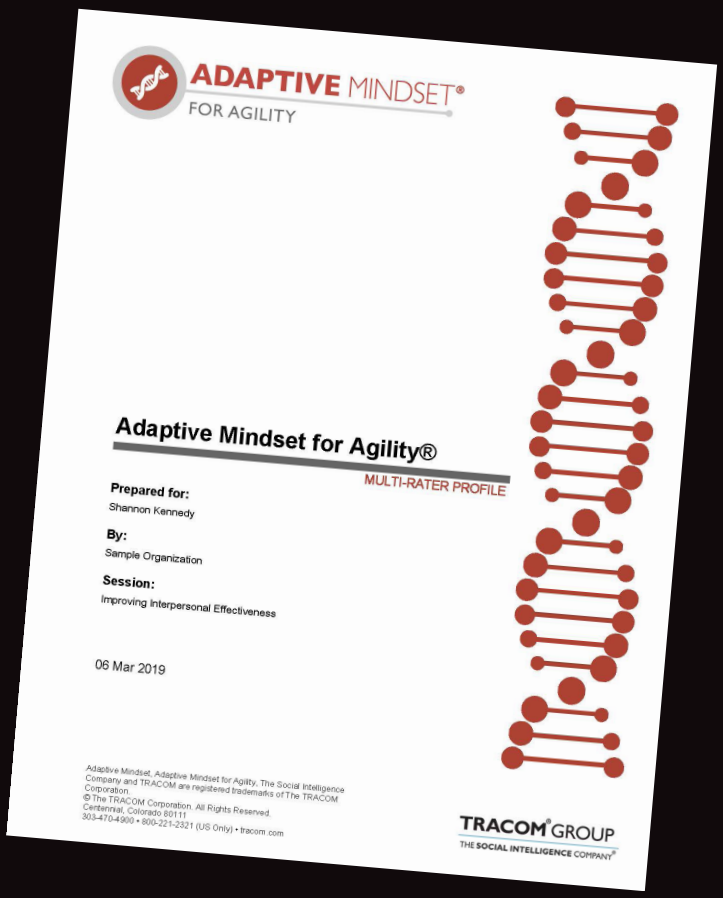
Technical Report

Universal

Adaptive Mindset for Agility®

Multi-Rater Profile

Facilitator



TRACOM® GROUP
THE SOCIAL INTELLIGENCE COMPANY®

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Technical Report

TABLE OF CONTENTS

Acknowledgements

We would like to thank all the organizations and individuals who participated in the development of the Adaptive Mindset for Agility assessment and program. They provided data and feedback for initial versions of the assessment as well as early versions of the learning program. Their efforts and insights are very much appreciated.

Introduction

TRACOM develops assessments that are anchored in scientific theory and research. This report provides a detailed description of the research process that led to our Adaptive Mindset for Agility® assessment. It serves as a companion to other Adaptive Mindset for Agility materials, including the Unlocking Personal Agility® Administration Kit and the Profile Guide.

This Technical Report is organized as follows:

- First, we provide a brief overview of agility. You will gain an understanding of what agility is, why it is important, and how it complements TRACOM's existing suite of products. We then describe how the agility model and assessment were developed.
- Next, we explain the psychometric properties of the scale that show evidence for precision and accuracy.
- Finally, we present the norms for the scale. Norms summarize the survey performance of respondents in TRACOM's data set and serve as a standard against which each individual is compared.

Before you begin reading through this material, we encourage you to familiarize yourself with the Glossary. Terms in this section are used frequently throughout this report and it is important you understand them.

Glossary

This report is intended to be understandable for people who will be facilitating and using Adaptive Mindset for Agility programs. There are some technical terms that are used throughout the report and it's important to define these upfront.

