

# THE FIVE BEHAVIORS OF A COHESIVE TEAM<sup>®</sup>

## Research Report

Version 2

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## Overview of This Research Report

The purpose of this report is to provide the validity research for The Five Behaviors of a Cohesive Team® assessments and related profile reports.

The Five Behaviors of a Cohesive Team program consists of two main applications: Personal Development and Team Development. The Personal Development profile provides personalized feedback to help individuals become better teammates within the framework of The Five Behaviors™ model. The Team Development application is intended to be used by existing teams to improve their cohesiveness, productivity, and effectiveness. This team report includes personalized feedback for a team member along with feedback on the team overall.

Both profiles require participants to take the Everything DiSC® individual assessment. Participants' results on this assessment inform the personalized feedback they will receive in their profiles. In addition, participants involved in the Team Development application will also be required to answer questions about their team in a second section, the team assessment; their answers in this section, along with those of their teammates, will inform the team results in their profile. Table 1 provides an overview of these two assessments.

This report provides validation research conducted on both the individual and team assessments.

**Table 1. Overview of Assessments**

	<b>Application</b>	<b>Content</b>	<b>Use of Results in Five Behaviors</b>
<b>Individual Assessment</b>	Personal Development Team Development	Everything DiSC personality assessment	Personalized feedback to help the individual understand how they might approach each behavior
<b>Team Assessment</b>	Team Development	Includes: <ul style="list-style-type: none"><li>• Survey of the team's current behaviors</li><li>• Survey of opinions on team culture</li></ul>	Feedback on how the team approaches each behavior



## The Five Behaviors™ Model

The Five Behaviors of a Cohesive Team® is based on the model developed by Patrick Lencioni in his book, *The Five Dysfunctions of a Team*. Lencioni's model outlines the five behaviors that are essential to a healthy, well-functioning team: building trust, mastering conflict, achieving commitment, embracing accountability, and focusing on results. These five behaviors build upon one another as follows:

- Members of a truly cohesive team must **trust** one another in order to engage in unfiltered **conflict**.
- They must engage in **conflict** so that they can **commit** to decisions and plans of action.
- Once team members are **committed**, they hold one another **accountable** for delivering against those plans.
- After holding one another **accountable**, they focus on achievement of collective **results**.

This model serves as the foundation for both the Personal Development and Team Development profiles and will be referred to throughout this report.



# Overview of the Validation Process

Psychological instruments are used to measure abstract qualities that we can't touch or see. These are characteristics like intelligence, extraversion, or honesty. So how do researchers evaluate these instruments? How do we know whether such assessments are actually providing accurate information about these characteristics or just generating haphazard feedback that sounds believable? Simply put, if an instrument is indeed useful and accurate, it should meet a variety of different standards that have been established by the scientific community. Validation is the process through which researchers assess the quality of a psychological instrument by testing the assessment against these different standards. This report is designed to help you understand these different standards and see how the Five Behaviors™ assessment performs under examination.

Validation asks two fundamental questions:

1. How **reliable** is the assessment? That is, researchers ask if an instrument measures in a consistent and dependable way. If the results contain a lot of random variation, it is deemed less reliable.
2. How **valid** is the assessment? That is, researchers ask if an instrument measures accurately. The more that an assessment measures what it proposes to measure, the more valid the assessment is.

Note that no psychometric assessment is perfectly reliable or perfectly valid. All psychological instruments are subject to various sources of error. Reliability and validity are seen as matters of degree on continuous scales, rather than reliable/unreliable and valid/invalid on dichotomous scales. Consequently, it is more appropriate to ask, "How much evidence is there for the reliability of this assessment?" than, "Is this assessment reliable?"

## Reliability

When we talk of reliability in relation to profiles such as *The Five Behaviors of a Cohesive Team*®, we are referring partly to the assessment's stability and partly to its internal consistency.



## Stability

Stability refers to the assessment's ability to yield the same measurements over a period of time. This is generally tested by having the same people complete the assessment twice, with a suitable time interval between the two measurements (the so-called test-retest.) The results are then compared to determine how strongly they relate to each other (or correlate.) If a person's results remain unchanged, a stable assessment should produce results that are quite similar between two different administrations. In reality, however, it is almost impossible to obtain perfect test-retest reliability on any sophisticated psychological test, even if the individual in question does not change on the measured attribute. This is because test results are influenced by a variety of extraneous factors that are unrelated to the characteristics that the test intends to measure. For instance, someone who is tired during one testing may answer differently than they will on a second testing when they are well-rested. Similarly, another person may respond to a test differently depending on the mood they are in. Generally speaking, the longer the interval between two test administrations, the greater the chance that these random variables can artificially lower the test-retest reliability of an instrument. In other words, the longer the time period between two testings, the lower we would expect the test-retest reliability to be.

## Internal Consistency

Internal consistency evaluates the degree of correlation among questions that profess to measure the same thing. Researchers recognize that if all of the questions or items on a given scale are in fact measuring the same thing, they should all correlate with each other to some degree. In other words, all of the items on a scale should be consistent with each other. A statistic called Cronbach's Alpha is usually regarded as the best method of evaluating internal consistency.

Cronbach's Alpha expresses the degree of correlation as a specific number, which typically varies between 0 and 1.0. If the value of Alpha is 0, then there is no relationship among the items/statements on a given scale. On the other hand, if all the statements in a questionnaire measure in an identical fashion, then the value of Alpha will be 1.0, which indicates absolute internal consistency.



The following guidelines are frequently used to evaluate the quality of a scale's internal reliability: Alpha values above .70 are generally considered acceptable and satisfactory, Alpha values above .80 are considered quite good, and values above .90 are considered to reflect exceptional internal consistency. In fact, Alpha values that are too high may indicate that the items on a scale are redundant or too similar. In such cases, many of the instrument's items may provide very little new information about a respondent.

## Validity

As mentioned, validity indicates the degree to which an assessment measures what it has been designed to measure. Assessing the validity of a psychological assessment that measures abstract qualities (like trust or dominance) can be tricky. There are, however, a number of basic strategies that researchers use to answer the question, "How well is this instrument measuring what it says it's measuring?" The validation strategies discussed in this report fall under the heading of construct validity.

Construct validity examines the validity of an assessment on a highly theoretical level. A construct is an abstract idea or concept (such as intelligence, commitment, or influence) that is used to make sense of our experience. When researchers examine an assessment for construct validity, first, they specify a series of theoretical relationships (e.g., the construct A is theoretically related to the constructs of X, Y, and Z). Then, they test these theoretical relationships empirically to see if the relationships actually exist. If the proposed relationships do exist, the instrument is thought to have higher validity. Researchers test construct validity by looking at how two scales measuring distinct constructs correlate to each other.





# The Individual Assessment: Everything DiSC®

## Overview

The personalized feedback for participants in both the Personal Development and Team Development applications is based on the results of their Everything DiSC® assessment. This section of the research report gives an overview of the DiSC® model and examines the validation research backing the assessment. Before reviewing the research, however, it will be useful to understand how each application uses the results of the Everything DiSC assessment.

## Team Development

The Team Development profile introduces the Everything DiSC model, explores the participant's DiSC style (see the discussion of the styles in the pages that follow), and helps participants understand how their style might influence their approach to each behavior in The Five Behaviors™ model. Most of the personalized feedback in the profile will therefore be written according to the participant's style, which will be determined based on their responses in the Everything DiSC assessment. The profile also shows the DiSC styles of the other team members participating in the program, helps the participant understand how others might approach each behavior based on their DiSC style, and gives all participating team members a common language to discuss their similarities and differences.

## Personal Development

As with the Team Development profile, the personalized feedback in Personal Development is derived from the participant's Everything DiSC assessment results. This feedback illustrates how the participant might approach each behavior in The Five Behaviors model. The participant's style will be determined based on their responses to the Everything DiSC assessment, and their style will inform most of the personalized feedback they receive in the profile.

The Personal Development program does not, however, introduce participants to the DiSC model, and participants are never informed of their DiSC style. Instead, personalized feedback is provided without reference to DiSC. This approach was possible because the assignment of a DiSC style, though helpful, is not essential to an understanding of the personalized feedback.



That is, it is possible to provide feedback that speaks to the tendencies of each style without actually identifying the style or the model itself.

Why did we choose to omit references to the DiSC® model? The primary reason was to simplify the profile and the related facilitation experience.\* The Personal Development facilitation experience is a half-day program, unlike the one- to three-day program associated with the Team Development application. By not making the DiSC model overt, the Personal Development application allows for more focus on The Five Behaviors™ model during the limited time frame available. That is, because participants are not required to understand the DiSC model to understand their profile, they can concentrate on The Five Behaviors model and their personalized feedback.

In addition, whereas the Team Development profile uses the DiSC model to help individuals develop trust with fellow teammates involved in the program, the Personal Development profile is focused primarily on developing an individual's teamwork skills. There is less need, therefore, to include the DiSC model within the framework of the Personal Development application.

In sum, a participant's DiSC style (as determined by their Everything DiSC® assessment results) informs the Personal Development profile but functions largely in the background. In this way, participants can focus on The Five Behaviors model while still receiving personalized feedback that is backed by the research described in the pages that follow.

## The DiSC® Model

The foundation of DiSC was first described by William Moulton Marston in his 1928 book, *Emotions of Normal People*. Marston identified what he called four “primary emotions” and associated behavioral responses, which today we know as Dominance (D), Influence (i), Steadiness (S), and Conscientiousness (C). Since Marston's time, many instruments have been developed to measure these attributes. The Everything DiSC assessment uses the circle, or circumplex, as illustrated below, as an intuitive way to represent this model. Although all points around the circle are equally meaningful and interpretable, the DiSC model discusses four specific reference points.

