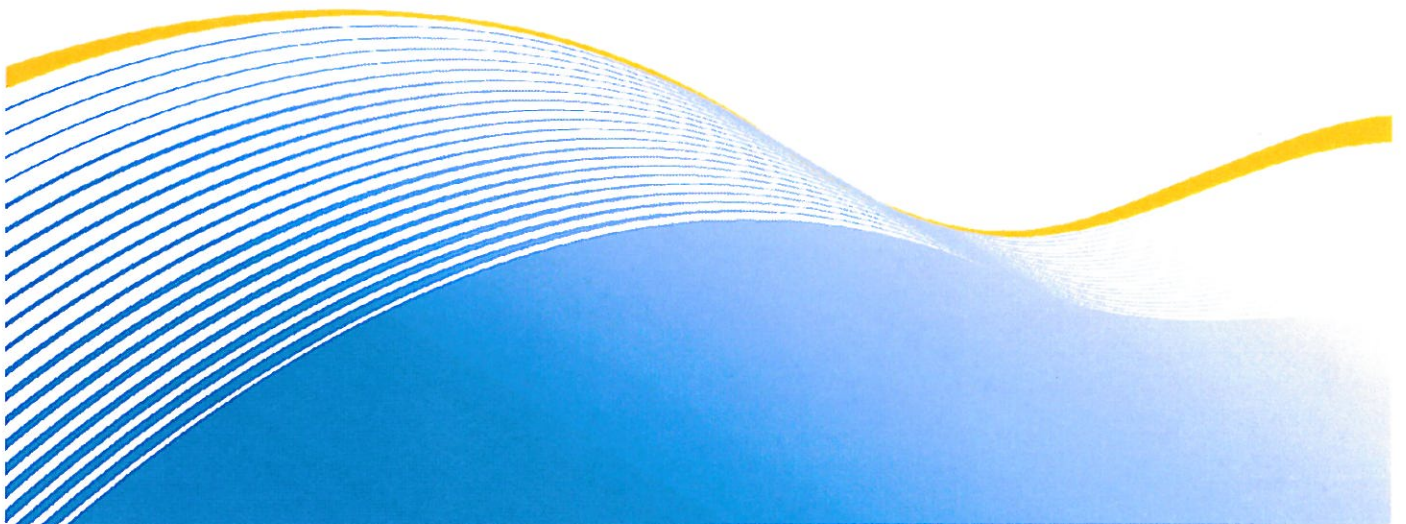


# Research Report

*by Inscape Publishing*



## Overview of this Research Report

The purpose of this report is to provide the validity research for the *Everything DiSC® Application Library* assessment and profiles. Section 1 includes background and research on the assessment, specifically on the 79-item response set, the DiSC® scales that are derived from this information, and the circumplex representation of the model. Sections 2-4 provide research on the application-specific models used in *Everything DiSC Management*, *Everything DiSC Sales*, and *Everything DiSC Workplace™*. Section 5 provides the research for the *Everything DiSC Comparison Report*. The Appendices contain more detailed information on the Everything DiSC assessment research.

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## Section 1: Everything DiSC® Assessment Research

### 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 DiSC circle are equally meaningful and interpretable, the DiSC model discusses four reference points around the circle.

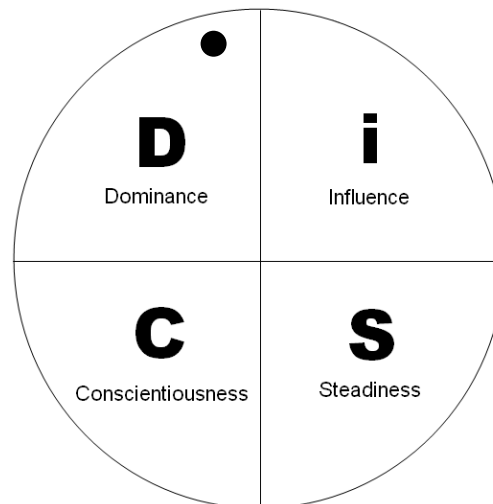
**Dominance:** direct, strong-willed, and forceful

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

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

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

**Figure 1. Circumplex DiSC Model**



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.

## Assessment and Scoring

The Everything DiSC® assessment asks participants to respond to 79 adjectives on a five-point ordered response scale, indicating how often each adjective describes them. 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.

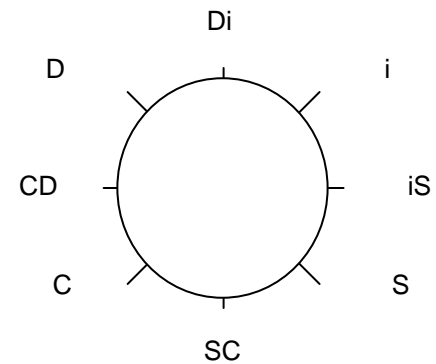
**SC** measures a moderate-paced, cautious disposition using adjectives such as careful, soft-spoken, and self-controlled.

**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.

An individual's scores on these eight scales are then weighted (according to the scale's location on the circle) and used to plot an individual on the Everything DiSC® Map, as represented by a dot. (Note that these eight scale scores are not directly reported in the profiles.) The Everything DiSC Map is divided into 12 sections, or styles, as shown in Appendix 3. Each section represents 30 degrees within the circle. An individual's feedback is based on the section in which his or her dot falls, and, in some cases, on the distance of the dot from the center of the circle.

**Figure 2. Eight DiSC® Scales**



## 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, extroversion, or honesty. So how do researchers evaluate these instruments? How do we know whether such tools 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 tool against these different standards. This paper is designed to help you understand these different standards and see how the Everything DiSC assessment performs under examination.

Validation asks two fundamental questions:

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

Note that no psychometric tool 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 tool?” than, “Is this tool reliable?”

## Reliability

**Internal Reliability** evaluates the degree of correlation among questions that profess to measure the same thing. That is, each of the eight scales in the DiSC® model is measured using a series of different items (i.e., questions in the form of adjectives, such as *direct*, *adventurous*, *cautious*, *cheerful*). Researchers recognize that if all of the items on a given scale (e.g., the D scale) are in fact measuring the same thing (e.g., Dominance), 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.