- *Reliability* – This determines whether an instrument measures consistently and precisely.
- *Validity* – This determines whether an assessment measures accurately. In other words, does it measure what we intend it to measure?
- *Correlation* – A correlation coefficient is a number that describes the degree of relationship between two variables. The number ranges from 0.0 (no relationship) to 1.0 (perfect relationship). For example, height and weight are related – taller people tend to weigh more than shorter people. The correlation between height and weight is 0.44, a moderate relationship.[i]
- *Item* – An item is a behavioral statement on a survey. An item is another word for a "survey question." An example item on a survey of stress management may be "Remains calm in tense situations."
- *Scale* – A scale is a collection of survey items that measure a single concept. For example, a scale of Proactivity is measured by a group of items such as "Presents improvement ideas to the manager or team" and "Recommends changes to processes or products that will benefit the organization."
- *Profile* – A profile is the actual report given to each participant, which describes that participant's standing on each of the Agility elements.
- *Norms* – Norms are statistics that describe the survey performance of a particular population, such as people from the same country or occupation. Norms serve as a reference point so that people can compare themselves to others. Norms allow an individual to say, for example, that he is more proactive than 66% of the population.

What is Agility and Why is it Important?

Organizations operate in a turbulent and ambiguous business climate. To capitalize on (even keep pace with) technology and market shifts, organizational agility is essential. By organizational agility, we mean the capacity to spot and exploit opportunities in fast-changing environments. Research suggests that nearly 90% of executives view agility as central to business success, and research from the Massachusetts Institute of Technology shows that agile firms grow revenue 37% faster and generate 30% higher profits compared to non-agile firms.[ii]

So, how do we foster organizational agility? What does agility look like at the individual level? Personal agility means adopting a flexible mindset that promotes the generation and implementation of original and useful ideas. Rather than merely responding to change, agile employees recognize opportunities for innovation and create change. Research shows that employees who *create* change are 43% more effective than employees who merely *respond* to change. Agile individuals perform at a higher level and contribute to organizational unit profitability and firm performance.[iii iv v] They also have greater career satisfaction and an enhanced sense of personal power and influence.[vi]

The agility assessment and training program serve as complements to the existing product within our Adaptive Mindset solution line – Adaptive Mindset for Resiliency®. Resiliency refers to the ability to adapt and grow in response to stress that is thrust upon us. Agility is the more proactive capacity to recognize and exploit opportunities in a rapidly-changing environment. It is about adopting a flexible mindset that promotes the generation and implementation of novel ideas. Put simply, resilient employees respond productively to change forced upon them, while agile employees create change. In a turbulent business climate, both resiliency and agility are essential adaptive capacities.[vii viii]

Development and Validation of the Agility Model and Assessment

In December 2014, TRACOM began developing an assessment of personal agility. The assessment validation occurred in two phases:

Phase 1: We thoroughly reviewed the scientific literature on innovation and agility. Sources included research from the fields of business, neuroscience, and psychology. Based on this review, we identified nine factors that comprise individual agility: Openness, Proactivity, Collaboration, Focus, Idea Generation, Motivation, Self-Belief, Energize, and Apply. These are factors that covered the full gamut of the concept of individual agility. For a description of each of these factors, see the Appendix.

We wrote between 7 and 11 items to tap each of these dimensions, which resulted in a 78-item scale. We administered these items online to 828 people across the United States who were employed full-time. Participants were told to indicate the extent to which they agree each statement applies to them.

Various statistical analyses were run including factor analysis, reliability analysis, and descriptive statistics, which revealed the items that were of highest quality. Factor analysis indicates whether items that we expect to cluster together do, in fact, cluster together. For example, we would expect participants to respond similarly to items measuring the concept of "focus," to items measuring the concept of "collaboration," and so on. If we can show that items fit well within each subscale, we provide evidence that we are measuring what we intend to measure. Reliability analysis indicates how closely related items are within each subscale. Descriptive statistics indicate whether certain items had very high average responses (meaning they do not do a good job of differentiating between people) or whether subgroup differences such as age or gender influenced responses. Items that did not perform well based on these analyses were eliminated. Interestingly, the items written to assess 'motivation' did not form a solid factor, with items loading onto other dimensions or failing to load onto any dimension at all. Thus, the 'motivation' items were eliminated. This phase of the validation process yielded a 49-item scale assessing eight factors.

Phase 2: In the second phase of our research, we wrote additional items to test along with our 49-item scale. The total number of items tested in this phase was 58. We determined that Self-Belief was hard for others to observe and, therefore, items measuring this concept would only be completed by the individuals, rather than their raters.