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\* Note that the report can also be distributed independently of the facilitation experience.



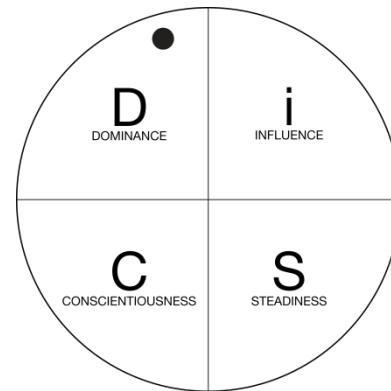
**Dominance:** direct, strong-willed, and forceful

**Influence:** sociable, talkative, and lively

**Steadiness:** gentle, accommodating, and soft-hearted

**Conscientiousness:** private, analytical, and logical

Figure 1. Everything DiSC® Map



Although some people tend equally toward all of these regions, research indicates that most of us lean toward one or two. Each person who takes the Everything DiSC assessment is plotted on the circle, also known as the Everything DiSC Map. The example in Figure 1 shows a person (represented by the dot) who tends toward the D region, but also somewhat toward the i region. This represents a Di style.

This person, therefore, is probably particularly active, bold, outspoken, and persuasive, as these qualities generally describe people who share both the D and i styles. The distance of the dot from the center of the circle is also meaningful. People, whose dots fall toward the edge of the circle, as shown in Figure 1, are much more inclined toward their DiSC® styles and are likely to choose the priorities of that style over those of other styles. People whose dots fall close to the center of the circle are less inclined toward a particular style and find it fairly easy to relate to the priorities of other styles.

## The Individual Assessment: Response Format and Style Assignment

The Everything DiSC assessment asks participants to respond to statements on a five-point ordered response scale, indicating how much they agree with each statement. These responses are used to form scores on eight scales (standardized to have a mean of zero and standard deviation of one) that are located around the DiSC circle, as shown in Figure 2. The eight scales are as follows:

- **D** measures a direct, dominant disposition using adjectives such as aggressive, strong-willed, and forceful.



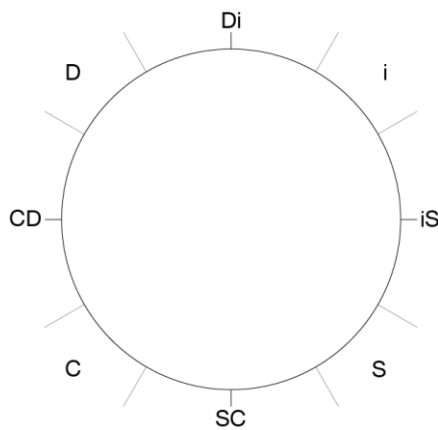
- **Di** measures an active, fast-paced disposition using adjectives such as dynamic, adventurous, and bold.
- **i** measures an interactive, influencing disposition using adjectives such as sociable, lively, and talkative.
- **iS** measures an agreeable, warm disposition using adjectives such as trusting, cheerful, and caring.
- **S** measures an accommodating, steady disposition using adjectives such as considerate, gentle, and soft-hearted.
- **SC** measures a moderate-paced, cautious disposition using adjectives such as careful, soft-spoken, and self-controlled.
- **C** measures a private, conscientious disposition using adjectives such as analytical, reserved, and unemotional.
- **CD** measures a questioning, skeptical disposition using adjectives such as cynical, stubborn, and critical.

During the assessment process, the respondent's variance on each of the eight scales is calculated. If the variance on a particular scale is above a predetermined cut-off, the participant is presented with additional items for that scale. In this way, the assessment can gain more certainty with regard to the respondent's true score. This process mirrors those used in other adaptive testing assessments.

An individual's scores on the eight scales are then used to plot the individual on the Everything DiSC® map, as represented by a dot. The Everything DiSC map is divided into 12 sections, or styles, each representing 30 degrees within the circle. Feedback is largely based on the section in which the dot falls. Other factors, such as the dot's distance from the center of the circle and the individual's priorities, may also be reflected in the feedback.\*

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\* Note that the eight scale scores are not directly reported in the profiles. In addition, the Personal Development report will not include a visual representation of the Everything DiSC map or a description of a person's DiSC® style or dot location.

**Figure 2. Eight DiSC® Scales**

## Validation of the Individual Assessment

Validation is a process in which an assessment is reviewed for its overall reliability, whether it is consistent and dependable, and its overall validity, whether it measures the construct accurately and is measuring what it is supposed to measure. For a more in-depth discussion of the complete validation process, please see page 6.

## The Individual Assessment: Reliability

Reliability is the term we used to encompass the discussion of both an assessment's stability and its internal consistency.

### Stability

The Everything DiSC® assessment's stability was examined by determining if the assessment produced the same measurements over a period of time. In practical terms, the stability of DiSC (i.e., test-retest reliability) is measured by asking a group of respondents to take a DiSC instrument and then asking those same respondents to take the same test again at a later time. This stability can be quantified in the form of a reliability coefficient, which is a statistic that is generated by looking at the mathematical relationship between a group's initial scores on an instrument and their subsequent scores. Reliability coefficients range between 0 and +1.0. The closer that a correlation coefficient is to +1.0, the more stable the instrument is considered to be. Researchers generally use



the following guidelines to help them interpret these test-retest reliability coefficients—coefficients above .70 are considered acceptable, and coefficients above .80 are considered very good. The eight scales of the Everything DiSC® assessment have been measured for their test-retest reliability over a two-week period and the following coefficients were found:

**Table 2. Scale Test-Retest Reliabilities**

Scale	Reliability
Di	.86
i	.87
iS	.85
S	.86
SC	.88
C	.85
CD	.85
D	.86

N =599

These results suggest that results produced by the Everything DiSC assessment are quite stable over time. Consequently, test takers and test administrators should expect no more than small changes when instrument is taken at different times. As the period between administrations increases, however, divergent results of these administrations will become more and more noticeable.

Note that even over very short intervals an instrument's results can show small changes. In fact, it is unlikely that two administrations of a test will yield the exact same results on any sophisticated psychological instrument. When such changes are observed in DiSC®, however, the fundamental interpretation of the results will usually be the same.

## Internal Consistency

Internal consistency refers to the amount of correlation among questions or items that are said to be measuring the same thing. Cronbach's Alpha is used to evaluate internal consistency. It typically ranges from 0 to 1.0. Alpha coefficients were calculated for a sample of 752 respondents. The



demographics of this sample are included in Appendix A. The scales on the Everything DiSC® assessment demonstrate good-to-excellent internal consistency, as shown by the Alpha values listed in Table 3. All reliabilities are well above .70, with a median of .87.

**Table 3. Internal Consistency of the Everything DiSC Scales**

Scale	Number of items	Cronbach's Alpha
<b>Di</b>	9	.90
<b>i</b>	7	.90
<b>iS</b>	9	.86
<b>S</b>	10	.87
<b>SC</b>	12	.84
<b>C</b>	11	.79
<b>CD</b>	12	.87
<b>D</b>	8	.88

*N* = 752

Analyses were also performed to understand the impact of the extra adaptive questions that some respondents receive if there is a large amount of variation within their responses to a single scale's items. That is, if the variance in a respondent's ratings to a scale's items is above a certain level, the respondent is given five to ten extra items that continue to measure the trait assessed by the scale. For convenience, the items that all respondents receive will be called "base items" and the items that only inconsistent responders receive will be called "extra items."

Table 4 shows the internal reliabilities for only those respondents who gave the most inconsistent responses to a given scale's items, measured by a high degree of response variance. In other words, these are respondents whose scale preferences seemed most unclear. In the first bold column are the Alphas for those respondents using both the base items and extra items (which reflects how these respondents are measured in the actual assessment). In the second bold column are the Alphas for those respondents using only the base items. With only the base items, the median Alpha in this subsample is .62. The median Alpha when the extra items are included is .77. By comparing these two columns, we can see the internal consistency is much higher for these unclear respondents when they receive the extra items. In essence, these extra items are used to further gauge the target trait when the normal assessment has produced unclear or variable results. The final column shows the



percentage of respondents in the sample who received extra items on a given scale. On average, 24% of respondents received extra items on an individual scale.

**Table 4. Internal Consistency of the Everything DiSC® Scales for Inconsistent Responders**

Scale	With extra items			Without extra items			% receiving extra items
	Alpha	N	# items	Alpha	N	# items	
<b>Di</b>	<b>.80</b>	170	14	<b>.63</b>	170	9	23%
<b>D</b>	<b>.82</b>	105	12	<b>.60</b>	105	7	14%
<b>i</b>	<b>.76</b>	214	14	<b>.58</b>	214	9	28%
<b>S</b>	<b>.78</b>	174	15	<b>.64</b>	174	10	23%
<b>SC</b>	<b>.76</b>	223	17	<b>.64</b>	223	12	30%
<b>C</b>	<b>.78</b>	261	19	<b>.61</b>	261	11	35%
<b>CD</b>	<b>.74</b>	188	22	<b>.63</b>	188	12	25%
<b>D</b>	<b>.68</b>	116	13	<b>.34</b>	116	8	15%

## The Individual Assessment: Validity

Validity examines whether an assessment is measuring the construct or idea that it says it is measuring. Researchers look at a number of different things to determine the assessment's evidence for validity. For the purposes of the Everything DiSC assessment used in both Personal Development and Team Development, construct validity and scale intercorrelations are used.