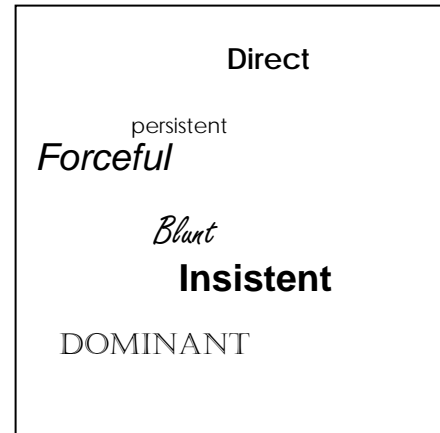
Cronbach’s Alpha expresses the degree of correlation as a specific number, which typically varies between 0.0 and 1.0. If the value of Alpha is 0.0, then there is no relationship among the items/statements on a given scale. On the other hand, if all the statements in a questionnaire measure in an identical fashion, then the value of Alpha will be 1.0, which indicates absolute internal consistency. Cronbach’s Alpha is calculated separately for each of the assessment’s eight scales.

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 usually 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.

Alpha coefficients were calculated for a sample of 811 respondents. The demographics of this sample are included in Appendix 1.

**Figure 3. D Scale Items**

### The D Scale



The scales on the Everything DiSC® instruments demonstrate good-to-excellent internal consistency, as shown by the Alpha values listed in Table 1. All reliabilities are well above .70, with a median of .85.

**Table 1. Scale Reliabilities**

Scale	Cronbach's Alpha
D	.88
Di	.91
i	.91
iS	.88
S	.82
SC	.82
C	.80
CD	.75

## Validity

As mentioned, validity indicates the degree to which a tool measures that which it has been designed to measure. Assessing the validity of a psychological tool that measures abstract qualities (like intelligence, extroversion, or honesty) 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 here fall under the heading of **construct validity**.

### Construct Validity

Construct validity examines the validity of a tool on a highly theoretical level. A *construct* is an abstract idea or concept (such as intelligence, dominance, or honesty) that is used to make sense of our experience. The Di scale of the Everything DiSC instruments, 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, if our measure of a bold tendency has high validity, people scoring high on the Di scale should score relatively low on a scale measuring cautiousness, such as the SC scale. This is essentially what researchers do when they examine construct validity. First, they specify a series of theoretical relationships (e.g., the construct of boldness 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.

### **Scale Intercorrelations**

As you might imagine, there are a variety of different ways to test construct validity. First, we can examine the validity of an instrument as a whole. Instruments like the Everything DiSC® assessment propose an underlying model in which the scales have a specific relationship to each other.

Researchers examine the actual relationship among the scales to see if they reflect the theoretical relationship proposed by the model.

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 (.51) should be substantially lower than the alpha reliability of the Di or i scales (both .91). On the other hand, scales that are theoretically opposite (e.g., i and C) should have strong negative correlations. Table 2 below shows data obtained from a sample of 811 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 2. 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>	.37	<b>.91</b>						
<b>I</b>	-.04	.51	<b>.91</b>					
<b>IS</b>	-.49	-.10	.38	<b>.88</b>				
<b>S</b>	-.71	-.42	-.05	.49	<b>.82</b>			
<b>SC</b>	-.52	-.75	-.63	-.11	.37	<b>.82</b>		
<b>C</b>	-.05	-.55	-.76	-.44	-.06	.54	<b>.80</b>	
<b>CD</b>	.35	-.18	-.50	-.69	-.51	.15	.39	<b>.75</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=811, as shown in Appendix 1.

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 pattern of correlations for a given scale are expected to be arranged in a particular order. As can be seen in Table 3 below, 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 3. 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 4, 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 4, 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 4. Actual and Predicted Scale Relationships**

$r_1$	>	$r_2$	>	$r_3$	>	$r_4$	
.43	>	-.05	>	-.51	>	-.73	Actual (average)
.42	>	.03	>	-.36	>	-.73	Predicted

**The Dimensionality of the DiSC® Model: Multidimensional Scaling (MDS)**

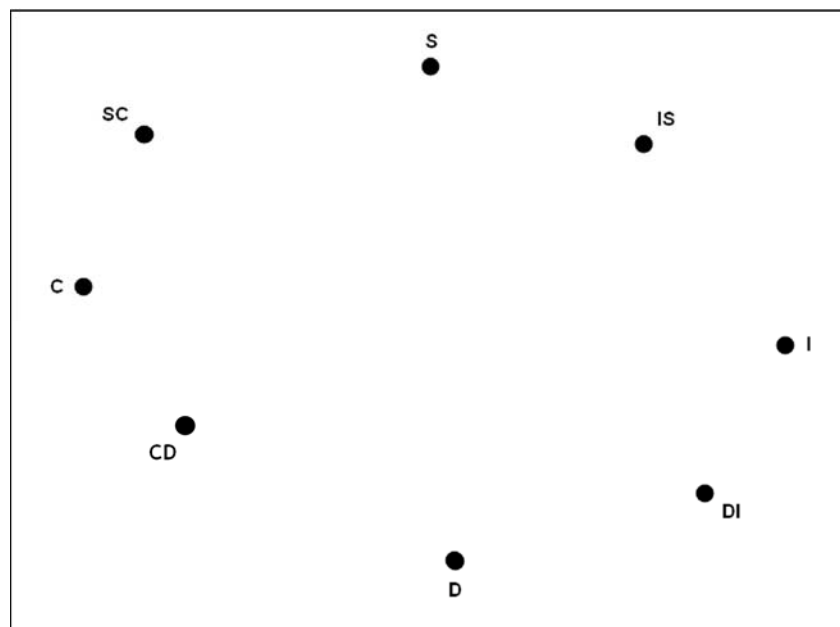
A statistical technique called multidimensional scaling also adds support to the DiSC® model as a circumplex. This technique has two advantages. First, it allows for a visual inspection of relationship among the eight scales. Second, this technique allows researchers to look at all of the scales simultaneously. In Figure 1 below, 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 4, the scales are arranged in a way that is expected by the DiSC model.

(Keep in mind 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 4. MDS Two-Dimensional Solution**



Stress = .00956  
RSQ = .99908  
N = 811

As can be seen above, all scales are closest to the scales that are theoretically adjacent to them in the model. For instance, the Di is closest to the D scale and i scale, as predicted by the model. In addition, scales that are theoretically opposite (e.g., the i or C) are generally furthest away from each

other on the plot, although there were two exceptions to this finding. 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 .00956 and the RSQ value is .99908. 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 principle components factor analysis was performed on all eight scales using a varimax rotation. The eigenvalues below clearly reinforce the two-dimensional structure underlying the eight scales, as shown in Table 5. 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 zero.