The 58-item scale was administered to 338 respondents. Of these 338 respondents, 230 had at least two raters assess them on the seven multi-rater agility dimensions.

Again, factor analysis and reliability analysis were conducted to determine which items were of highest quality. Problematic items were identified and eliminated based on these analyses, resulting in a 40-item scale – 35 of these items are multi-rater and 5 are self-only. The reliability and validity evidence for this scale is presented in the next section.

Psychometric Properties of the Adaptive Mindset for Agility® Assessment

Psychological measurement is the process of developing procedures that measure individuals' attributes such as personality and agility. This process is inherently challenging. For example, how do we know if we are measuring precisely and accurately abstract psychological concepts such as focus, self-belief, and openness?

Psychologists have determined that for assessments to be useful, they must adhere to standards set forth in the Standards for Educational and Psychological Testing.[ix] This is a document that provides benchmarks for developing psychological measurement instruments in the United States and many other countries. According to the document, the quality of an assessment is determined based on two primary forms of evidence: reliability and validity.

Reliability determines whether an instrument measures in a consistent and precise way.

There are several forms of reliability evidence. One of the most common and established is internal consistency. Internal consistency measures the relationship among survey items that are written to measure the same thing. If all items on a scale are measuring the same thing, people should respond to these items in a similar manner. Therefore, these items should correlate with one another to a certain degree – they should be internally consistent. Another form of reliability evidence is test-retest reliability. This form of reliability measures the consistency of people's responses to an assessment across two different points in time. A third form of reliability evidence is inter-rater reliability, which determines the degree of consistency among raters who are assessing a particular individual.

Validity determines whether an instrument measures accurately. In other words, does the instrument measure what it purports to measure? As with reliability, there are various forms of validity evidence. One form is convergent and discriminant validity. Convergent validity evidence arises when the instrument is related to other theoretically similar and valid psychological measures. Discriminant validity arises when the instrument exhibits little or no relationship to other theoretically *diss*imilar and valid psychological measures. For example, we would expect that a measure of extraversion would correlate highly with a valid measure of talkativeness and would correlate weakly with a valid measure of intelligence. When this data trend is observed, we would say the measure of extraversion demonstrates convergent and discriminant validity.

Another form of validity is factorial validity. Factorial validity examines the extent to which the expected structure of a scale actually emerges in the data. In other words, it examines whether items within each subscale cluster together. Factorial validity shows that items within each subscale truly do belong in the given subscale and supports the overall structure of the survey. Importantly, factorial validity is purely empirical. The analysis is not guided by any preconceived theory. Therefore, when items cluster together we can be confident that they are measuring the same concept.

It is important to note that an assessment can be reliable but not valid. You can think of reliability and validity in terms of a weight scale. If a weight scale is reliable, it will give you the same

weight every time you step on it (given that your weight has not actually changed). However, the scale may not be accurate (valid) because it does not give your actual weight. Similarly, a psychological assessment may measure precisely but not accurately.

Psychologists support the reliability and validity of an assessment by accumulating evidence over time. Rather than speaking in absolutes – as an assessment being perfectly reliable or valid – psychologists speak of the *extent to which* an assessment is reliable or valid.

In the following sections, we provide descriptive statistics, which show the mean and standard deviation for each subscale of the Agility assessment. We then provide reliability and validity evidence for the assessment.

Descriptive Statistics

The Adaptive Mindset for Agility assessment uses behavioral statements (e.g., "Generates a lot of ideas when thinking about a question"). These statements are rated on a six-point scale ranging from (1) "Strongly Disagree" to (6) "Strongly Agree." Descriptive statistics were calculated for each of the eight dimensions of Agility. The mean indicates the average score for each subscale. The standard deviation indicates the amount of dispersion of the data values from the mean. 68% of the scores lie within one standard deviation of the mean, 95% lie within two standard deviations of the mean, and 99.7% lie within three standard deviations from the mean. For example, Openness has a mean of 5.07 and a standard deviation of 0.51, meaning that 68% of the scores fall between 4.56 (5.07 – 0.51) and 5.58 (5.07 + 0.51).

