.001
Playfulness/Humor	177	138	14.8	<.001
Conflict	118	161	12.6	<.098
Idea-Support	169	111	33	<.001
Debate	182	152	11.6	<.001
Risk-Taking	131	109	7.1	<.008

Use of Creative Problem Solving

A practical study was conducted in 2024 with a North American publishing organization interested in the relationship between the SOQ and the level of use of creative problem solving (N=330).

Table 28
High and Low Use of CPS

SOQ Dimensions	High Use (n=108) Mean	Lower Use (n=222) Mean	F	ANOVA *p*
Challenge/Involvement	246	223	13.5	<.001
Freedom	184	151	20.3	<.001
Trust/Openness	220	189	17.6	<.001
Idea-Time	160	128	14.5	<.001
Playfulness/Humor	201	173	12.4	<.001
Conflict	56	68	2.8	<.098
Idea-Support	210	174	18.4	<.001
Debate	197	164	18.9	<.001
Risk-Taking	158	127	22.7	<.001

Sense of Belonging

A practical study was conducted in 2024 with a North American publishing organization interested in the relationship between the SOQ and having a sense of belonging (N=330).

Table 29
High and Low Sense of Belonging

SOQ Dimensions	High (n=268) Mean	Low (n=62) Mean	F	ANOVA *p*
Challenge/Involvement	245	170	128.4	<.001
Freedom	169	127	23.6	<.001
Trust/Openness	214	136	97.6	<.001
Idea-Time	151	86	47.8	<.001
Playfulness/Humor	200	105	133.1	<.001
Conflict	51	123	77.2	<.001
Idea-Support	203	112	97.2	<.001
Debate	188	120	62.6	<.001
Risk-Taking	145	102	31.9	<.001

More versus Less Positive, Productive Organizations

We had access to the SOQ data from nine studies that we aggregated under the general heading of positive, and creatively productive workplaces. The sample included results from two unpublished doctoral dissertations (Erikson, 2010; Bushart (2015). Additional data was aggregated from three published studies (Isaksen and Lauer,2002; Lofquist et al., 2018 and Isaksen et al., 2024).

Three studies conducted to meet practical needs of organizations were also included that used single items or independent short scales. The first was conducted in 2010 with a large university interested in the promotion of diversity and inclusion and included three additional metrics were added to the SOQ (N=525). The second was conducted in 2016 with a manufacturing facility within a large consumer products organization interested in how focusing on safety can also encourage creativity and innovation (N=299). The third practical study was conducted in 2024 with a North American publishing organization

interested in the relationship between the SOQ and having a sense of belonging and level of use of creative problem solving (N=330).

The best versus worst workplace study reported above was also included for this analysis (N=1262, taken twice). The total sample for this analysis included 4,871 subjects from 2524 different workplaces. The average age was 37 for those who provided this information (N=1378). The sample included 610 males and 856 females for those who provided their gender (N=1466).

Table 30
More and Less Positive, Productive Organizations

SOQ Dimensions	More Positive (n=2779) Mean	Less Positive (n=2092) Mean	F	ANOVA *p*
Challenge/Involvement	232	131	2949.3	<.000
Freedom	188	119	1296.3	<.000
Trust/Openness	203	112	2038.1	<.000
Idea-Time	179	87	2280.8	<.000
Playfulness/Humor	216	118	2325.4	<.000
Conflict	73	147	1013.3	<.000
Idea-Support	208	97	3236.5	<.000
Debate	204	120	2049.1	<.000
Risk-Taking	172	89	1876.8	<.000