### Scale Intercorrelations

Because DiSC® is based on a theoretical model, certain relationships are expected when looking at the different scales. The Di scale of the Everything DiSC assessment, for example, measures a particular construct (i.e., the tendency to be bold, adventurous, and fast paced). This “bold” construct, in turn, is theoretically related to a variety of other constructs. For instance, it is reasonable to assume that someone who is very bold will not be particularly cautious in nature. Thus, bold tendencies and cautious tendencies are theoretically linked in a negative manner. Consequently, we would expect that people scoring high on the Di scale should score relatively low on a scale measuring cautiousness, such as the SC scale.





The DiSC® model proposes that adjacent scales (e.g., Di and i) will have moderate correlations. That is, these correlations should be considerably smaller than the Alpha reliabilities of the individual scales. For example, the correlation between the Di and i scales (.50) should be substantially lower than the Alpha reliability of the Di or i scales (both .90).

Table 5 shows data obtained from a sample of 752 respondents who completed the Everything DiSC® assessment. The correlations among all eight scales show strong support for the model. That is, moderate positive correlations among adjacent scales and strong negative correlations are observed between opposite scales.

**Table 5. Scale Intercorrelations**

	<b>D</b>	<b>Di</b>	<b>i</b>	<b>iS</b>	<b>S</b>	<b>SC</b>	<b>C</b>	<b>CD</b>
<b>D</b>	<b>.88</b>							
<b>Di</b>	.46	<b>.90</b>						
<b>i</b>	.14	.50	<b>.90</b>					
<b>iS</b>	-.37	.04	.47	<b>.86</b>				
<b>S</b>	-.69	-.31	.03	.57	<b>.87</b>			
<b>SC</b>	-.62	-.73	-.56	-.13	.34	<b>.84</b>		
<b>C</b>	-.19	-.43	-.70	-.49	-.18	.45	<b>.79</b>	
<b>CD</b>	.42	-.14	-.37	-.68	-.66	-.08	.26	<b>.87</b>

Cronbach's Alpha reliabilities are shown in bold along the diagonal, and the correlation coefficients among scales are shown within the body of the table. Correlation coefficients range from -1 to +1. A correlation of +1 indicates that two variables are perfectly positively correlated such that as one variable increases, the other variable increases by a proportional amount. A correlation of -1 indicates that two variables are perfectly negatively correlated, such that as one variable increases, the other variable decreases by a proportional amount. A correlation of 0 indicates that two variables are completely unrelated;  $N=752$ , as shown in Appendix A.

Because the Everything DiSC assessment model proposes that the eight scales are arranged as a circumplex, an even more strict set of statistical assumptions are required of the data. The patterns of correlations for a given scale are expected to be arranged in a particular order. As can be seen in Table 6, the strongest theorized correlation for a given scale is labeled  $r_1$ . The second strongest is labeled  $r_2$ , and so on. In this case,  $r_4$  represents the correlation with a theoretically opposite scale. Consequently,  $r_4$  should be a reasonably strong negative correlation. For each scale, we should observe the following relationship if the scales support a circumplex structure:  $r_1 > r_2 > r_3 > r_4$ .

**Table 6. Expected Scale Intercorrelations**

	<b>D</b>	<b>Di</b>	<b>i</b>	<b>iS</b>	<b>S</b>	<b>SC</b>	<b>C</b>	<b>CD</b>
<b>D</b>	1.00							
<b>Di</b>	$r_1$	1.00						
<b>i</b>	$r_2$	$r_1$	1.00					
<b>iS</b>	$r_3$	$r_2$	$r_1$	1.00				
<b>S</b>	$r_4$	$r_3$	$r_2$	$r_1$	1.00			
<b>SC</b>	$r_3$	$r_4$	$r_3$	$r_2$	$r_1$	1.00		
<b>C</b>	$r_2$	$r_3$	$r_4$	$r_3$	$r_2$	$r_1$	1.00	
<b>CD</b>	$r_1$	$r_2$	$r_3$	$r_4$	$r_3$	$r_2$	$r_1$	1.00

Looking at Table 7, we do, in fact, observe a  $r_1 > r_2 > r_3 > r_4$  pattern for each scale. In addition, we can examine the magnitude of these correlations in comparison to the theoretically expected magnitudes. The predicted magnitudes of  $r_1, r_2, r_3, r_4$  under a circumplex structure are listed in Table 6, as described by Wiggins (1995). The “actual”  $r_x$  values are the median correlations for a given  $r_x$ . Although the actual and predicted values are not exactly the same (a near impossible standard for practical purposes), the magnitude of the actual and predicted correlation values is quite similar, thus providing additional support for the DiSC® circumplex model and the ability of the Everything DiSC® assessment to measure this model.

**Table 7. Actual and Predicted Scale Relationships**

	$r_1$	>	$r_2$	>	$r_3$	>	$r_4$
<b>Actual (median)</b>	.45	>	-.11	>	-.46	>	-.69
<b>Predicted</b>	.42	>	.03	>	-.36	>	-.73

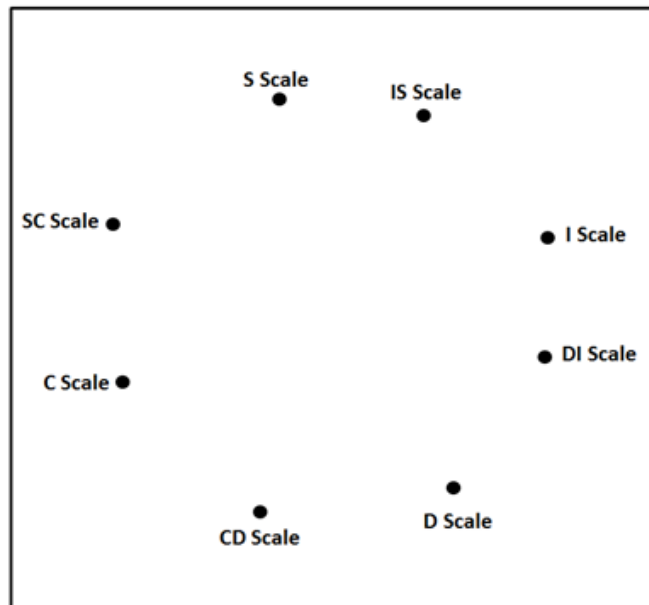
## Multidimensional Scaling (MDS)

A statistical technique called multidimensional scaling also adds support to the DiSC model as a circumplex. This technique has two advantages. First, it allows for a visual inspection of relationship among the eight scales. Second, this technique allows researchers to look at all of the scales simultaneously. In Figure 3, scales that are closer together have a stronger positive relationship. Scales that are farther apart are more dissimilar. The circumplex DiSC model predicts that the eight scales will be arranged in a circular format at equal intervals.



As can be seen in Figure 3, the scales are arranged in a way that is expected by the DiSC® model. (Note that the original MDS rotation is presented below and this rotation is arbitrary.) Although the eight scales do not form a perfectly equidistant circle (as predicted by the model), this theoretical ideal is nearly impossible to obtain with actual data. The actual distance between the scales, however, is roughly equal, providing strong support for the model and its assessment.

**Figure 3. MDS Two-Dimensional Solution**



Stress = .01326  
RSQ = .99825  
N = 752

As the figure shows, all scales are closest to the scales that are theoretically adjacent to them in the model. For instance, the Di scale is closest to the D scale and i scale, as predicted by the model. In addition, scales that are theoretically opposite (e.g., i and C) are generally furthest away from each other on the plot. Consequently, this analysis adds strong support for the two-dimensional DiSC model and the ability of the Everything DiSC® assessment to measure that model.

Additionally, the S-stress of the model is .01326 and the RSQ value is .99825. These values reflect the ability of a two-dimensional model to fit the data. Lower S-stress values are preferred (with a minimum of 0) and higher RSQ values are preferred (with a maximum of 1). Both of these values are almost ideal in the data, suggesting that the two-dimensional DiSC model fits the participant data exceptionally well.



## The Dimensionality of the Circumplex DiSC® Model: Factor Analysis

(Note that this section may require some statistical background to understand fully)

To further explore the dimensionality of the model, a principal components factor analysis was performed on all eight scales using a varimax rotation. The eigenvalues clearly reinforce the two-dimensional structure underlying the eight scales, as shown in Table 8. Only two components demonstrate eigenvalues above one, and both of these are well above one. Further, components 3 through 8 all have eigenvalues that decrease smoothly and are meaningfully below one. Consequently, regardless of whether we use Kaiser's Criterion or a scree plot method of determining the number of factors to extract, the number of retained factors is two, as predicted by the model.

**Table 8. Factor Analysis Eigenvalues**

Component	Eigenvalues
1	3.10
2	2.95
3	0.60
4	0.38
5	0.37
6	0.31
7	0.23
8	0.04

*N* = 752

The rotated factor loadings are listed in Table 9. (Note that the loadings were rotated such that the loadings reflect the original DiSC® rotation). The pattern of loadings is as expected for a circumplex model, as listed under the "Ideal Loadings" column. That is, with a circumplex model, we would expect that some scales would have high loadings on one component and near zero loadings on the other component (i.e., Di, iS, SC, and CD) and some scales would have moderately high loadings on both components (e.g., D, i, S, and C).