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 5. Factor Analysis Eigenvalues**

Component	Eigenvalues
1	3.25
2	2.85
3	0.51
4	0.48
5	0.36
6	0.28
7	0.26
8	< 0.01

N=811

The rotated factor loadings are listed in Table 6. (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 the 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 6. Factor Loadings for the Eight DiSC® Scales.**

<b>Scale</b>	<b>Actual Loadings</b>		<b>Ideal Loadings</b>	
	Vertical Dimension	Horizontal Dimension	Vertical Dimension	Horizontal Dimension
<b>D</b>	.621	-.605	.707	-.707
<b>Di</b>	.865	.065	1.000	.000
<b>i</b>	.657	.598	.707	.707
<b>iS</b>	-.068	.861	.000	1.000
<b>S</b>	-.585	.662	-.707	.707
<b>SC</b>	-.901	-.127	-1.000	.000
<b>C</b>	-.634	-.590	-.707	-.707
<b>CD</b>	-.071	-.851	.000	-1.000

Further, the pattern of negative and positive loadings are 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 7 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 7, reflects the extent to which the scale is represented by the two underlying dimensions (Kiesler et al., 1997). These values can range from 0.0 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 7. Angular locations for the Eight DiSC® Scales.**

<b>Scale</b>	<b>Actual Angle</b>	<b>Ideal Angle</b>	<b>Deviation</b>	<b>Vector Length</b>
<b>D</b>	316	315	1	.87
<b>Di</b>	4	0	4	.87
<b>i</b>	42	45	-3	.89
<b>iS</b>	95	90	5	.86
<b>S</b>	131	135	-4	.88
<b>SC</b>	188	180	8	.91
<b>C</b>	223	225	-2	.87
<b>CD</b>	265	270	-5	.85

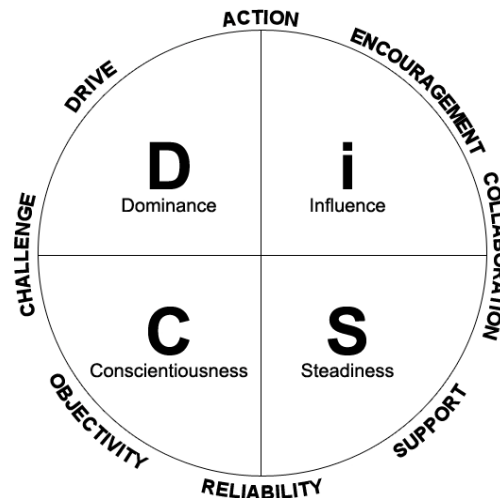
### Summary of the Validation Results

Evaluation of the Everything DiSC® assessment indicates that there is strong support for the reliability and validity of this tool. Analyses suggest that the scales' reliabilities are in the good-to-excellent range, with a median coefficient alpha of .85. Analyses examining the validity of the tool were also very favorable. 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.

## Section 2: Everything DiSC® Management Model Research

## Background

Each instrument in the *Everything DiSC® Application Library* uses an application-specific model to give context to the report interpretation. The management model in the *Everything DiSC Management Profile*, shown in Figure 5, helps managers understand how they approach their work. The eight words around the map indicate the top priorities of managers with different DiSC® styles. For example, the priorities of “S” managers are Support, Reliability, and Collaboration. The development of this model was based on empirical data gathered from both managers and employees.

Figure 5. *Everything DiSC Management Model*

## The Research

First, participants with management experience (N=427) were presented with a series of statements describing management tasks and asked the importance of each when working as a manager. For instance, participants were asked to rate the importance of “Setting high expectations” on a 5-point scale ranging from “Not Important” (1) to “Crucially Important” (5). Statements were grouped into eight categories that represent the eight priorities on the circle above. Each category contained four to five statements. The 36 individual statements are shown in Table 8.

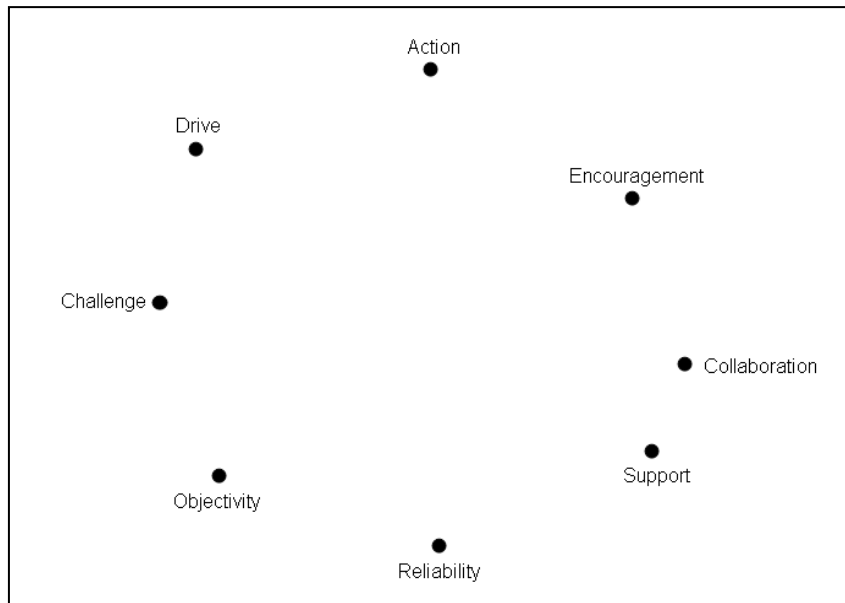
**Table 8. Statements used to measure the priorities from the manager's perspective**

<b>Priority</b>	<b>Statement</b>
ACTION	Maintaining forward momentum on your team
ACTION	Creating goals for the team that are inspiring
ACTION	Getting new projects moving quickly
ACTION	Encouraging the team to maintain an energetic pace
ACTION	Encouraging people to take risks
ENCOURAGEMENT	Celebrating group victories
ENCOURAGEMENT	Praising people for good work
ENCOURAGEMENT	Letting people know that you're optimistic about their progress
ENCOURAGEMENT	Creating enthusiasm in the team
COLLABORATION	Building a sense of collaboration
COLLABORATION	Encouraging teamwork
COLLABORATION	Providing feedback in a way that's warm and understanding
COLLABORATION	Making sure that everyone's getting along
SUPPORT	Letting people know that you are there to help them out whenever they need it
SUPPORT	Checking in with people to make sure they are doing ok
SUPPORT	Taking time to listen to people's concerns and fears
SUPPORT	Letting people know that you're patient with their mistakes
RELIABILITY	Creating a stable work environment
RELIABILITY	Being consistent in your management
RELIABILITY	Checking to make sure people have the resources they need
RELIABILITY	Giving people time to adjust to changes
RELIABILITY	Providing people with clear guidelines for doing their work
OBJECTIVITY	Maintaining objectivity in your management decisions
OBJECTIVITY	Ensuring that decisions are based on logical analysis
OBJECTIVITY	Emphasizing the need for quality work
OBJECTIVITY	Making accuracy a top priority
OBJECTIVITY	Separating out emotions from facts when making decisions
CHALLENGE	Challenging ideas that don't make sense to you
CHALLENGE	Questioning employee's actions when they don't seem logical to you
CHALLENGE	Letting people know when they aren't performing up to your standards
CHALLENGE	Questioning procedures or practices that aren't efficient
CHALLENGE	Providing people with new challenges
DRIVE	Constantly pushing yourself and others toward results
DRIVE	Creating a sense of urgency in the team
DRIVE	Getting results that are practical and concrete
DRIVE	Setting high expectations

