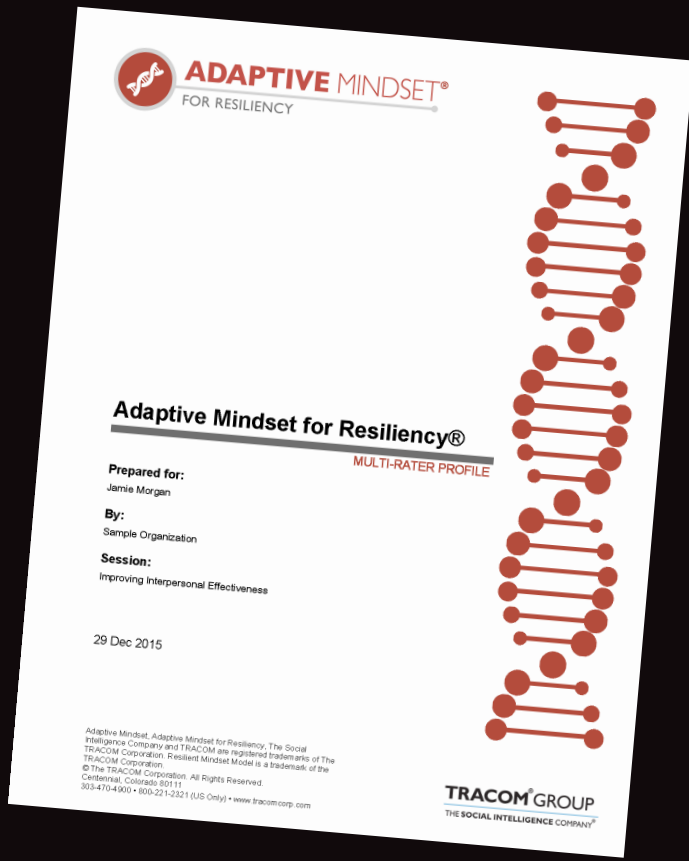


Technical Report

Universal

Adaptive Mindset for Resiliency®

Multi-Rater Profile



Technical Report

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Multi-Rater Profile



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Introduction

At TRACOM, we pride ourselves on producing organizational products grounded in empirical research and theory. This technical report describes the research and development of the Resilient Mindset Model™ and assessment. Scores from this assessment are used as input to generate the Universal Multi-rater Profile as well as the Online Self-Perception Profile. This report is intended to accompany Adaptive Mindset for Resiliency facilitator materials, particularly the *Developing a Resilient Mindset*™ administration kit.

This technical report is organized as follows:

- First, we provide an overview of employee resiliency, including what it is and why it's important. Then, we explain the development and validation process for the Resilient Mindset Model. You will learn that the Adaptive Mindset for Resiliency assessment was based on a thorough literature review as well as two rounds of data collection and statistical analyses.
- Next, we present the most up-to-date research supporting the quality of the assessment instrument that measures the Model. The quality of this instrument is determined according to reliability and validity evidence.
- Lastly, we describe the norms for the assessment and a training evaluation case.

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. Enjoy your psychometric journey!

Glossary

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

- *Reliability* – This determines whether the measurement assessment is consistent and precise.
- *Validity* – This determines whether the assessment measures accurately. In other words, does it truly measure the concepts that it proposes to measure?
- *Correlation* – A correlation coefficient determines the extent to which two variables are related to each other. Values range from 0.0 (no relationship) to 1.0 (perfect relationship). For example, height and weight are proportional to each other and should be highly correlated. In fact, the correlation between height and weight among adults is 0.44, a strong relationship (Meyer et al., 2001).
- *Item* – An item is a behavioral statement on the survey, sometimes called a “survey question.” An example of an item is “Monitors progress on goals.”
- *Scale* – A scale is a collection of survey items that measures a single construct. For example, Self-Composure is a scale. It is measured by a group of items that are all related to the Self-Composure construct (e.g., “Stays composed even during stressful times,” “No one knows it when he/she is under pressure.”)
- *Profile* – A Profile is the actual report that is given to each participant. It includes information about the learner's standing on each of the resiliency elements.