**Table 9. Factor Loadings for the Eight DiSC® Scales**

Scale	Actual Loadings		Ideal Loadings	
	Vertical Dimension	Horizontal Dimension	Vertical Dimension	Horizontal Dimension
<b>D</b>	.51	-.73	.707	-.707
<b>Di</b>	.83	.09	1.000	.000
<b>i</b>	.56	.67	.707	.707
<b>iS</b>	.06	.88	.000	1.000
<b>S</b>	-.76	.48	-.707	.707
<b>SC</b>	-.90	-.03	-1.000	.000
<b>C</b>	-.61	-.56	-.707	-.707
<b>CD</b>	-.09	-.85	.000	-1.000

Further, the pattern of negative and positive loadings is as expected. For example, the *i* and *C* scales share no common dimensions, and consequently show an opposing pattern of negative loadings (the *C* scale) and positive loadings (the *i* scale). However, the *D* and *i* scales would be expected to share one component but be opposite on the other component. This is what we observe, since both scales are negatively loaded on component 1, but have opposite loadings on component 2.

Table 10 shows the ideal and actual angular locations for the eight DiSC scales. The deviation column indicates that the actual angles are very similar to the ideal angles. The absolute average deviation is 3.8, which is lower than many of the interpersonal-based instruments currently available. Vector length, as shown in the last column of Table 10, reflects the extent to which the scale is represented by the two underlying dimensions (Kiesler et al., 1997). These values can range from 0 to 1.0. A length of .80 is considered very good and a length above .90 is considered exceptional. The mean vector length of .87 suggests that the scales have a strong relationship with the dimensions they are intended to measure.

**Table 10. Angular Locations for the Eight DiSC® Scales**

Scale	Actual Angle	Ideal Angle	Deviation	Vector Length
<b>D</b>	325	315	10	.89
<b>Di</b>	6	0	6	.83
<b>i</b>	40	45	-5	.87
<b>iS</b>	86	90	-4	.88
<b>S</b>	122	135	-13	.90
<b>SC</b>	182	180	2	.90
<b>C</b>	223	225	-2	.82
<b>CD</b>	276	270	6	.85

## Correlations with Other Assessments of Personality

Another method used to provide evidence of construct validity involves correlating an assessment with other well-respected assessments of similar traits. For this purpose, a group of respondents took the Everything DiSC® assessment and two established measures of personality: the *NEO® Personality Inventory – Revised* (NEO PI-R™) and the *Sixteen Personality Factor Questionnaire* (16PF®).

The NEO PI-R is a 240-item assessment designed to measure the five-factor model of personality: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience (McCrae & Costa, 2010). The 16PF is a 185-item assessment designed to measure sixteen primary personality traits, as well as the five-factor model of personality (IPAT, 2009). The assessment also provides scores on nineteen additional scales in the following areas: self-esteem and adjustment, vocational interests, social skills, leadership, and creativity.

The correlations among the Everything DiSC scales and the NEO PI-R and the 16PF are shown in Appendices C and D. For the purposes of interpretation, a summary is provided here. For each Everything DiSC scale, the ten strongest correlations with either the NEO PI-R or 16PF are listed.



### The Di scale

The ten strongest correlations with the Di scale are listed below.

**Table 11. Strongest Correlations between the Di Scale and the NEO PI-R and 16PF**

Scale	Instrument	<i>r</i>
Assertiveness	NEO PI-R	.68
Creative Potential	16PF	.62
Independence	16PF	.60
Activity	NEO PI-R	.57
Emotional Expressivity	16PF	.56
Social Expressivity	16PF	.55
Dominance	16PF	.54
Social Control	16PF	.53
Enterprising	16PF	.53
Social Boldness	16PF	.52

The scales listed in Table 11 reflect the active, socially influential disposition that is measured by the Di scale. Although not listed above, this scale also demonstrated high correlations with the Excitement Seeking ( $r = .51$ ) and Achievement Striving ( $r = .48$ ) scales of the NEO PI-R. This reflects the adventurous, pioneering aspects of the Di scale.

### The i scale

The ten strongest correlations with the i scale are listed below.

**Table 12. Strongest Correlations between the i Scale and the NEO PI-R and 16PF**

Scale	Instrument	<i>r</i>
Social Expressivity	16PF	.74
Extraversion	16PF	.70
Social Boldness	16PF	.70
Extraversion	NEO PI-R	.69
Social Adjustment	16PF	.68
Gregariousness	NEO PI-R	.65
Social Control	16PF	.62
Liveliness	16PF	.62
Warmth	NEO PI-R	.60
Leadership Potential	16PF	.60



The scales listed in Table 12 reflect the extraverted, lively disposition that is measured by the i scale, as well as some elements of social poise or competence. Although not listed above, this scale also demonstrated high correlations with Positive Emotions ( $r = .50$ ) and Self-consciousness ( $r = -.48$ ) scales of the NEO PI-R. The i scale also had high correlations with Social ( $r = .56$ ) and Enterprising ( $r = .53$ ) vocational interest scales.

### The iS scale

The ten strongest correlations with the iS scale are listed below.

**Table 13. Strongest Correlations between the iS Scale and the NEO PI-R and 16PF**

Scale	Instrument	<i>r</i>
Warmth	NEO PI-R	.61
Positive Emotions	NEO PI-R	.57
Empathy	16PF	.56
Trust	NEO PI-R	.55
Altruism	NEO PI-R	.53
Agreeableness	NEO PI-R	.52
Extraversion	NEO PI-R	.52
Extraversion	16PF	.51
Warmth	16PF	.49
Compliance	NEO PI-R	.47

The scales listed in Table 13 reflect the warm, accepting, and empathic disposition measured by the iS scale. Although not listed above, the iS scale also had significant correlations with the Emotional Sensitivity ( $r = .42$ ) scale of the 16PF. Significant negative correlations with the Angry Hostility ( $r = -.46$ ; NEO PI-R), Tension ( $r = -.43$ ; 16PF), and Anxiety ( $r = -.41$ ; 16PF) scales reflect the more cheerful, easygoing disposition measured by the iS scale.

### The S scale

The ten strongest correlations with the S scale are listed in Table 14.



**Table 14. Strongest Correlations between the S Scale and the NEO PI-R and 16PF**

Scale	Instrument	<i>r</i>
Agreeableness	NEO PI-R	.67
Compliance	NEO PI-R	.65
Altruism	NEO PI-R	.47
Trust	NEO PI-R	.39
Straightforwardness	NEO PI-R	.39
Creative Potential	16PF	-.32
Independence	16PF	-.40
Dominance	16PF	-.45
Tension	16PF	-.45
Angry Hostility	NEO PI-R	-.53

The scales listed in Table 14 reflect the agreeable, peaceful, and accommodating disposition measured by the S scale. The original conceptualization of the S scale also included a number of submissive tendencies, which is reflected by correlations with Compliance, Independence, and Dominance. It is worth noting the Straightforwardness scale is designed to measure sincerity or genuineness (rather than directness or bluntness), which is consistent with the S construct.

### The SC scale

The ten strongest correlations with the SC scale are listed below.

**Table 15. Strongest Correlations between the SC Scale and the NEO PI-R and 16PF**

Scale	Instrument	<i>r</i>
Dominance	16PF	-.63
Social Adjustment	16PF	-.64
Enterprising	16PF	-.65
Social Boldness	16PF	-.66
Social Expressivity	16PF	-.67
Social Control	16PF	-.67
Emotional Expressivity	16PF	-.69
Independence	16PF	-.71
Creative Potential	16PF	-.72
Assertiveness	NEO PI-R	-.75



The scales listed in Table 15 reflect the self-controlled, cautious, and passive disposition measured by the SC scale. Although not listed above, the SC scale had significant positive correlations with a number of scales, particularly on the NEO PI-R. These include Self-Consciousness ( $r = .44$ ), Compliance ( $r = .41$ ), and Modesty ( $r = .37$ ).

### The C scale

The ten strongest correlations with the C scale are listed below.

**Table 16. Strongest Correlations between the C Scale and the NEO PI-R and 16PF**

Scale	Instrument	<i>r</i>
Liveliness	16PF	-.55
Warmth	NEO PI-R	-.55
Social	16PF	-.57
Empathy	16PF	-.57
Gregariousness	NEO PI-R	-.59
Social Boldness	16PF	-.60
Social Adjustment	16PF	-.60
Extraversion	NEO PI-R	-.63
Social Expressivity	16PF	-.66
Extraversion	16PF	-.67

The scales listed in Table 16 reflect the introverted and emotionally reserved disposition measured by the C scale. Although not listed above, the C scale had significant positive correlations with the Self-reliance ( $r = .51$ ; 16PF), Self-consciousness ( $r = .41$ ; NEO PI-R), and Privateness ( $r = .33$ ; 16PF) scales. Correlations with the Order ( $r = .07$ ; NEO PI-R), Perfectionism ( $r = .15$ ; 16PF), and Conscientiousness ( $r = .11$ ; NEO PI-R) scales were significant, but smaller than expected. It is important to note that the C scale is designed to measure a reserved, methodical, analytical disposition rather than directly measuring a preference for order.

### The CD scale

The ten strongest correlations with the CD scale are listed in Table 17.

**Table 17. Strongest Correlations between the CD Scale and the NEO PI-R and 16PF**

Scale	Instrument	<i>r</i>
Tension	16PF	.55
Angry Hostility	NEO PI-R	.51
Anxiety	16PF	.45
Positive Emotions	NEO PI-R	-.41
Altruism	NEO PI-R	-.42
Warmth	NEO PI-R	-.43
Empathy	16PF	-.44
Trust	NEO PI-R	-.47
Agreeableness	NEO PI-R	-.48
Compliance	NEO PI-R	-.55

The scales listed in Table 17 reflect the skeptical, challenging disposition measured by the CD scale. Although not listed above, the CD scale had significant positive correlations with the Vigilance ( $r = .31$ ; which measures an expectation of being misunderstood or taken advantage of) and Self-reliance ( $r = .30$ ; which is opposed with group-orientation) scales of the 16PF.