After participants rated each statement, the average response for statements within a priority category was calculated. Consequently, all participants had a category score for all eight priorities. These category scores were then ipsatized by subtracting a mean score across all statements. This process controlled for response bias and ensured that the category scores reflected the relative importance of the eight priorities for a particular participant.

The category scores were then submitted to a multidimensional scaling (MDS) analysis. This analysis allows researchers to look at the relationship among the eight categories and determine if the categories relate to each other in the manner predicted by the model. The results of the analysis are presented in Figure 6. Categories that are closer together share more in common and categories that are further apart are more dissimilar.

**Figure 6. Multidimensional Scaling Results for Managers**



As expected, the eight priorities form a circular shape, with the priorities arranged as predicted by the management model. That is, the sequence around the circle proceeds as follows: Action, Encouragement, Collaboration, Support, Reliability, Objectivity, Challenge, and Drive. 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.

To capture management priorities from the perspective of employees, a second study was performed. In this study, 699 participants were asked to think of their previous experiences reporting to a manager. They were then presented with a series of management tasks and asked to rate how important each was for a manager to perform. For instance, participants rated how important “Taking time to listen to my concerns and fears” was on a 5-point scale ranging from “Not Important” (1) to “Crucially Important” (5).

Again, statements were grouped into eight categories that represent the eight priorities in Figure 5. Each category contained three to five statements. As described in the previous study, statement ratings within a priority category were averaged and ipsatized to arrive at a category score. The individual statements used in this study are shown in Table 9.

**Table 9. Statements used to measure the priorities from an employee's perspective**

<b>Priority</b>	<b>Statement</b>
DRIVE	Setting high expectations
DRIVE	Creating a sense of urgency in the team
DRIVE	Getting quick results
DRIVE	Constantly pushing himself/herself and others toward results
ACTION	Maintaining forward momentum on our team
ACTION	Creating goals for the team that are inspiring
ACTION	Encouraging the team to maintain an energetic pace
ACTION	Encouraging me to take risks
ENCOURAGEMENT	Celebrating group victories
ENCOURAGEMENT	Letting me know that he/she is optimistic about my progress
ENCOURAGEMENT	Creating enthusiasm in the team
COLLABORATION	Providing feedback in a way that's warm and understanding
COLLABORATION	Building a sense of collaboration
COLLABORATION	Encouraging teamwork
COLLABORATION	Making sure that everyone's getting along
SUPPORT	Letting me know that he/she is there to help me out whenever I need it
SUPPORT	Checking in with me to make sure I'm doing ok
SUPPORT	Taking time to listen to my concerns and fears
SUPPORT	Letting me know that he/she is patient with my mistakes
RELIABILITY	Creating a stable work environment
RELIABILITY	Being consistent in his/her management
RELIABILITY	Checking to make sure I have the resources I need
RELIABILITY	Giving me time to adjust to changes
RELIABILITY	Providing me with clear guidelines for doing my work
OBJECTIVITY	Emphasizing the need for quality work
OBJECTIVITY	Ensuring that decisions are based on logical analysis
OBJECTIVITY	Maintaining objectivity in his/her management decisions
OBJECTIVITY	Making accuracy a top priority
OBJECTIVITY	Separating out emotions from facts when making decisions
CHALLENGE	Challenging ideas that don't make sense to him/her
CHALLENGE	Questioning employee's actions when they don't seem logical
CHALLENGE	Questioning procedures or practices that aren't efficient
CHALLENGE	Providing me with new challenges

The priority category scores were then submitted to a multidimensional scaling (MDS) analysis. The results of this analysis are shown in Figure 7.

**Figure 7. Multidimensional Scaling Results for Employees**



As with the manager data, the priority categories are arranged in a circle. Further, the categories are plotted in the expected order: Action, Encouragement, Collaboration, Support, Reliability, Objectivity, Challenge, and Drive. The categories are not spaced in a perfectly even manner, but, again, this standard is almost impossible to meet with real data.

### Summary of the Validation Results

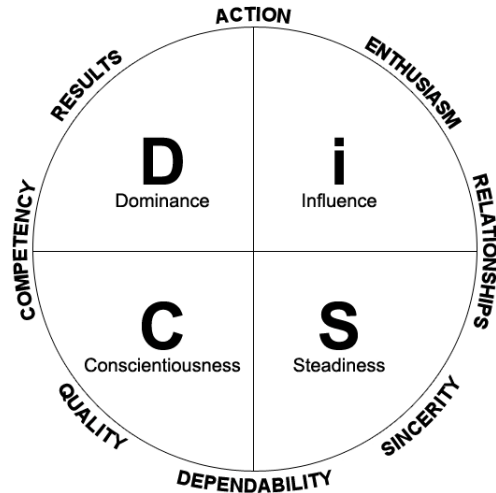
Overall, both of these studies provide strong support for the *Everything DiSC® Management* model. Two separate data sets addressing management priorities from the perspective of both managers and employees confirm that the eight priorities are arranged in a circular fashion in the predicted order. This type of empirical support should give managers confidence that the *Everything DiSC Management* model accurately reflects real-life management environments and is useful for understanding various approaches to management.

## Section 3: Everything DiSC® Sales Model Research

### Background

The application-specific model used in the *Everything DiSC® Sales Profile*, shown in Figure 8, helps salespeople better understand themselves and their customers. In this model, the eight words around the map indicate the priorities of both customers and salespeople of different DiSC® styles during sales interactions. For example, the priorities of “i” salespeople and customers are Enthusiasm, Action, and Relationships. The development of this model was based on empirical data gathered from both customers and salespeople.