- *Norms* – Normative scores, or norms, are statistics that describe the survey performance of a well-defined population, such as people from the same country or job group. Norms are a reference point that we create so people can compare themselves to others. Norms allow you to say, for example, that you are more self-assured than 33% of the U.S. population.

Resiliency – What is it and Why is it Important?

Perhaps now more than ever, workers are under an enormous amount of stress. Organizations are constantly undergoing changes (e.g., mergers, acquisitions, layoffs, technological shifts), and this kind of turbulent work environment can wreak havoc on employees' health and performance. A study by the American Psychological Association shows that job pressure is the number one source of stress for Americans (Stress Statistics, 2014). According to another study, 51% percent of employees say that they are less productive due to stress and 52% percent of workers have made a decision about their career such as looking for a new job, declining a promotion, or leaving a job based on workplace stress (American Psychological Association Practice Organization, 2010). A moderate amount of stress can help performance, but these statistics indicate that employees regularly experience stress levels that are detrimental, even dangerous. One critical way to help employees strengthen their responses to challenges and effectively manage change is by building their resiliency (Shin, Taylor, & Seo, 2012).

We define resilience as individuals' developable capacity to adapt to change and stressors in a way that not only allows them to bounce back, but also to grow and improve from the experience. Highly resilient people are action-oriented and find opportunities in adversity. Research shows that personal resiliency is linked to many desirable health outcomes including lower levels of psychological distress (Utsey, Geisbrecht, Hook, & Stanard, 2008) and lower physical symptoms and injuries at work (Siu, Hui, Phillips, Lin, Wong, & Shi, 2009). Resiliency also connects to positive work outcomes such as increased job performance (Luthans, Avolio, Avey, &



Norman, 2007), job satisfaction, work happiness, organizational commitment (Youssef & Luthans, 2007), work-life balance (Siu, Hui, Phillips, Lin, Wong, & Shi, 2009), and lower intentions to quit (Avey, Luthans, & Jensen, 2009; Naswall, Malinen, & Kuntz, 2013). Various scholars and business leaders maintain that resiliency is a key distinguishing feature between those who make a powerful impact with good ideas and those who don't (McKinley, 2013), those who succeed and those who fail (Coutu, 2002).

Stress and adversity are not going to disappear, so providing models and mechanisms for workers to enhance their resiliency is absolutely essential.

Development and Validation of the Resilient Mindset Model™ and Assessment

In February 2013, TRACOM began developing an assessment for employee resiliency. The assessment validation occurred in two phases:

Phase 1: We conducted a thorough review of the resiliency literature. Based on this review, we identified nine factors comprising employee resiliency. These factors were:

- 1) *Self-Assurance*: the extent to which individuals believe that they can successfully perform work-related tasks or behaviors.
- 2) *Personal Beliefs*: the extent to which individuals have a sense of meaning and purpose in their lives.
- 3) *Self-Composure*: the extent to which individuals can manage stress and remain calm under pressure.
- 4) *Personal Responsibility*: the extent to which individuals believe that their success at work is determined by their talents and motivation as opposed to external forces such as luck or good timing.
- 5) *Problem Solving*: the extent to which individuals can plan and resolve challenges effectively.
- 6) *Realistic Optimism*: individuals' tendency to see the world in a positive way, but also remain grounded in reality.
- 7) *Goal Orientation*: the extent to which individuals set appropriate goals and monitor their progress on those goals.
- 8) *Adaptability to Change*: the extent to which individuals are flexible in the face of change.
- 9) *Social Support*: the extent to which individuals have a supportive social network.

We developed between eight and ten items to measure each dimension, resulting in a 117-item initial scale. We administered this survey, along with demographic measures, in an online format to 973 employed individuals from across the United States. Participants were told to respond to questions according to how they behave and view themselves *in the workplace*.