Note that the number of respondents differs for Self-Belief. This is because Self-Belief was self-report only and there were 338 respondents in our self-only data set. The rest of the scales were multi-rater and there were 230 respondents in our multi-rater data set.

Table 1. Descriptive Statistics for the Agility Subscales

Subscale	N	Mean	Standard Deviation
Openness	230	5.07	0.51
Proactivity	230	5.06	0.46
Idea Generation	230	4.83	0.46
Focus	230	4.90	0.53
Collaboration	230	5.07	0.46
Self-Belief	338	4.88	0.76
Energize	230	4.74	0.47
Apply	230	4.77	0.49

Reliability

As discussed earlier, there are several forms of reliability evidence. Below we present the evidence for internal consistency and item-subscale correlations. As we collect more data, we will also be able to determine the degree of interrater reliability and test-retest reliability.

Internal Consistency

One of the most common and established forms of reliability evidence is internal consistency. Internal consistency measures the relationship among survey items that are written to measure the same thing. If all items on a subscale, such as Openness, are measuring the same thing, respondents should respond similarly to these items. Therefore, these items should correlate with one another to a certain degree – they should be internally consistent. This relationship is measured by a correlation coefficient called Cronbach's alpha.[x] Alpha values range from 0.0 (no relationship among scale items) to 1.0 (perfect internal consistency).

A widely-accepted guideline for evaluating a scale's internal consistency is the following:[xi]

- Satisfactory Alpha: 0.70 - 0.80
- Good Alpha: 0.80 - 0.90
- Excellent Alpha: > 0.90

It is important to note that we do not want an alpha value that is too high. This would indicate that the items within a scale are redundant with one another and are not measuring unique aspects of the psychological concept.

Table 2 shows the Cronbach's alpha coefficients for each of the eight Agility subscales. Alpha values ranged from 0.87 to 0.95, indicating good or excellent internal consistency. As a point of comparison, the average alpha value of personality assessments is 0.77.[xii]

Item Subscale Correlations

In a reliable subscale, all items correlate moderately or strongly with the total subscale score. This indicates that each item is consistent with the psychological concept its overall subscale is measuring. Item-subscale correlations ranged from 0.56 to .90, which is very good.

Table 2. Internal Consistency of each Agility Subscale

Subscale	Number of items	Cronbach's Alpha
Openness	5	0.92
Proactivity	5	0.92
Idea Generation	5	0.93
Focus	5	0.95
Collaboration	5	0.90
Self-Belief	5	0.92
Energize	5	0.87
Apply	5	0.90

Validity

Factorial Validity

Factorial validity is the degree to which the presumed structure underlying a set of items actually appears in a data set. It is determined using a statistical method called factor analysis, which reduces the data to its primary dimensions and shows which items fit under each dimension.

Factor analysis is similar to internal consistency reliability in that it shows the relationship between items. However, unlike internal consistency which is conducted on a select set of subscale items, factor analysis does not impose any restrictions on which items to cluster.

Results of the factor analysis aligned with expectations. First, a factor analysis was conducted on the 35 multi-rater items. Seven dimensions emerged and accounted for 78% of the total variance in the data set. Each item fit under its hypothesized dimension and there was no cross-loading, meaning none of the items fit under multiple dimensions.

A second factor analysis was then conducted on the five self-only items, which were written to assess Self-Belief. A single factor was extracted from the data, which was expected. This one factor accounted for 76% of the variance in the data set.

Overall, the two sets of factor analyses provided significant support for the Agility model.