**Figure 8. Everything DiSC Sales Model**



### The Research

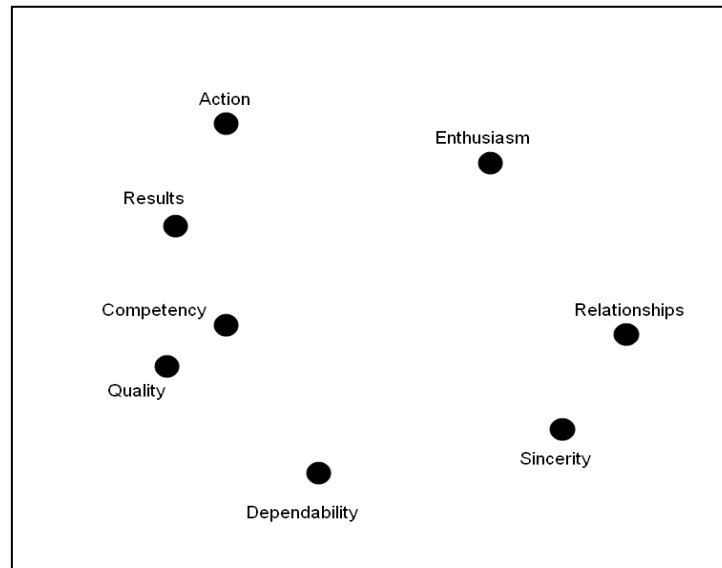
First, participants (N=1,047) were presented with a series of statements and asked the importance of each when working with a salesperson. For instance, participants were asked to rate the importance of “Working with a salesperson who is friendly and personable” on a five-point scale ranging from “Not Important” (1) to “Vitaly Important” (5). Statements were grouped into eight categories that represent the eight priorities on the circle above. Each category contained two to four statements. The individual statements for each category are shown in Table 10.

**Table 10. Statements used to measure the priorities from the customer's perspective**

<b>Priority</b>	<b>Statement</b>
ACTION	Being assured that things will happen quickly and easily once I make a decision
ACTION	Getting things moving as soon as possible after the sale
ENTHUSIASM	Seeing a product/service that I'm excited about
ENTHUSIASM	Working with salespeople who are enthusiastic and passionate about the product/service
RELATIONSHIPS	Working with salespeople who are friendly and personable
RELATIONSHIPS	Working with salespeople that I connect with
RELATIONSHIPS	Knowing that the salesperson doesn't see me as just another sales opportunity
RELATIONSHIPS	Working with a sales person I enjoy talking to
SINCERITY	Working with salespeople who are sincere
SINCERITY	Working with salespeople who I sense are genuinely looking out for my best interest
SINCERITY	Working with a salesperson who genuinely seems to care about my needs and concerns
SINCERITY	Working with a salesperson who is a good listener
DEPENDABILITY	Being sure that the salesperson is dependable
DEPENDABILITY	Working with salespeople who are thorough, careful, and responsible
QUALITY	Being sure that I'm getting the highest quality
QUALITY	Seeing demonstrations of the quality of the product/service
COMPETENCY	Being sure that the salesperson is competent to handle my business
COMPETENCY	Working with salespeople who are experts in their field
RESULTS	Having salespeople show me how I can get immediate, practical results
RESULTS	Seeing how the product/service can have a big impact on my success
RESULTS	Seeing the immediate benefits of the product/service

After participants rated each statement, the average response for statements within a priority category was calculated. Consequently, all participants had a category score for all eight priorities. These category scores were then ipsatized by subtracting a mean score across all statements. This process controlled for response bias and ensured that the category scores reflected the relative importance of the eight priorities for a particular participant.

The category scores were then submitted to a multidimensional scaling (MDS) analysis. This analysis allows researchers to look at the relationship among the eight categories and determine if the categories relate to each other in the manner that the model predicts. The results of the analysis are presented below. Categories that are closer together share more in common, and categories that are farther apart are more dissimilar.

**Figure 9. Multidimensional Scaling Results for Customers**

As expected, the eight priorities are arranged in a circular shape, with the priorities arranged in the manner predicted by the sales model. That is, the sequence around the circle proceeds as follows: Action, Enthusiasm, Relationships, Sincerity, Dependability, Quality, Competency, and Results. 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.

Because the *Everything DiSC® Sales* model speaks to the priorities of salespeople as well as customers, a second sample of data was collected on salespeople (N=1,800).

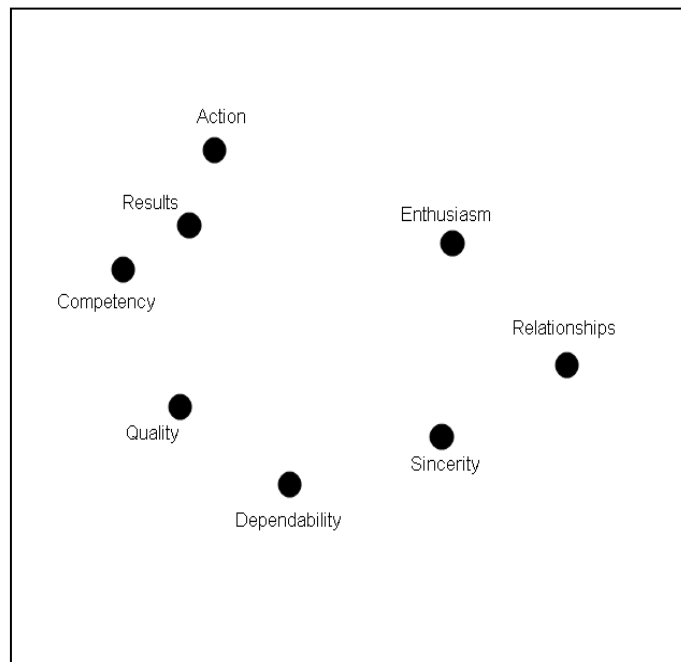
In this study, salespeople were presented with sales behaviors such as “Showing the customer that you’re an expert in your field,” and asked to rate the importance of each statement on a five-point scale ranging from “Not Important” (1) to “Vitaly Important” (5). Each category contained three to five statements. Sample statements for each category are shown in Table 11.