Various statistical analyses including reliability analyses, factor analysis, item-total correlations, item correlations, and descriptive statistics were conducted on the items. These analyses indicated how closely correlated items were within each subscale, how well each item fit within each given subscale, whether subgroup differences (age, gender, ethnicity) influenced responses, and whether there were certain items with very high average responses (these items were flagged as “too easy”). Items that were problematic based on these criteria were deleted, which resulted in a 40-item final scale. For the most part, the emergent dimensions aligned with our expectations. The only exception was that the “adaptability to change” dimension did not emerge as a distinct dimension. Instead, another dimension surfaced which we called “Courageous Communication.” This dimension refers to individuals' willingness to reach out, share ideas, and ask questions others might be afraid to ask in the face of difficulty.

Phase 2: In the second phase of our research, we modified several existing items in our 40-item scale and developed new items for each of the nine dimensions. This process yielded a 57-item scale. We determined that items that corresponded to Personal Responsibility,



Personal Beliefs, and Social Support were not observable and, therefore, could not be accurately assessed by others. These items were marked as “self-assessment only.” The 57-item scale was then administered to 91 working individuals from across the United States. These 91 individuals formed our self-perception data set. Of these 91 adults, 54 received ratings from at least two raters on the six multi-rater dimensions. These 54 target individuals formed our multi-rater data set.

Using these individuals’ responses, we again examined the statistical properties of this instrument using reliability analysis, factor analysis, item-total correlations, and so on. Problematic items were identified and eliminated based on these analyses, resulting in a 45-item scale. Of these 45 items, 30 are multi-rater and 15 are self-only. Over the course of the next few years, we gathered more data, re-assessed the psychometric properties of this scale, and adjusted our norms. The most up-to-date reliability and validity evidence for this instrument is presented in the section titled, “Psychometric Properties of the Adaptive Mindset for Resiliency Assessment.” The most up-to-date norm information is presented in the section titled, “Norms.” The finalized Resilient Mindset Model™ is in the Appendix.

Measurement Format

The Adaptive Mindset for Resiliency assessment uses behavioral statements (e.g., “Deals directly with conflict”). These statements are rated on a six-point scale ranging from “Strongly Disagree” to “Strongly Agree.”

Psychometric Properties of the Adaptive Mindset for Resiliency[®] Assessment

While objects in the physical world, such as weight and temperature, are easily and accurately measured, psychological concepts such as resiliency are not so straightforward to assess. Therefore, psychologists have determined that for assessments to be sound, they must meet the criteria set forth in the “Standards for Educational and Psychological Testing,” which provides benchmarks for developing psychological measurement instruments. According to this 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 different forms of reliability evidence. For example, we can look at internal consistency. Internal consistency determines whether people are responding to items that measure the same thing in a similar manner. We can also look at test-retest reliability. Test-retest reliability determines how consistently people respond to an assessment across two different points in time. We can look at interrater agreement as well. Interrater agreement determines the extent to which different raters agree with one another when using an assessment to rate a particular individual.

Validity determines whether an instrument measures *accurately*. In other words, does it measure what it proposes to measure? There are several different forms of validity evidence. For example, we can look at convergent and discriminant validity. Convergent validity determines whether the assessment is related to other theoretically similar psychological

measures. Discriminant validity determines whether the assessment is not related to other theoretically dissimilar measures. As an example, if a resiliency assessment is measuring what it purports to measure, it should correlate highly with a valid measure of adaptability but correlate weakly with a valid measure of talkativeness. Another form of validity evidence is factorial validity. It is determined using a statistical procedure called factor analysis, which serves to uncover the underlying dimensions of a set of items. Factorial validity is useful for supporting the overall structure of the survey and showing that all of the items within each subscale truly do belong in the given subscale.

Regarding reliability and validity, there are several points worth mentioning. First, a measurement instrument can be reliable, but not valid. One way to think of this is to imagine a weight scale. If you weigh yourself every hour and consistently get the same result of 145 lbs., the scale would be reliable. However, the scale may not be accurate (valid) because you actually weigh 160 lbs. Similarly, an assessment might measure in a very precise, stable way, but instead of measuring the construct it is intended to measure – conscientiousness – it might measure something else, such as organization skills. Second, no psychological assessment is perfectly reliable or perfectly valid, since assessments are affected by various sources of error. Psychologists tend to speak about the *degree to which* an instrument is reliable or valid. The quality of the instrument is determined by accumulating evidence over time.