### The D scale

The ten strongest correlations with the D scale are listed below.

**Table 18. Strongest Correlations between the D Scale and the NEO PI-R and 16PF**

Scale	Instrument	<i>r</i>
Dominance	16PF	.63
Independence	16PF	.60
Assertiveness	NEO PI-R	.55
Creative Potential	16PF	.51
Emotional Expressivity	16PF	.50
Enterprising	16PF	.44
Social Control	16PF	.35
Straightforwardness	NEO PI-R	-.35
Agreeableness	NEO PI-R	-.58
Compliance	NEO PI-R	-.63



The scales listed in Table 18 reflect the forceful, outspoken disposition that is measured by the D scale. Although not listed above, the D scale also had significant positive correlations with the Social Boldness ( $r = .32$ ; 16PF) and Activity ( $r = .32$ ; NEO PI-R) scales. As mentioned earlier, the Straightforwardness scale of the NEO PI-R is designed to measure sincerity rather than bluntness. Low scorers are described as more likely to manipulate others or to be cunning.

## Summary of the Validation Results

Evaluation of the Everything DiSC® assessment indicates that there is strong support for the reliability and validity of this assessment. Analyses suggest that the scales' reliabilities are in the good-to-excellent range, with a median coefficient Alpha of .87 and a median test-retest reliability of .86. Analyses examining the validity of the assessment were also very favorable. The circumplex structure of the assessment conforms well to expectations, as assessed by multidimensional scaling, scale intercorrelations, and factor analysis. The relationships among the eight scales are highly supportive of the circumplex structure and strongly reflect the expected pattern of correlations hypothesized under the DiSC® model. Correlations between the Everything DiSC scales and the scales of the NEO PI-R and the 16PF provide additional support for the validity of the assessment.\*

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\* For more in-depth information on the validity of the assessment and the research behind it, refer to the *Everything DiSC Manual* (Wiley, 2015).



# The Team Assessment

## Psychometric Development

In addition to personalized feedback for the participant, the Team Development profile includes the team's results based on all team members' answers in the team assessment.\*

This team section of the assessment contains two subsections. The first subsection is the Team Survey, and asks team members how often their team engages in certain healthy behaviors. There are 20 items (e.g., *Team members acknowledge their weaknesses to one another*, *Team members solicit one another's opinions during meetings*), to which participants respond based on a five-point ordered response scale. The twenty Team Survey items are used to create scores on the Five Behaviors™ scales, as described below.

The second subsection of the assessment includes the Team Culture items. The Team Culture items ask team members for their opinions on various aspects of the culture. For instance, team members are asked what changes might improve the functioning of the team or what behaviors they think are appropriate in a team setting. In the Team Culture section, participants are presented with a question and then select all responses that they feel apply.

### The Five Behaviors™ Scales

The Five Behaviors scales are the foundation of the Team Development profile and the related facilitation experience. These scales are as follows:

**Trust** measures team members' willingness to be completely vulnerable with one another. It also measures the confidence among team members that their peers' intentions are good and that there is no reason to be protective or careful around the team.

**Conflict** measures the team's productive conflict—in other words, conflict that is focused on concepts and ideas and avoids mean-spirited, personal attacks.

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\* Participants in the Personal Development program will not take this team assessment.



**Commitment** measures the team's clarity around decisions, as well as its ability to move forward with complete buy-in from every member of the team, even those who initially disagreed with the decision.

**Accountability** measures team members' willingness to call their peers on performance or behaviors that might hurt the team.

**Results** measures the team's collective goals and is not limited to financial measures, but is more broadly related to expectation and outcome-based performance.

Each of these scales contains four items. Scale scores are calculated by (1) finding the mean item response per scale per individual; and (2) averaging the individual item means per scale per team. The cutoff scores for each area are as follows: The team's results are considered to be low if the results fall between 1.00 and 3.24, medium if the results are between 3.25 and 3.75, and high if the team's mean score is between 3.76 and 5.00.

## Sample

### Sample Characteristics

This report describes results from two samples for items in the Team Survey and the Team Culture sections. The first sample was composed of participants recruited to test the assessment during the trial phase of *The Five Behaviors of a Cohesive Team*®. This is referred to as the Beta Sample ( $N = 1483$ ). The second sample took the assessment as part of team workshops conducted by a network of consultants that operate in conjunction with The Table Group, Patrick Lencioni's consulting group. This is referred to as the Consulting Sample ( $N = 5004$ ). Analyses were performed on both samples independently, when possible. The Beta Sample was composed of 718 men (48.4%) and 765 women (51.6%) responding to a total of 25 items on the Team Survey and Team Culture sections of the assessment. Participants were included in the analysis if they met the criteria of being part of an intact team consisting of at least three members. This resulted in 199 teams ranging in size from three to 33 people. The average team size was 10 people, the median was eight people, and the mode was six people. Table 19 provides an overview of the demographic information of the Beta Sample including education, ethnicity, and industry.



Similarly, the Consulting Sample consisted of 613 teams with at least three participants working as part of an intact team. The teams ranged in size from three to 15 people. The average team size was eight people, the median was eight people, and the mode was six people. No other demographic information was available.

**Table 19. *The Five Behaviors of a Cohesive Team*® Beta Sample Demographics (N=1483)**

<b>Gender</b>	Male	48.4%
	Female	51.6%
<b>Age</b>	18-25	7.1%
	26-35	21.0%
	36-45	28.6%
	46-55	25.8%
	56 and older	17.4%
<b>Education</b>	College Graduate	41.5%
	Graduate/Professional Degree	30.5%
	Some College	15.7%
	High School Graduate	6.4%
	Technical/Trade School	5.2%
	Some High School	0.6%
<b>Ethnicity</b>	Caucasian	75.6%
	Asian	8.1%
	Hispanic/Latino	6.3%
	African/African American	4.8%
	Native American	0.9%
	Other	3.4%
<b>Employment</b>	Professional	27.0%
	Mid-Level Management	16.6%
	Executive	11.1%
	Secretarial/Clerical	6.5%
	Supervisory	6.2%
	Sales	4.8%
	Self-employed	4.7%
	Mechanical/Technical	3.5%
	Teacher/Educator	2.9%



	Healthcare Worker	2.0%
	Student	1.6%
	Customer Service	2.6%
	Other	10.5%
<hr/>		
<b>Industry</b>	Business Services	18.5%
	Educational Services	10.9%
	Health Services	9.8%
	Manufacturing	9.0%
	Transportation/ Utilities	4.6%
	Public Administration	3.6%
	Wholesale/ Retail/ Trade	3.3%
	Finance	2.4%
	Hospitality	2.4%
	Non-Profit	2.3%
	Government	1.5%
	Construction	1.3%
	Engineering	1.1%
	Other	29.3%
<hr/>		
<b>Location</b>	United States	76.0%
	Canada	5.3%
	Singapore	3.1%
	Australia	1.9%
	Switzerland	1.1%
	Ireland	1.0%
	United Arab Emirates	0.9%
	Other	10.7%

## Impact of Ethnicity

In an effort to understand the impact that culture may have on the assessment, an analysis of variance (ANOVA) was performed on the Five Behaviors™ scale means across various ethnic groups (as shown in Table 20) to examine any differences. The results suggest that these differences are very small. The largest differences are seen on the Conflict scale, in which ethnicity accounted for only 1.09% of scale variance. None of the differences between ethnic groups was





statistically significant. This suggests that ethnicity does not play a meaningful role in determining how team members respond to the team survey.

**Table 20. Percent of Variance Accounted for by Ethnicity**

Scale	Percentage
Trust	0.91%
Conflict	1.09%
Commitment	0.28%
Accountability	0.49%
Results	0.63%

## Descriptive Statistics: Team Survey

Descriptive statistics were calculated for the Team Survey items and the resulting Five Behaviors™ scales, as shown in Table 21. Respondents were grouped into their respective teams to determine the Team Survey item means. Descriptive statistics for the Team Culture items can be found in Appendix E.