**Table 11. Statements used to measure the priorities from the salesperson's perspective**

<b>Priority</b>	<b>Statement</b>
ACTION	Showing the customer that you can make things happen quickly and easily
ACTION	Helping the customer see how they can use your product/service immediately
ACTION	Inspiring the customer that your product/service can help them right away
ENTHUSIASM	Getting the customer excited about your product/service
ENTHUSIASM	Creating enthusiasm in the customer
ENTHUSIASM	Having fun with the customer
RELATIONSHIPS	Developing a comfortable, friendly relationship with the customer
RELATIONSHIPS	Building a personal connection with the customer
RELATIONSHIPS	Being friendly, warm, and personable
RELATIONSHIPS	Showing that you care about the customer as a person, not just as a customer
RELATIONSHIPS	Showing the customer that you empathize with his/her needs and concerns
SINCERITY	Showing that you're sincere
SINCERITY	Showing that you're genuinely looking out for the customer's best interest
SINCERITY	Showing that you truly care about the customer's problems
DEPENDABILITY	Showing that you and your product/service are a dependable choice
DEPENDABILITY	Showing that you'll be available to provide support after the sale
DEPENDABILITY	Showing that you're thorough and careful
QUALITY	Explaining the quality of your product/service
QUALITY	Showing that you can back up your claims with evidence
QUALITY	Making sure customers get all of the information they need to make an informed decision
COMPETENCY	Demonstrating your expertise on the product/service you're selling
COMPETENCY	Showing the customer that you're an expert in your field
COMPETENCY	Showing the customer that you can get things done without wasting a lot of their time
COMPETENCY	Backing up claims with specific information
RESULTS	Showing the customer how you can get them immediate, practical results
RESULTS	Showing the customer that you can have an impact on their success
RESULTS	Getting the customer to see the benefits of your product/service

As described in the previous study, statement ratings within a priority category were averaged and ipsatized to arrive at a category score. The category scores were then submitted to a multidimensional scaling (MDS) analysis. The results of this analysis are shown in Figure 10.

**Figure 10. Multidimensional Scaling Results for Salespeople**



As with the customer data, the priority categories are arranged in a circle. Further, the categories are plotted in the expected order: Action, Enthusiasm, Relationships, Sincerity, Dependability, Quality, Competency, and Results. The categories are not spaced in a perfectly even manner, but again, this standard is almost impossible to meet with real data.

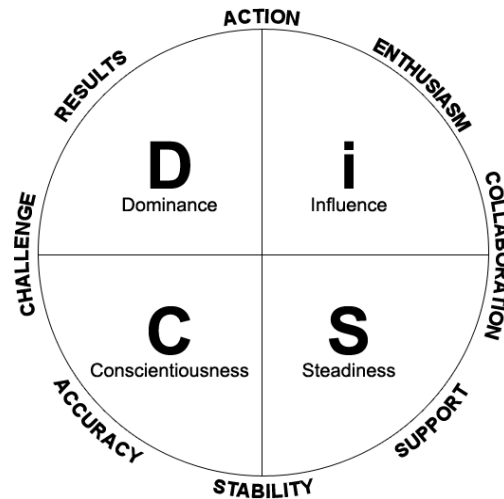
### Summary of the Validation Results

Overall, both of these studies provide strong support for the *Everything DiSC Sales* model. Two separate data sets addressing both customers' and salespeople's priorities confirm that the eight priorities are arranged in a circular fashion in the predicted order. This type of empirical support should give salespeople confidence that the *Everything DiSC Sales* model accurately reflects real-life sales environments and is useful for understanding themselves and their customers.

## Section 4: Everything DiSC® Workplace™ Model Research

## Background

The application-specific model used in the *Everything DiSC® Workplace™ Profile*, shown to the right, helps people better understand how they approach their work. In this model, the eight words around the map indicate the work priorities of people with different DiSC® styles. For example, the top priorities of people with the “C” style are Accuracy, Stability, and Challenge. The development of this model was based on empirical data gathered from working adults.

Figure 11. *Everything DiSC Workplace Model*

## The Research

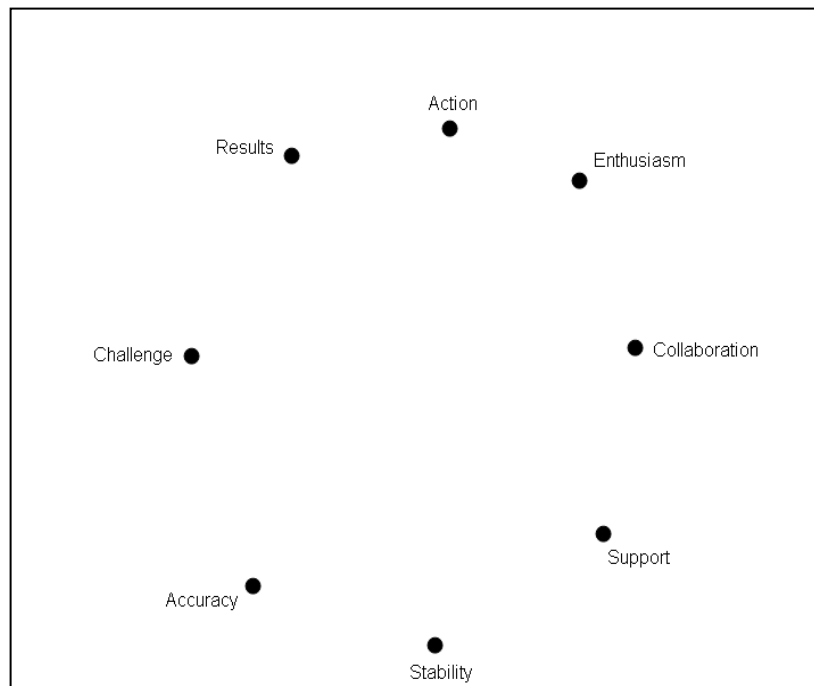
First, participants (N=2,270) were presented with a series of statements describing work tasks and asked to rate the importance of each task to job effectiveness. For instance, participants were asked to rate the importance of “Speaking up about problems” on a 5-point scale ranging from “Not Important” (1) to “Crucially Important” (5). Statements were grouped into eight categories that represent the eight priorities on the circle in Figure 11. Each category contained three statements that were used to form a scale. The 24 individual statements are shown in Table 12.

After participants rated each statement, these statements were ipsatized by subtracting a mean score across all statements. This process controlled for response bias and ensured that the item ratings reflected the relative importance of the eight priorities for a particular participant. The average ipsatized response for statements within a priority category was then calculated. Consequently, all participants had a category score for all eight priorities.