In the following sections, we provide descriptive statistics, which show the central tendency (mean) and standard deviation for each subscale of the Adaptive Mindset for Resiliency assessment. We then move on to provide reliability and validity evidence for the assessment. These statistics were calculated in July of 2016.

Descriptive Statistics

Descriptive statistics were calculated for each of the nine dimensions of resiliency. The mean gives us a sense of the “typical” score for each subscale and the standard deviation gives us a sense of how much variability there is in the distribution of scores. Note that the number of respondents for each subscale is either 778 or 740. This is because the self-assessment-only scales had 778 respondents and the multi-rater scales had 740 respondents.

Table 1. Descriptive Statistics for the Resilient Mindset Model Subscales

Subscale	N	Mean	Standard Deviation
Personal Responsibility	778	5.01	0.66
Realistic Optimism	740	5.00	0.47
Personal Beliefs	778	4.91	0.74
Self-Assurance	740	5.20	0.41
Self-Composure	740	4.79	0.57
Problem Solving	740	5.01	0.44
Goal Orientation	740	4.98	0.43
Courageous Communication	740	4.95	0.54
Social Support	778	4.93	0.77

Reliability

There are several forms of reliability evidence, as discussed previously. It was not possible to assess test-retest reliability because respondents haven't yet taken the assessment at two different points in time. Additionally, due to the limited data collected so far on the Adaptive Mindset for Resiliency assessment, inter-rater agreement cannot yet be tested. This type of reliability will be tested as the assessment is administered to larger populations. We were, however, able to assess internal consistency and item-subscale correlations.

Internal Consistency

One common form of reliability evidence is internal consistency. Internal consistency measures the relationship between survey items that claim to measure the same thing. In other words, internal consistency determines whether participants are responding similarly to items within the same subscale. For example, if a respondent indicates strong agreement with items such as "Productively manages stress" and "Controls his/her behavior during stressful times" and strong disagreement with items such as "Becomes visibly upset when under pressure," that would produce high internal consistency for a scale of self-composure.

The Resilient Mindset Model subscales were analyzed for internal consistency using Cronbach's (1951) coefficient alpha. Alpha values range from 0.0 (no relationship among survey items in a scale) to 1.0 (perfect internal consistency). There is disagreement about appropriate alpha values. However, as a benchmark, consider that a comprehensive review found that personality scales have an average alpha value of .77 (Charter, 2003). Also, note that an alpha value that is too high is not desirable – it indicates that items are redundant with one another and are not measuring unique facets of the psychological concept.

A widely-accepted rule of thumb for Cronbach's alpha values is the following (Cicchetti, 1994):

- Excellent: Alpha > 0.90
- Good: 0.9 > Alpha > .80
- Satisfactory: 0.8 > Alpha > .70

Table 2 shows the Cronbach's alpha coefficients for each of the nine Resilient Mindset Model subscales.

Table 2. Alpha Reliability Coefficients for the Resilient Mindset Model Subscales

Subscale	Number of items	Cronbach's Alpha
Personal Responsibility	5	0.83
Realistic Optimism	5	0.94
Personal Beliefs	5	0.85
Self-Assurance	5	0.95
Self-Composure	5	0.94
Problem Solving	5	0.92
Goal Orientation	5	0.91
Courageous Communication	5	0.94
Social Support	5	0.86



Item Subscale Correlations

In a reliable scale, all items will correlate with the total subscale score. This shows that each item is consistent with the construct that the overall subscale is measuring. The item-subscale correlations ranged from 0.54 to 0.92, indicating that the items fit well into their respective subscales.

Validity

Factorial Validity

Factor analysis is a statistical procedure used to identify the underlying structure of a set of items. If we can show that items are fitting well within each subscale, we lend support to the construct validity of the measurement instrument.

Factor analysis is similar to internal consistency reliability in that it indicates how closely items are clustering. However, unlike internal consistency reliability, which is conducted on an established set of subscale items, factor analysis does not impose a priori assumptions or restrictions on the factor structure of the data. The output of factor analysis is unknown ahead of time.