Subscale Intercorrelations

Additional validity evidence can be obtained by looking at subscale correlations. If a scale is measuring what it purports to measure, then its subscales should be related to each other to a degree that makes theoretical sense. For example, we would expect 'Focus' to exhibit low correlations with constructs such as 'Collaboration' and 'Apply,' because one's ability to focus is relatively independent of one's ability to collaborate or apply ideas. Additionally, we would expect 'Proactivity' to exhibit moderate or high correlations with constructs such as 'Openness,' because those who anticipate the future and take initiative to bring about change are likely to also show an interest and openness to different topics. Indeed this is what we found. 'Focus' was correlated with 'Collaboration' and 'Apply' at r = 0.25 and 0.23, respectively. 'Proactivity' was correlated with 'Openness' at r = 0.66. As a point of reference, consider that r = 0.7 to 0.9 is categorized as a strong correlation, r = 0.4 to 0.6 is categorized as a moderate correlation, and r = 0.1 to 0.3 is categorized as a weak correlation.[xiii]

Table 3 displays all multi-rater subscale intercorrelations. Overall, subscales were mildly to moderately correlated, indicating that they are related, but distinct, components of agility.

Table 3. Intercorrelations of Multi-Rater Subscales

Subscale	1	2	3	4	5	6	7
1. Idea Generation	1.00						
2. Focus	0.42	1.00					
3. Proactivity	0.44	0.44	1.00				
4. Energize	0.42	0.31	0.56	1.00			
5. Collaboration	0.39	0.25	0.34	0.30	1.00		
6. Apply	0.43	0.23	0.38	0.40	0.44	1.00	
7. Openness	0.45	0.33	0.66	0.41	0.39	0.50	1.00

Face Validity

Face validity assesses whether an instrument subjectively appears to participants to measure the concept it purports to measure. In other words, face validity is the extent to which the instrument "looks valid" to respondents. While face validity is not a technical form of validity evidence, it does suggest that respondents accept the survey and the feedback drawn from their responses.

The Adaptive Mindset for Agility assessment demonstrates good face validity. Respondents indicate that the items are clear, measure with precision, and link back to the overall construct of agility.

Norms

Norms are statistics that describe the survey performance of a particular population such as people within the same country or occupation. They are a reference point that we create so people can compare themselves to others and gain more meaningful feedback. For example, it is useful to tell someone that their average score on a particular subscale was 4.5 on a 6-point response scale, but it is more meaningful to tell them that they scored between the 33rd and 66th percentile on that subscale.

To create norms, we divide all of the data in our database into thirds. If participants score in the bottom third on a subscale, they are considered "Unrealized" in that area; if they score in the middle third, they are considered "Emerging" in that area; and if they score in the top third, they are considered "Prepared" in that area.

Tables 4 and 5 show the norms for each subscale and area of the IDEA Model, respectively, for the global population. As we gather more data from different countries, we will develop country-specific norms.

*The Design norm is based on multi-rater data for Focus, Collaboration, and Idea Generation. This norm does not include Self-Belief because multi-rater data is not available for this subscale.

Table 4. Global Norms for each Subscale

Subscale	Number of items	N	Unrealized	Emerging	Prepared
Openness	5	230	5.00 – 24.66	24.67 – 26.66	26.67 – 30
Proactivity	5	230	5.00 – 24.49	24.50 – 26.49	26.50 – 30
Idea Generation	5	230	5.00 – 23.49	23.50 – 24.99	25.00 – 30
Focus	5	230	5.00 – 23.99	24.00 – 25.79	25.80 – 30
Collaboration	5	230	5.00 – 24.74	24.75 – 26.49	26.50 – 30
Self-Belief	5	338	5.00 – 23.00	24.00 – 25.00	26.00 – 30
Energize	5	230	5.00 – 22.99	23.00 – 24.99	25.00 – 30
Apply	5	230	5.00 – 23.13	23.14 – 24.99	25.00 – 30

Table 5. Global Norms for each Area of the IDEA Model.