**Table 12. Statements used to measure each of the eight workplace priorities**

<b>Priority</b>	<b>Statement</b>
ACTION	Remaining active
ACTION	Being on the lookout for new opportunities
ACTION	Being open to taking risks
ENTHUSIASM	Showing enthusiasm for the projects you are working on
ENTHUSIASM	Being optimistic about the work you are doing
ENTHUSIASM	Encouraging people to have fun at work
COLLABORATION	Communicating frequently with the people you work with
COLLABORATION	Taking opportunities to collaborate with other people
COLLABORATION	Encouraging teamwork
SUPPORT	Letting people know that you are there to help out if they need it
SUPPORT	Being patient with other people's mistakes
SUPPORT	Delivering feedback in a tactful manner
STABILITY	Working at a consistent, steady pace
STABILITY	Creating schedules for projects
STABILITY	Following established rules or procedures
ACCURACY	Taking extra time to ensure quality
ACCURACY	Making decisions that are based on logic, not emotion
ACCURACY	Taking time to analyze choices in-depth before making a decision
CHALLENGE	Speaking up about problems
CHALLENGE	Questioning ideas that don't seem logical
CHALLENGE	Questioning procedures or practices that aren't efficient
RESULTS	Being direct with your opinions and ideas
RESULTS	Constantly pushing yourself toward new goals
RESULTS	Setting high expectations for yourself and others

The category scores were then submitted to a multidimensional scaling (MDS) analysis. This analysis allows researchers to look at the relationship among the eight categories and determine if the categories relate to each other in the manner predicted by the model. The results of the analysis are presented in Figure 12. Categories that are closer together share more in common and categories that are farther apart are more dissimilar.

**Figure 12. Multidimensional Scaling Results**

As expected, the eight priorities are arranged in a circular shape, with the priorities arranged in the manner predicted by the workplace model. That is, the sequence around the circle proceeds: Action, Enthusiasm, Collaboration, Support, Stability, Accuracy, Challenge, and Results. Although the eight priority scales do not form a perfectly equidistant circle (as predicted by the model), this theoretical ideal is nearly impossible to obtain with actual data.

### Summary of the Validation Results

Overall, this study provides strong support for the *Everything DiSC® Workplace™* model. Data from a large sample of working adults suggest that the eight priorities are arranged in a circular fashion in the predicted order. This type of empirical support should give DiSC® participants confidence that the *Everything DiSC Workplace* model accurately reflects real-life workplace environments and is useful for understanding various approaches to work.

## Section 5: Everything DiSC® Comparison Report Research

### Background

The *Everything DiSC® Comparison Report* allows any two *Everything DiSC Application Library* participants to see the areas in which they are similar and different. Further, the report provides a narrative that explains these similarities and difference and guides participants in a discussion around them. Overall, the purpose of this report is to improve communication and efficiency, while reducing tension and misunderstandings.

The *Everything DiSC Comparison Report* begins with a brief comparison of the two participants' DiSC® styles. Each participant's style is calculated from the participant's responses to the 79-item Everything DiSC assessment (discussed in Section 1 of this report). The focus of this section of the research report is on the continua contained in the second section of the *Everything DiSC Comparison Report*. Figure 13 shows an example of one such continuum.

**Figure 13. Continuum example**



### Selection of the Continua within Each Report

For each participant report, nine continua are calculated. The names of these continua are shown in Table 13. However, only the six continua that are expected to generate the most meaningful discussion for the participants are presented in the Comparison Report. This ensures that participants are not overwhelmed with data and are better able to focus their discussions on meaningful topics.

**Table 13. Everything DiSC® Comparison Report Continua**


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Soft-spoken - Forceful
Daring - Careful
Patient - Driven
Skeptical - Accepting
Outgoing - Private
Tactful - Frank
Accommodating - Strong-willed
Lively - Reserved
Calm - Energetic

---

A panel of DiSC® subject matter experts reviewed each possible pairing on all nine continua and developed an algorithm to determine which six continua would be presented within a given *Everything DiSC® Comparison Report*. The decision rules used in creating this algorithm include:

- If possible, at least two continua showing similarities should be presented.
- If possible, at least two continua showing differences should be presented.
- Continua on which there are larger differences are more likely to be presented than continua on which there are smaller differences.
- Among continua that have very high statistical correlations or conceptual overlap, only the continuum judged to be most meaningful should be presented.

Although other decision rules were used to create this algorithm, those presented above represent the major criteria. Within the report, the largest differences are presented first and the smallest differences (or greatest similarities) are shown last.

## Scoring of the Continua

Each of the nine continua are calculated using the same 79 item responses that are to used to calculate a participant's DiSC style. Although there is substantial overlap in the items used to calculate DiSC style and continua scores, an individual's continua scores are calculated separately from his or her DiSC style. Therefore, it is possible to have a person who tends toward the S style, for example, who is more Daring than Careful on that particular continuum, even though this is quite atypical for people with the S style. The number of items on each continuum scale range from 4 to 11, with a median of 8.

## Internal Reliability

Alpha internal reliability coefficients were calculated for each of the nine continua, as shown in Table 14, using a sample of 1,362 participants. These coefficients range from .68 to .90, with a median reliability of .80. Therefore, these scales demonstrate adequate to excellent internal consistency. This finding suggests that each of these continua scales is measuring a single, unified construct.

**Table 14. Alpha Coefficients of the Continua Scales**

Continua Scale	Number of Items	Alpha
Soft-spoken Forceful	11	.83
Daring Careful	7	.78
Patient Driven	7	.76
Skeptical Accepting	8	.71
Outgoing Private	11	.89
Tactful Frank	4	.68
Accommodating Strong-willed	8	.80
Lively Reserved	11	.90
Calm Energetic	11	.86

## Correlations with Self-Ratings

A study was conducted to determine how accurately a participant's continua score was able to predict his or her own perception of where he or she should fall. After responding to the 79 Everything DiSC® assessment items, participants (N=1,362) were asked to place themselves on a 7-point continuum which was anchored on both ends by continua labels. For example, participants were asked to rate where they fell on a continuum that ranged from Outgoing to Private. Correlations were then calculated between the continua scale scores and the self-rating, as shown in Table 15.

**Table 15. Correlation of Continua Scale Scores with Self-Ratings**

<b>Scale</b>	<b>Correlation with Self-Rating</b>
Soft-spoken Forceful	.73
Daring Careful	.69
Patient Driven	.63
Skeptical Accepting	.64
Outgoing Private	.77
Tactful Frank	.66
Accommodating Strong-willed	.64
Lively Reserved	.77
Calm Energetic	.67*

\* This correlation was calculated using a sample of 233 participants.

The correlations ranged from .63 to .77, with a median of .67. These correlations suggest that the continua scale scores do a good job of representing how participants see themselves on these continua. In other words, these data indicate that participants are likely to resonate with the continua scores that are presented to them. Although not presented above, our research also indicated that these correlations tend to be much higher when the criterion variable (i.e., participant self-ratings) are developed using a larger number of items (which is a more reliable measure) rather than the single rating. Therefore, the correlations above most likely underestimate the true correlation between self-perception and continua scores.