For the most part, results of the factor analysis aligned with our expectations. First, a factor analysis was conducted on the 30 multi-rater items. However, rather than six dimensions, five dimensions emerged and accounted for 79.67% of the variance in the data set. Specifically, problem solving and goal orientation items clustered under one dimension. This is understandable, given that, to some degree, the problem-solving process requires that individuals regulate themselves in relation to goals. However, theoretically, goal orientation is distinct from problem solving in several ways: 1) problem solving is reactive in that it arises in response to a challenge, whereas goal orientation is more proactive – it doesn't require

a trigger event 2) problem solving is cognitive – it involves defining the problem, gathering relevant information, and forming an innovative solution, whereas goal orientation is meta-cognitive – it is an overarching, higher-level cognitive process that allows learners to monitor and regulate their behavior and attention in relation to objectives. For these reasons, we continue to discriminate between the two factors.

A second factor analysis was then conducted on the 15 self-only items. Results clearly displayed the three self-only dimensions (personal responsibility, personal beliefs, and social support), which accounted for 63.33% of the variance in the data set. Across both sets of factor analysis results, there was minimal cross-loading (i.e., very few items fit under multiple dimensions). Overall, the clustering of items provided significant support to our model.

Subscale Intercorrelations

We gain more construct validity evidence by examining subscale intercorrelations. Subscale intercorrelations indicate the degree to which the subscales are related to one another. If subscales are related to the degree that we expect, this provides evidence that our subscales are measuring what they intend to measure. For example, we would expect similar scales such as realistic optimism and self-composure to exhibit moderate correlations with each other, and dissimilar scales such as this personal responsibility and social support to exhibit weaker correlations with each other. According to Dancey and Reidy's (2004) categorization:

- Strong correlation: $r = 0.7 - 0.9$
- Moderate correlation: $r = 0.4 - 0.6$
- Weak correlation: $r = 0.1 - 0.3$

Tables 3 and 4 show that the subscales were mildly to moderately correlated, providing evidence that the resiliency subscales are related but distinct dimensions and fit well together on the survey. Furthermore, the subscales have meaningful correlations (e.g., self-assurance is moderately related to courageous communication and realistic optimism).

Face Validity

Face validity assesses whether the test “looks valid” to respondents. In other words, face validity determines whether participants subjectively view the instrument as assessing the psychological concept it is supposed to measure. While face validity is not necessary for validity evidence, it does suggest that users are more likely to accept the instrument and feedback they receive from it.

The Adaptive Mindset for Resiliency assessment demonstrates good face validity. All of the items are clear and distinctly link back to their individual subscales as well as the overall construct of employee resiliency. This is not to suggest, however, that respondents will understand how the items are combined into the various subscales.

Table 3. Intercorrelations of Multi-Rater Subscales

Subscale	1	2	3	4	5
1. Self-Assurance	1.00				
2. Self-Composure	0.36	1.00			
3. Problem Solving & Goal Orientation	0.69	0.43	1.00		
4. Courageous Communication	0.69	0.14	0.59	1.00	
5. Realistic Optimism	0.60	0.57	0.54	0.45	1.00

Table 4. Intercorrelations of Self-Only Subscales

Subscale	1	2	3
1. Social Support	1.00		
2. Personal Responsibility	.32	1.00	
3. Personal Beliefs	.54	.46	1.00



Norms

Normative scores, or norms, are statistics that describe the survey performance of a well-defined population (e.g., people from the same country). Norms are a reference point that we create so people can compare themselves to others. For example, norms allow you to say that you are more self-assured than 66% of the U.S. population.

To create norms, we examine all of the data in our database and divide the data into thirds. If participants score in the bottom third on a dimension, this is considered an “Undeveloped Source of Resiliency.” If participants score in the middle third on a dimension, this is considered a “Secondary Source of Resiliency.” If participants score in the top third on a dimension, this is considered a “Strong Source of Resiliency.”