**Table 21. The Five Behaviors Team Survey Descriptive Statistics**

	Consulting Sample N =613 Teams		Beta Sample N =199 Teams	
	Mean	Standard Deviation	Mean	Standard Deviation
<b>Trust Scale</b>	<b>3.11</b>	<b>0.44</b>	<b>3.40</b>	<b>0.48</b>
Team members acknowledge their weaknesses to one another.	2.72	0.48	3.07	0.61
Team members willingly apologize to one another.	3.25	0.54	3.63	0.64
Team members are unguarded and genuine with one another.	3.26	0.55	3.60	0.60
Team members ask one another for input regarding their areas of responsibility.	3.22	0.46	3.66	0.59
<b>Conflict Scale</b>	<b>3.33</b>	<b>0.41</b>	<b>3.79</b>	<b>0.54</b>
Team members voice their opinions even at the risk of causing disagreement.	3.32	0.47	3.64	0.50



	Consulting Sample N =613 Teams		Beta Sample N =199 Teams	
	Mean	Standard Deviation	Mean	Standard Deviation
Team members solicit one another's opinions during meetings.	3.50	0.47	3.92	0.56
When conflict occurs, the team confronts and deals with the issue before moving to another subject.	3.15	0.51	3.36	0.62
During team meetings, the most important—and difficult—issues are discussed.	3.34	0.49	3.67	0.59
<b>Commitment Scale</b>	<b>3.48</b>	<b>0.43</b>	<b>3.78</b>	<b>0.46</b>
The team is clear about its overall direction and priorities.	3.49	0.52	3.71	0.63
Team members end discussions with clear and specific resolutions and calls to action.	3.35	0.46	3.67	0.58
Team members leave meetings confident that everyone is committed to the decisions that were agreed upon.	3.37	0.52	3.56	0.61
Team members support group decisions even if they initially disagree.	3.73	0.43	3.84	0.51
<b>Accountability Scale</b>	<b>2.96</b>	<b>0.37</b>	<b>3.52</b>	<b>0.52</b>
Team members offer unprovoked, constructive feedback to one another.	3.00	0.45	3.30	0.58
The team ensures that members feel pressure from their peers and the expectation to perform.	2.86*	0.52*	2.97	0.55
Team members confront peers about problems in their respective areas of responsibility.	2.93	0.44	3.28	0.58
Team members question one another about their current approaches and methods.	3.02	0.40	3.21	0.57
<b>Results Scale</b>	<b>3.37</b>	<b>0.46</b>	<b>3.57</b>	<b>0.50</b>
Team members value collective success more than individual achievement.	3.49	0.57	3.79	0.68
Team members willingly make sacrifices in their areas for the good of the team.	3.34	0.49	3.58	0.59
When the team fails to achieve collective goals, each member takes personal responsibility to improve the team's performance.	3.16	0.53	3.45	0.63
Team members are quick to point out the contributions and achievements of others.	3.48	0.52	3.73	0.66

\*During the testing phase, this item was changed. The results show the mean and standard deviation from the previous item: The team ensures that poor performers feel pressure and the expectation to improve.



## The Team Assessment: Validation Process

The team section of the assessment was examined through a validation process which examined both reliability and validity. For a more in-depth discussion of the complete validation process please see page 6.

### Reliability: Evidence of Internal Consistency

Internal consistency analyses evaluate the degree to which the items of a given scale correlate with each other. Each of the Five Behaviors™ scales (i.e., Trust, Conflict, Commitment, Accountability, and Results) is measured using four items (e.g., *Team members acknowledge their weaknesses to one another*, *Team members willingly apologize to one another*, *Team members are unguarded and genuine with one another*). If all of the items on the Trust scale, for example, are in fact measuring the same construct (i.e., trust) then the items should all correlate with each other. Cronbach's Alpha is used to evaluate internal consistency by looking at the item's correlations with each other.

Alpha coefficients were calculated for the two samples. The five scales on the Five Behaviors assessment demonstrate good internal consistency, as shown by the Alpha values listed in Table 22. For the Beta Sample ( $N=1483$ ), all reliabilities are near .70, with a median of .80. For the Consulting Sample ( $N=5004$ ), all reliabilities are well above .70, with a median of .77. The Alpha values show that the items on the scales are measuring the same construct as is proposed by the model.

**Table 22. Internal Consistency of the Five Behaviors Assessment, Cronbach's Alpha**

Scale	Consulting Sample $N=5004$	Beta Sample $N=1483$
Trust	.77	.80
Conflict	.76	.76
Commitment	.82	.82
Accountability	.73	.68
Results	.79	.82



## Construct Validity: Scale Inter correlations

Validity evaluates whether the assessment actually measures what it proposes to measure. One way to examine the validity of an instrument is to gather data and then analyze those data against a proposed theoretical model. In this case, The Five Behaviors™ model suggests that each of the behaviors builds on previous behaviors. As such, each of the behaviors should be correlated with the others.

For example, The Five Behaviors model specifies that a very trusting team will be more likely to be a committed team. Thus, trust and commitment have a positive theoretical relationship. So, we would expect that teams scoring high on the Trust scale should also score relatively high on the Commitment scale.

Tables 23 and 24 show inter correlations among The Five Behaviors scales. As expected, we find moderate to strong positive correlations among the five scales.

**Table 23. Consulting Sample Scale Inter correlations, N =5004**

	<b>Trust</b>	<b>Conflict</b>	<b>Commitment</b>	<b>Accountability</b>	<b>Results</b>
<b>Trust</b>	<b>.77</b>				
<b>Conflict</b>	.73	<b>.76</b>			
<b>Commitment</b>	.67	.72	<b>.82</b>		
<b>Accountability</b>	.68	.76	.67	<b>.73</b>	
<b>Results</b>	.77	.67	.75	.65	<b>.79</b>

**Table 24. Beta Sample Scale Intercorrelations, *N* = 1483**

	<b>Trust</b>	<b>Conflict</b>	<b>Commitment</b>	<b>Accountability</b>	<b>Results</b>
<b>Trust</b>	<b>.80</b>				
<b>Conflict</b>	.74	<b>.76</b>			
<b>Commitment</b>	.65	.74	<b>.82</b>		
<b>Accountability</b>	.59	.65	.57	<b>.68</b>	
<b>Results</b>	.80	.70	.70	.60	<b>.82</b>

Note: Cronbach's Alpha reliabilities are shown in bold along the diagonal, and the correlation coefficients among scales are shown within the body of the table. Correlation coefficients range from -1 to +1. A correlation of +1 indicates that two variables are perfectly positively correlated such that as one variable increases, the other variable increases by a proportional amount. A correlation of -1 indicates that two variables are perfectly negatively correlated, such that as one variable increases, the other variable decreases by a proportional amount. A correlation of 0 indicates that the two variables are completely unrelated.

## Comparing Team Sizes: Small and Large Teams

### Team Survey

Analyses were performed to determine if differences existed between small and large work teams. For this analysis, teams were deemed to be small if they had eight people or fewer. Using the Beta Sample, this resulted in 147 small teams. Similarly, teams of nine or more people were considered to be large (*N* = 52). Table 25 provides the analysis of the scales and item means of the Beta Sample for the small and large teams. A *t*-test was used to determine if the two means were statistically significantly different from each other. Statistically significant relationships are indicated with an asterisk. The Trust scale and the Conflict scale did show statistically significant differences. In addition to the full scale differences among means, a number of item means were also statistically significantly different as shown in Table 25. In all cases where there was a statistically significant difference, the larger teams had a lower average than the smaller teams.

**Table 25. Team Survey Means: Small (N =147) and Large Teams (N =52)**

	Small Teams	Large Teams
	Mean	Mean
<b>Trust Scale</b>	<b>3.44*</b>	<b>3.25*</b>
Team members acknowledge their weaknesses to one another.	3.12	2.95
Team members willingly apologize to one another.	3.70**	3.44**
Team members are unguarded and genuine with one another.	3.67**	3.41**
Team members ask one another for input regarding their areas of responsibility.	3.72**	3.49**
<b>Conflict Scale</b>	<b>3.84*</b>	<b>3.66*</b>
Team members voice their opinions even at the risk of causing disagreement.	3.70**	3.45**
Team members solicit one another's opinions during meetings.	3.98*	3.76*
When conflict occurs, the team confronts and deals with the issue before moving to another subject.	3.39	3.27
During team meetings, the most important and difficult issues are discussed.	3.70	3.61
<b>Commitment Scale</b>	<b>3.41</b>	<b>3.30</b>
The team is clear about its direction and priorities.	3.74	3.64
Team members end discussions with clear and specific resolutions and calls to action.	3.69	3.59
Team members leave meetings confident that everyone is committed to the decisions that were made.	3.62*	3.42*
Team members support group decisions even if they initially disagreed.	3.88	3.73
<b>Accountability Scale</b>	<b>3.55</b>	<b>3.44</b>
Team members offer unprovoked, constructive feedback to one another.	3.33	3.20
The team ensures that members feel pressure from their peers and the expectation to perform.	2.94	3.05
Team members are quick to confront peers about problems in their respective areas of responsibility.	3.27	3.29
Team members question one another about their current approaches and methods.	3.23	3.16



	Small Teams	Large Teams
	Mean	Mean
<b>Results Scale</b>	<b>3.60</b>	<b>3.51</b>
Team members value collective success more than individual achievement.	3.82	3.69
Team members willingly make sacrifices in their areas for the good of the team.	3.61	3.47
When the team fails to achieve collective goals, each member takes personal responsibility to improve the team's performance.	3.49	3.34
Team members are quick to point out the contributions and achievements of others.	3.76	3.67

\* statistically significant at the .05 level; \*\* statistically significant at the .01 level

## Team Culture

The Team Culture items not only describe what behaviors are occurring on a team, but can be used to look at differences between small and large teams. For example, a small team and a large team may respond in a statistically significantly different manner to the item, *There would be more trust on our team if...* The responses can be used to help a team address specific issues based on other teams of a similar size. In this way, the Team Culture items allow for a deeper analysis of the specific behaviors that individuals engage in based on team size. Table 26 provides the analysis of the Beta Sample for individuals on teams of eight people or fewer (small teams) ( $N = 804$ ) and for individuals on teams of nine people or more (large teams) ( $N = 679$ ). An asterisk next to the item indicates that there is a statistically significant difference between the two proportions as indicated by a z-test for proportions of independent groups. These data are important not only as a means for understanding how to build a more cohesive team, but also as a means to understanding small and large team concerns and behaviors.