## Intercorrelations among the Continua Scales

Intercorrelations among the continua scales were calculated using a sample of 1,362 participants. As shown in Table 16, many of the scale correlations are quite high, likely because these scales contain overlapping items. Although these scales may appear repetitive, they are included because each is used to help facilitate a different discussion between participants. For instance, the Calm-Energetic scale correlates at -.93 with the Outgoing-Private scale. The Calm-Energetic scale, however, is used to facilitate a discussion about the pace at which participants choose to complete tasks. On the other hand, the Outgoing-Private scale is used to facilitate a discussion about such topics such as the need for personal space versus the need for interaction.

**Table 16. Continua Scale Intercorrelations**

Continua Scales	Soft-spoken Forceful	Daring Careful	Patient Driven	Skeptical Accepting	Outgoing Private	Tactful Frank	Accommodating Strong-willed	Lively Reserved	Calm Energetic
Soft-spoken - Forceful	-	-.61	.90	-.10	-.60	.52	.76	-.62	.71
Daring - Careful	-.61	-	-.63	.00	.50	-.30	-.46	.53	-.62
Patient - Driven	.90	-.63	-	-.12	-.54	.44	.72	-.58	.68
Skeptical - Accepting	-.10	.00	-.12	-	-.32	-.29	-.33	-.28	.22
Outgoing - Private	-.60	.50	-.54	-.32	-	-.11	-.18	.98	-.93
Tactful - Frank	.52	-.30	.44	-.29	-.11	-	.53	-.12	.21
Accommodating – Strong-willed	.76	-.46	.72	-.33	-.18	.53	-	-.21	.34
Lively - Reserved	-.62	.53	-.58	-.28	.98	-.12	-.21	-	-.94
Calm - Energetic	.71	-.62	.68	.22	-.93	.21	.34	-.94	-

## Summary of the Validation Results

Overall, this research provides strong support for the *Everything DiSC® Comparison Report* continua scales. Data from a large sample of working adults suggest these scales have good internal reliability and accurately reflect participants' self-perceptions. This type of empirical support should give DiSC® participants confidence that the *Everything DiSC Comparison Report* provides a solid foundation for participants to discuss their similarities and differences as a basis for relationships that are more productive and enjoyable.

## Section 6: Appendices

Appendix 1. Everything DiSC<sup>®</sup> Assessment Development Sample Demographics

(N=811)

Gender	Male	49 %
	Female	51 %
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Age	Under 18	>1 %
	18-25	15 %
	26-35	17 %
	36-45	26 %
	46-55	29 %
	56 or older	13 %
<hr/>		
Education	Some high school	1 %
	High school graduate	5 %
	Technical/Trade school	2 %
	Some college	24 %
	College graduate	35 %
	Graduate/Professional degree	33 %
<hr/>		
Heritage	African American	10 %
	American Indian	1 %
	Asian American	2 %
	Caucasian	79 %
	Hispanic	6 %
	Other	3 %
<hr/>		
Employment	Secretary/Clerical	4 %
	Executive	11 %
	Mid-Level Management	13 %
	Supervisory	3 %
	Professional	34 %
	Mechanical-Technical	2 %
	Customer Service	3 %
	Sales	6 %
	Healthcare Worker	1 %
	Teacher/Educator	6 %
	Skilled Trades	2 %
	Student	6 %
	Self-Employed	1 %
	Homemaker	1 %
	Other	7 %
<hr/>		

## Appendix 2. Everything DiSC<sup>®</sup> Assessment Ethnic and Gender Differences

It is important to understand the relationship between ethnic background and profile score. An analysis of variance (ANOVA) was performed on the eight scale means across the ethnic groups within the sample (see Appendix 1). Results indicated that there was no significant difference ( $p < .05$ ) on seven of the eight scales based on ethnic background ( $df=804$ ). The ANOVA indicated that there was a statistically significant difference ( $p=.02$ ) across ethnic groups on the iS scale. These differences, however, accounted for only 1.7% of the variance on this scale, suggesting that ethnic classification does not have a practically meaningful relationship to scores on the iS scale. Further, ethnic background accounted for less than 1% of the variance on each of the other seven scales.

Gender differences were also examined across the eight *Everything DiSC<sup>®</sup>* scales. Although these differences were still generally small, they were larger than the differences based on ethnicity. Again, the largest differences were seen on the iS scale, in which gender accounted for 10.2% of scale variance. Gender accounted for 4.2% of the variance on the DC scale, which is theoretically opposite the iS scale. Women tended to score higher on the IS scale and men tended to score higher on the DC scale. For the other six scales, statistically significant differences were found, but as the table below shows, these differences did not appear to be large in practical terms.

Percent of variance  
accounted for by:

<b>Scale</b>	Gender	Heritage
<b>D</b>	0.3	0.2
<b>Di</b>	0.5	0.6
<b>i</b>	2.9	0.7
<b>iS</b>	10.2	1.7
<b>S</b>	2.4	0.3
<b>SC</b>	1.5	0.9
<b>C</b>	2.5	0.7
<b>CD</b>	4.2	0.5

### Appendix 3. The Distribution of DiSC<sup>®</sup> Style Scores in the Everything DiSC<sup>®</sup> Assessment

(N=811)

The distribution of DiSC<sup>®</sup> styles in the Everything DiSC<sup>®</sup> assessment is presented below. Each style covers 30 degrees of the DiSC circle. The Di style, for example, indicates that a person's score falls in the D quadrant, but tends toward the i quadrant. A person is assigned to a given style if their DiSC score falls in the area of the circle corresponding to that style. Although there is some variability in style distribution, all of these roles are within 4.5 percentage points of each other.

Style	Frequency (%)
DC	8.0
D	6.1
Di	8.3
iD	10.6
i	9.5
iS	7.7
Si	7.9
S	6.4
SC	8.4
CS	8.5
C	8.0
CD	10.4

## Appendix 4. References

Kiesler, D. J., Schmidt, J. A., & Wagner, C. C. (1997). A circumplex inventory of impact messages: An operational bridge between emotion and interpersonal behavior. In R. Plutchik & H. Conte (Eds.), *Circumplex models of personality and emotions*. Washington, DC: American Psychological Association.

Wiggins, J. S. (1995). *Interpersonal Adjective Scales: Professional Manual*. Odessa, FL: Psychological Assessment Resources, Inc.