We have several country norms as well as a global norm. For simplicity, here, we only present the norms for the global population (see Table 5). As you will see, the results of the norm group are skewed toward the high end of the response scale. This means that even if raters give favorable marks to a target individual, that individual may still score in the bottom third when compared to the norm group.

Table 5. Global Norms

Subscale	Number of items	N	Undeveloped Source of Resiliency	Secondary Source of Resiliency	Strong Source of Resiliency
Personal Responsibility	5	778	5 – 23	24 – 25	26 – 30
Realistic Optimism	5	740	5.00 – 24.49	24.50 – 25.99	26.00 – 30
Personal Beliefs	5	778	5 – 23	24 – 25	26 – 30
Self-Assurance	5	740	5.00 – 25.39	25.40 – 26.99	27.00 – 30
Self-Composure	5	740	5.00 – 23.19	23.20 – 25.32	25.33 – 30
Problem Solving	5	740	5.00 – 24.39	24.40 – 25.99	26.00 – 30
Goal Orientation	5	740	5.00 – 24.32	24.33 – 25.82	25.83 – 30
Courageous Communication	5	740	5.00 – 23.99	24.00 – 25.99	26.00 – 30
Social Support	5	778	5 – 23	24 – 25	26 – 30

Training Evaluation

In 2016, TRACOM began collecting data to evaluate the effectiveness of the ‘Adaptive Mindset for Resilience’ program. A sample of 30 employees from a multi-national restaurant chain attended the program and completed a survey one week later about the attitudinal and behavioral changes they experienced.

These individuals were a mixture of individual contributors, supervisors, managers, and executives. While this sample size is small, data collection is ongoing and preliminary results are encouraging, suggesting that the program is positively affecting participants’ attitudes and behaviors.

Participants responded to the following items on a scale ranging from 1) Strongly Disagree to 6) Strongly Agree:

“Since attending the ‘Adaptive Mindset for Resilience’ program, I am better able to:”

	Percent of respondents who agreed or strongly agreed
Remain flexible when things change	80%
Maintain good relationships with co-workers	80%
Deal with challenges	77%
Support changes at work	77%
Control negative emotions when working with customers and co-workers	73%
Accept feedback at work	73%
Feel empowered in my role	70%
Stay motivated to perform well at work	70%
Stay engaged with my work	67%
Remain calm in stressful situations	67%
Remain energized at work	57%



Participants responded to the following items on a scale ranging from 1) Much less often to 5) Much more often:

“Since attending the ‘Adaptive Mindset for Resilience’ program, I:”

	Percent of respondents who indicated more or much more often
Provide help to my colleagues	77%
Display gratitude	77%
Recognize my negative automatic thoughts as they arise	73%
Challenge my automatic negative thoughts when they arise	73%
Replace automatic negative thoughts with more realistic thoughts	73%
Set goals to help me deal with challenges	70%
Make an effort to stay in the present moment during stressful times	70%
Exercise mindfulness to reduce my stress	67%
Give my time or expertise to others	63%
Use power poses to deal with stressful situations	63%
Monitor my progress on goals	60%

As TRACOM collects more data for this research, we will continue our analyses and provide updated results.