**Table 26. Team Culture Items: Small ( $N = 804$ ) and Large Team ( $N = 679$ )**

	Small Teams	Large Teams
	Mean	Mean
<b>Trust: There would be more trust on our team if people...</b>		
Understood each other's personality styles	59.1%	63.9%
Shared professional failures and successes	43.9%	47.7%
Admitted their mistakes	42.0%*	53.5%*



	Small Teams Mean	Large Teams Mean
Were more forthright with information	41.1%*	51.8%*
Would give credit where credit is due	32.8%*	39.9%*
Apologized	32.8%*	40.6%*
Spent more time together	32.7%*	28.7%*
Got to know each other on a personal level	28.9%*	34.0%*
Let go of grudges	28.2%*	41.4%*
Reduced the amount of gossiping	24.0%*	34.8%*
None of the above	14.2%*	7.4%*
<b>Commitment: I sometimes don't buy into the team's decisions because...</b>		
I don't have all of the information	39.9%*	47.9%*
We are not clear about the priorities	34.0%	38.6%
I don't trust my team to follow through	12.6%	11.0%
There is not enough time during meetings	10.1%	9.3%
Decisions are counter to my personal goals	4.1%	3.1%
None of the above	41.8%*	34.8%*
<b>Accountability: Our ability to hold one another accountable could improve if we challenged one another to...</b>		
Give each other feedback	49.6%*	55.1%*
Have clearer priorities and goals	49.3%	53.2%
Review progress against goals during team meetings	39.8%	40.6%
Have more efficient and productive meetings	36.4%*	41.7%*
Call each other on unproductive behaviors	35.9%	36.8%
Address missed deadlines immediately	31.3%	30.2%
Be more direct	30.3%*	39.3%*
Publicly share goals	27.6%*	33.7%*
Follow through on personal commitments	26.9%	29.3%
Spend more time together	21.2%	20.2%
None of the above	11.4%	8.4%





	Small Teams Mean	Large Teams Mean
<b>Results: Some distractions that keep us from focusing on results are...</b>		
Insufficient/ineffective processes and structure	45.6%	42.4%
Vague or shifting goals	39.2%	38.0%
Lack of drive and urgency	24.5%	26.1%
Lack of shared rewards	21.0%	22.8%
More emphasis on personal goals than team goals	15.9%	19.1%
Emphasis on career status or progression	8.2%	8.8%
None of the above	28.9%	26.7%

\* statistically significant at the .05 level

Conflict is important for teams to function effectively. The way in which people engage in conflict can determine how teams address challenges. Small and large teams can also differ in the way they approach conflict in the workplace. Table 27 presents the level of personal acceptance of behaviors associated with conflict for individuals on small and large teams. Individuals were asked to respond to the item, *When there is conflict on our team, I find this behavior...*, identifying the given behavior as unacceptable, tolerable, or perfectly acceptable. Chi-square tests were used to determine statistical significance between small and large teams. Statistically significant relationships are indicated by an asterisk.

Regardless of team size, the majority of individuals find it unacceptable to use strong language, exclude other team members from difficult conversations, and express anger through indirect actions. There were a number of statistically significant differences between small and large teams. Individuals on large teams report that it is less acceptable to go beyond the meeting end time to resolve an issue than those on small teams,  $\chi^2=8.49$ ,  $p < .05$ . Individuals on small teams are more accepting of people being outwardly emotional than those on large teams,  $\chi^2=11.45$ ,  $p < .01$ .


**Table 27. Acceptance of Conflict Behaviors: Small (N =804) and Large Teams (N =679)**

	Small Teams Percent of Team	Large Teams Percent of Team
<b>Raising your voice when you get passionate</b>		
Unacceptable	27.4%	25.3%
Tolerable	56.0%	59.2%
Perfectly Acceptable	16.7%	15.5%
<b>Going beyond the meeting end time to resolve an issue*</b>		
Unacceptable	2.4%	5.2%
Tolerable	38.6%	36.1%
Perfectly Acceptable	59.1%	58.8%
<b>Using strong language when you're upset</b>		
Unacceptable	63.4%	67.5%
Tolerable	30.8%	27.4%
Perfectly Acceptable	5.7%	5.2%
<b>Avoiding someone when you're angry</b>		
Unacceptable	38.8%	38.1%
Tolerable	46.5%	46.2%
Perfectly Acceptable	14.7%	15.6%
<b>Excluding other team members from difficult conversations</b>		
Unacceptable	66.4%	66.0%
Tolerable	27.0%	27.2%
Perfectly Acceptable	6.6%	6.8%
<b>Being outwardly emotional**</b>		
Unacceptable	20.9%	28.4%
Tolerable	62.8%	57.4%
Perfectly Acceptable	16.3%	14.1%
<b>Expressing anger through indirect actions rather than voicing it directly</b>		
Unacceptable	86.3%	88.4%
Tolerable	12.8%	10.8%
Perfectly Acceptable	0.9%	0.9%

\* statistically significant at the .05 level; \*\* statistically significant at the .01 level



In Table 28, individuals were asked whether they admit to performing the behavior in question at work. Statistical analyses were performed to determine statistical significance between individuals on small and large teams. There were a number of small differences between small and large teams, such as those on small teams tended to be more outwardly emotional. Individuals on small teams were more likely to exclude team members from difficult conversations than those on large teams. This information is useful in creating an atmosphere in which healthy conflict can thrive.

**Table 28. Percent of Team Admitting to Behaviors: Small (N =804) and Large Teams (N =679)**

	Small Teams Percent of Team	Large Teams Percent of Team
<b>Percent of individuals that admit to doing this at work</b>		
Raising your voice when you get passionate	37.4%	37.7%
Going beyond the meeting end time to resolve an issue	73.3%	68.8%
Using strong language when you're upset	18.4%	17.4%
Avoiding someone when you're angry	42.2%	41.8%
Excluding other team members from difficult conversations	20.4%*	16.3%*
Being outwardly emotional	26.7%	23.6%
Expressing anger through indirect actions rather than voicing it directly	13.3%	10.2%
Not doing any of the above	7.5%	8.7%

\* statistically significant at the .05 level

## Summary

- Cronbach's Alphas for the five scales support that the reliability of the Five Behaviors™ assessment scales is satisfactory to good with Alphas ranging from .73 to .82 (N =5004) and from .68 to .82 (N =1483).
- The intercorrelations among the five scales demonstrate the predicted relationships with correlations ranging from .57 to .80 (N =1483) and .65 to .77 (N =5004).



- Analyses on Team Culture items suggest that the majority of individuals find it unacceptable to use strong language, exclude other team members from difficult conversations, and express anger through indirect actions.
- Analyses on types of behaviors of small and large teams suggest that teams can behave differently when presented with similar situations at work. Individuals on large teams report that it is less acceptable to go beyond the meeting end time to resolve an issue than those on small teams. Individuals on small teams are more accepting of people being outwardly emotional. People on small teams tend to exclude other team members from difficult conversations more often than those on larger teams. This information can be used to educate teams on how to better develop their cohesiveness.



## Appendix A: Everything DiSC® Assessment Sample Demographics

**Table A1. Everything DiSC Assessment Development Sample Demographics**

<b>Gender</b>	Male	52%
	Female	48%
<b>Age</b>	18-25	9%
	26-35	24%
	36-45	21%
	46-55	30%
	56 or older	16%
<b>Education</b>	Some high school	1%
	High School Graduate	16%
	Technical/Trade School	9%
	Some college	28%
	College graduate	32%
	Graduate/Professional degree	14%
<b>Heritage</b>	African American	5%
	Native American	1%
	Asian American	5%
	Caucasian	80%
	Hispanic	6%
	Other	3%
<b>Employment</b>	Secretary/Clerical	7%
	Executive	3%
	Mid-Level Management	6%
	Supervisory	2%
	Professional	10%
	Mechanical-Technical	2%
	Customer Service	3%
	Sales	4%
	Healthcare Worker	3%
	Teacher/Educator	6%
	Skilled Trades	4%
	Student	2%
	Other	48%



## Appendix B: Everything DiSC® Assessment Gender Differences

It is important to understand the relationship between gender and profile score. An analysis of variance (ANOVA) was performed on the eight scale means across gender groups to determine any differences. These differences are generally small. The largest differences are seen on the S scale, in which gender accounted for 6.2% of scale variance. Women tended to score higher on the i, iS, S and SC scales, and men tended to score higher on the D, Di, C, and DC scales. Although statistically significant differences were found on five of the eight scales, in practical terms these differences are not large.