Area of the IDEA Model	Number of items	N	Unrealized	Emerging	Prepared
Investigate	10	230	10.00 – 49.24	49.25 – 52.82	52.83 – 60.00
Design*	15	230	15.00 – 71.66	71.67 – 76.59	76.60 – 90.00
Energize	5	230	5.00 – 22.99	23.00 – 24.99	25.00 – 30.00
Apply	5	230	5.00 – 23.13	23.14 – 24.99	25.00 – 30.00

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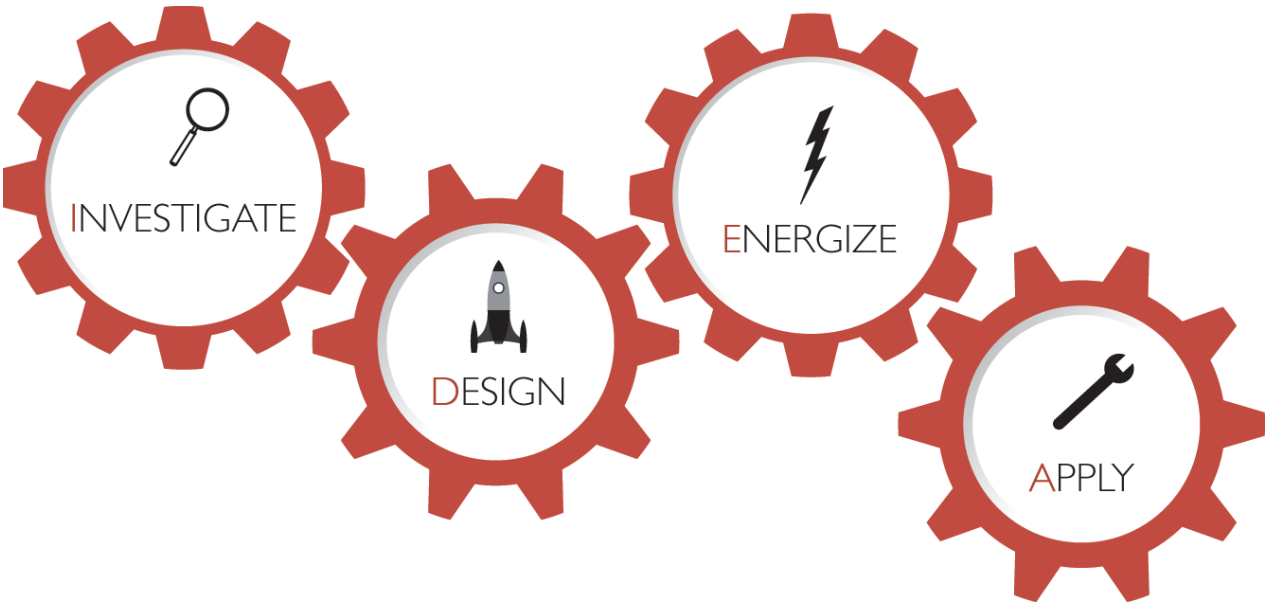
Appendix

Dimensions of Personal Agility

TRACOM's research indicates that personal agility is composed of eight elements, which can be categorized under four broader categories – Investigate, Design, Energize, and Apply. Descriptions of the categories and elements are provided below.



Investigate — looking for opportunities to improve current services, work processes, or products.

Openness - the willingness to consider new ideas and opportunities.

Proactivity - anticipating the future and taking initiative to bring about change.

Design — generating concepts that lead to improvement.

Idea Generation - developing many possible ideas or solutions to problems.

Focus - concentrating on what's important.

Collaboration - interacting effectively with others to develop ideas.

Self-Belief - the belief in oneself to be innovative.

Energize — influencing others, building coalitions, and mobilizing support for new ideas.

Apply — being bold and risking making mistakes; putting an idea into a practical plan, testing and modifying the plan, and making new ideas a regular part of the work process.

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Our mindset encompasses what is going on inside — our thoughts, perceptions and subconscious psychology. Although people do not see what is going on inside our heads, our mindset greatly affects our outward behavior and the ways in which we interact with others.

TRACOM's Agility programs help develop both individual and organizational agility. They teach participants about the cognitive biases that hold us back and include specific strategies to overcome them. They are built on the latest in neuroscience and experimental psychology, but are highly interactive and experiential, leading to a personal transformation in both thinking and action. Using multi-rater feedback through the Adaptive Mindset for Agility Profile, participants get a full understanding of their current Agility strengths and weaknesses as well as direction to develop those skills.

Mindset is one of the three elements of Social Intelligence along with Behavioral Style and Emotional Intelligence. Understanding and using Social Intelligence increases effectiveness and productivity.

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