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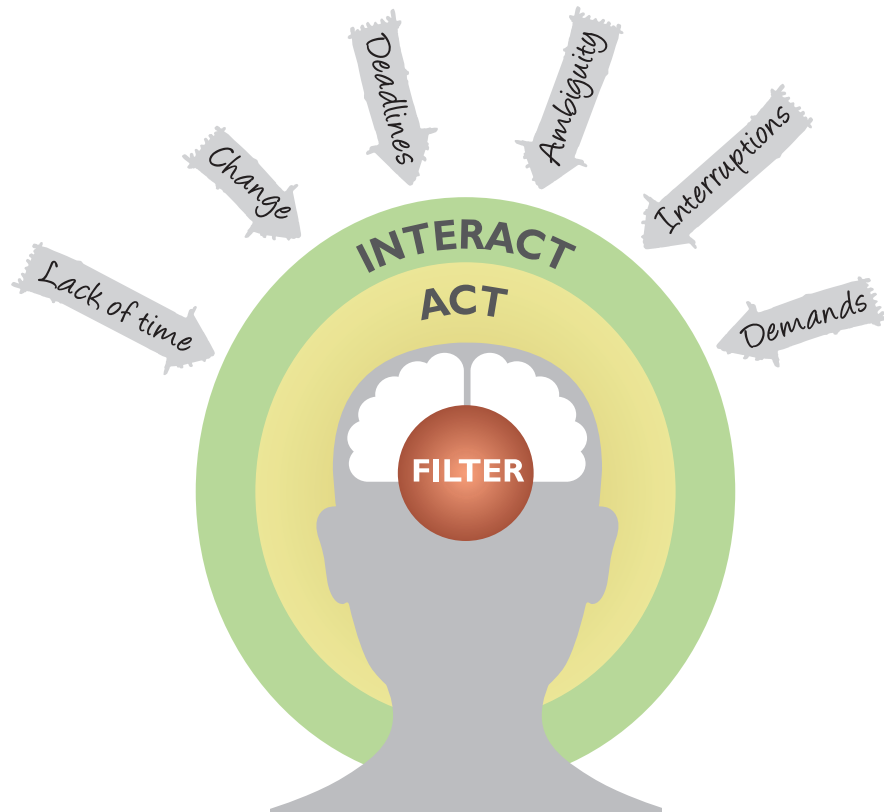
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Appendix

Summary of the Resilient Mindset Model™ Dimensions

Resiliency is composed of nine dimensions, which can be categorized under a broader three-category framework: 1) how you filter information, 2) how you act in response to challenges, and 3) how you interact with others. Next we describe each of the nine dimensions of resilience.



FILTER — How you filter information and interpret the world. This describes how you select information and integrate it into your mind and is comprised of personal responsibility, realistic optimism, and personal beliefs. Because this is happening in your mind, these elements of resiliency are not always observable to others, though others can often recognize your level of optimism.

1. **Personal Responsibility** is the belief that successes or failures at work are determined by one's own talents and motivations as opposed to external forces such as luck or good timing.
2. **Realistic Optimism** is the tendency to see the world in a positive way but remain grounded in reality.
3. **Personal Beliefs** is the sense that life has deep meaning and purpose. Personal beliefs may take the form of religious observance, spirituality, or devotion to a particular value system or cause.

ACT — How you handle challenges. This represents how you behave and respond to adversity and difficulty, and is comprised of self-assurance, self-composure, problem solving, and goal orientation. In contrast to how you filter information, these elements of resiliency are more observable to others.

1. **Self-Assurance** is the belief in oneself to successfully perform at work.
2. **Self-Composure** is the ability to manage stress and remain calm under pressure.
3. **Problem Solving** is the ability to plan and resolve problems effectively.
4. **Goal Orientation** is the tendency to set appropriate goals, monitor progress on those goals, and adjust behavior accordingly.

INTERACT — How you communicate and connect with others. This refers to your ability to communicate courageously with others and cultivate supportive relationships. These aspects of resiliency are observable to others; however, feelings about supportive relationships are subjective.

1. **Courageous Communication** is the tendency to communicate with others in a candid and courageous way in the face of difficulty.
2. **Social Support** is the perception that one is part of a supportive social network. This includes having close confidants and people with whom one can discuss problems.



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Neuroscience Holds the Key to Boosting Resiliency

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.

Research shows that highly resilient people respond to challenges with flexibility, bounce back from challenges, and even find opportunities within workplace stress. They perform more effectively in their jobs, are healthier, more engaged with their work, and have higher commitment to their organizations. The good news for employees and organizations is that resilience can be learned and developed.

TRACOM's Resiliency programs teach people about the sources of their stress, their pattern of responses to stress, and practical strategies for altering these responses. They are based on decades of research on resiliency as well as new and ground-breaking research in neuroscience. Participants leave the training with insights about themselves and concrete ways to buffer themselves from workplace stressors. They will be able to utilize these skills immediately to enhance their resiliency and increase their job performance.

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.

To learn more about these and other TRACOM products, visit www.tracomcorp.com.