**Table B1. DiSC® Scale Variance Accounted for by Gender**

Scale	Percent of Variance
<b>Di</b>	5.1%
<b>i</b>	2.3%
<b>iS</b>	0.1%
<b>S</b>	5.2%
<b>SC</b>	6.2%
<b>C</b>	0.2%
<b>CD</b>	2.4%
<b>D</b>	4.2%

*N* = 599



## Appendix C: Everything DiSC® Assessment and the 16PF

**Table C1. Correlation between the Everything DiSC Assessment and the 16PF**

16PF Scale	DiSC® Scale							
	Di	i	iS	S	SC	C	CD	D
Warmth	.15	.45	.49	.25	-.30	-.51	-.31	-.01
Reasoning	-.16	-.24	-.18	-.11	.08	.23	.23	.01
Emotional Stability	.21	.31	.38	.17	-.22	-.31	-.33	-.01
Dominance	.54	.28	-.14	-.45	-.63	-.24	.19	.63
Liveliness	.42	.62	.37	.06	-.45	-.55	-.27	.09
Rule Consciousness	-.21	-.03	.18	.23	.11	.07	-.23	-.20
Social Boldness	.52	.70	.35	-.10	-.66	-.60	-.19	.33
Sensitivity	-.17	.01	.15	.18	.10	-.05	-.05	-.19
Vigilance	.07	-.15	-.33	-.27	-.04	.10	.31	.23
Abstractedness	.09	-.07	-.21	-.23	-.02	.01	.24	.15
Privateness	-.21	-.39	-.31	-.04	.31	.33	.17	-.10
Apprehension	-.29	-.26	-.11	.06	.22	.22	.18	-.21
Openness to Change	.36	.19	.00	-.16	-.38	-.23	.08	.24
Self-Reliance	-.25	-.47	-.39	-.17	.28	.51	.30	.01
Perfectionism	.10	.05	.00	.00	-.11	.15	-.12	-.01
Tension	-.05	-.18	-.43	-.45	-.03	.24	.55	.20
Extraversion	.41	.70	.51	.12	-.52	-.67	-.34	.12
Anxiety	-.18	-.31	-.41	-.26	.15	.30	.45	.06
Tough Mindedness	-.16	-.18	-.12	.02	.23	.26	-.04	-.08
Independence	.60	.42	-.04	-.40	-.71	-.38	.14	.60
Self-Control	-.18	-.12	.07	.18	.11	.23	-.18	-.17
Realistic	.22	-.05	-.19	-.19	-.08	.09	.03	.20
Investigative	.06	-.23	-.31	-.22	.05	.26	.17	.13
Artistic	.36	.40	.16	-.11	-.45	-.41	.00	.23
Social	.30	.56	.45	.12	-.49	-.57	-.26	.14
Enterprising	.53	.53	.21	-.17	-.65	-.50	-.10	.44
Conventional	.06	.06	.07	.06	-.08	.08	-.18	-.02



16PF Scale	DiSC® Scale							
	Di	i	iS	S	SC	C	CD	D
Self-Esteem	.39	.52	.40	.07	-.46	-.48	-.32	.17
Emotional Adjustment	.24	.32	.33	.15	-.21	-.30	-.36	.04
Social Adjustment	.51	.68	.38	-.06	-.64	-.60	-.24	.32
Emotional Expressivity	.56	.56	.12	-.32	-.69	-.48	.07	.50
Emotional Sensitivity	.27	.45	.42	.14	-.42	-.52	-.23	.10
Emotional Control	.01	-.16	-.18	-.10	.07	.13	.07	.09
Social Expressivity	.55	.74	.41	-.04	-.67	-.66	-.24	.27
Social Sensitivity	-.37	-.26	-.09	.10	.30	.21	.15	-.22
Social Control	.53	.62	.30	-.13	-.67	-.52	-.16	.35
Empathy	.37	.60	.56	.22	-.44	-.57	-.44	.05
Leadership Potential	.47	.60	.40	.04	-.55	-.49	-.33	.20
Creative Potential	.62	.51	.07	-.32	-.72	-.41	.02	.51
Creative Achievement	.37	.19	-.09	-.27	-.35	-.11	.12	.26

N = 552





## Appendix D: Everything DiSC® Assessment and the NEO-PI-R

**Table D1. Correlation between the Everything DiSC Assessment and the NEO-PI-R**

NEO-PI-R Scale	DiSC® Scale							
	Di	i	iS	S	SC	C	CD	D
Neuroticism	-.31	-.29	-.26	-.12	.26	.31	.28	-.10
Extraversion	.45	.69	.52	.10	-.57	-.63	-.34	.15
Openness to Experience	.27	.10	.06	-.05	-.27	-.10	-.03	.10
Agreeableness	-.40	-.01	.52	.67	.35	-.05	-.48	-.58
Conscientiousness	.26	.09	.00	-.07	-.27	.11	-.11	.10
Anxiety	-.29	-.22	-.18	-.06	.23	.23	.23	-.10
Angry Hostility	.01	-.13	-.46	-.53	-.04	.17	.51	.30
Depression	-.30	-.34	-.30	-.08	.32	.30	.27	-.10
Self-Consciousness	-.40	-.48	-.27	.00	.44	.41	.23	-.23
Impulsiveness	-.08	-.08	-.21	-.27	-.01	.05	.35	.14
Vulnerability	-.35	-.21	-.19	-.04	.34	.18	.21	-.14
Warmth	.25	.60	.61	.29	-.41	-.55	-.43	-.03
Gregariousness	.40	.65	.41	.16	-.42	-.59	-.36	.06
Assertiveness	.68	.49	.11	-.30	-.75	-.41	-.04	.55
Activity	.57	.47	.12	-.23	-.57	-.33	-.11	.32
Excitement Seeking	.51	.37	.11	-.09	-.42	-.32	-.13	.19
Positive Emotions	.25	.50	.57	.21	-.35	-.44	-.41	-.06
Fantasy	.15	.05	.04	-.04	-.15	-.11	.05	.06
Aesthetics	.20	.16	.14	.06	-.17	-.15	-.15	-.02
Feelings	.14	.23	.22	.02	-.29	-.20	-.07	.09
Actions	.43	.34	.16	.01	-.34	-.34	-.16	.09
Ideas	.33	.10	-.01	-.15	-.35	-.04	-.01	.23
Values	.08	.01	.02	.00	-.14	-.04	.06	.02
Trust	.03	.26	.55	.39	-.08	-.27	-.47	-.21
Straightforwardness	-.28	-.03	.27	.39	.24	.05	-.27	-.35
Altruism	.02	.28	.53	.47	-.13	-.27	-.42	-.27
Compliance	-.27	-.01	.47	.65	.41	.00	-.55	-.63
Modesty	-.39	-.21	.09	.31	.37	.16	-.08	-.35



NEO-PI-R Scale	DiSC® Scale							
	Di	i	iS	S	SC	C	CD	D
Tender Mindedness	.00	.16	.37	.27	-.12	-.18	-.28	-.12
Competence	.33	.19	.16	.05	-.35	-.07	-.21	.08
Order	.18	.12	.07	.06	-.16	.07	-.17	-.04
Dutifulness	.11	.11	.19	.16	-.17	.00	-.22	-.06
Achievement Striving	.48	.31	.11	-.11	-.44	-.15	-.19	.20
Self-Discipline	.30	.23	.18	.05	-.29	-.11	-.26	.08
Deliberation	-.12	-.11	.09	.26	.15	.18	-.22	-.26

N = 552

## Appendix E: Team Culture Items for the Beta Sample

**Table E1. Team Culture Items, Beta Sample (N=1483)**

	Percent of Team
<b>Trust: There would be more trust on our team if people...</b>	
Understood each other's personality styles	61.3%
Admitted their mistakes	47.3%
Were more forthright with information	46.2%
Shared professional failures and successes	45.7%
Would give credit where credit is due	36.1%
Apologized	35.1%
Let go of grudges	34.1%
Got to know each other on a personal level	31.2%
Spent more time together	30.9%
Reduced the amount of gossiping	28.9%
None of the above	11.1%
<b>Commitment: I sometimes don't buy into the team's decisions because...</b>	
I don't have all of the information	43.6%
We are not clear about the priorities	36.1%
I don't trust my team to follow through	11.9%
There is not enough time during meetings	9.7%
Decisions are counter to my personal goals	3.6%
None of the above	38.6%



	Percent of Team
<b>Accountability: Our ability to hold one another accountable could improve if we challenged one another to...</b>	
Give each other feedback	52.1%
Have clearer priorities and goals	51.0%
Review progress against goals during team meetings	40.2%
Have more efficient and productive meetings	38.8%
Call each other on unproductive behaviors	36.3%
Be more direct	34.5%
Address missed deadlines immediately	30.8%
Publicly share goals	30.4%
Follow through on personal commitments	28.0%
Spend more time together	20.7%
None of the above	10.0%
<b>Results: Some distractions that keep us from focusing on results are...</b>	
Insufficient/ineffective processes and structure	44.2%
Vague or shifting goals	38.6%
Lack of drive and urgency	25.2%
Lack of shared rewards	21.8%
More emphasis on personal goals than team goals	17.4%
Emphasis on career status or progression	8.5%
None of the above	27.8%
<b>Table E2. Acceptance of Conflict Behaviors, Beta Sample (N =1483)</b>	
<b>Raising your voice when you get passionate</b>	
Unacceptable	26.4%
Tolerable	57.5%
Perfectly Acceptable	16.1%
<b>Going beyond the meeting end time to resolve an issue</b>	
Unacceptable	3.6%
Tolerable	37.4%
Perfectly Acceptable	58.9%



	Percent of Team
<b>Using strong language when you're upset</b>	
Unacceptable	65.3%
Tolerable	29.3%
Perfectly Acceptable	5.5%
<b>Avoiding someone when you're angry</b>	
Unacceptable	38.5%
Tolerable	46.4%
Perfectly Acceptable	15.1%
<b>Excluding other team members from difficult conversations</b>	
Unacceptable	66.2%
Tolerable	27.1%
Perfectly Acceptable	6.7%
<b>Being outwardly emotional</b>	
Unacceptable	24.3%
Tolerable	60.4%
Perfectly Acceptable	15.3%
<b>Expressing anger through indirect actions rather than voicing it directly</b>	
Unacceptable	87.3%
Tolerable	11.9%
Perfectly Acceptable	0.9%

**Table E3. Percent of Team Admitting to Behaviors, Beta Sample (N=1483)**

<b>Percent of team that admits to doing this at work</b>	
Raising your voice when you get passionate	37.6%
Going beyond the meeting end time to resolve an issue	71.2%
Using strong language when you're upset	17.9%
Avoiding someone when you're angry	42.0%
Excluding other team members from difficult conversations	18.5%
Being outwardly emotional	25.3%
Expressing anger through indirect actions rather than voicing it directly	11.9%
Not doing any of the above	8.0%



## Appendix F: References

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