

THE FIVE
BEHAVIORS
OF A COHESIVE
TEAM™

Research Report



Overview of this Research Report

The Five Behaviors of a Cohesive Team™ assessment contains two sections: a team section and an individual section. The team section contains a survey of the team’s current behavior along with a survey of the opinions about the team. The individual section contains the All Types™ assessment. This report provides validation research conducted on both sections of the assessment.

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The Team Assessment

Overview and Background

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 are not distinct issues that can be viewed in isolation; rather they 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**.

Because of this interrelationship, Lencioni's model posits that the five behaviors will be statistically correlated with one another.

Psychometric Development

The 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 5-point ordered response scale. The 20 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 report and the 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.



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 disagree 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 those individual means across team members. 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 1 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 1. The Five Behaviors of a Cohesive Team Beta Sample Demographics (N=1483)**

Gender	Male	48.4%
	Female	51.6%
Age	18-25	7.1%
	26-35	21.0%
	36-45	28.6%
	46-55	25.8%
	56 and older	17.4%
Education	College Graduate	41.5%
	Graduate/Professional	30.5%
	Some College	15.7%
	High School Graduate	6.4%
	Technical/Trade School	5.2%
	Some High School	0.6%
Ethnicity	Caucasian	76.5%
	Asian	8.1%
	Hispanic/Latino	6.3%
	African/African American	4.8%
	Native American	0.9%
	Other	3.4%
Employment	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%	



Industry	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%
Location	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 2) 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 2. 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 3. 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 A.

Table 3. The Five Behaviors Team Survey Descriptive Statistics

	Consulting Sample N=613 Teams		Beta Sample N=199 Teams	
	Mean	Standard Deviation	Mean	Standard Deviation
Trust Scale	3.11	0.44	3.40	0.48
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
Conflict Scale	3.33	0.41	3.79	0.54
Team members voice their opinions even at the risk of causing disagreement.	3.32	0.47	3.64	0.50
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
Commitment Scale	3.48	0.43	3.78	0.46
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



	Consulting Sample N =613 Teams		Beta Sample N =199 Teams	
	Mean	Standard Deviation	Mean	Standard Deviation
Accountability Scale	2.96	0.37	3.52	0.52
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
Results Scale	3.37	0.46	3.57	0.50
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	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

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



4. 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 4. 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 Intercorrelations

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 5 and 6 show intercorrelations among *The Five Behaviors* scales. As expected, we find moderate to strong positive correlations among the five scales.

Table 5. Consulting Sample Scale Intercorrelations, $N=5004$

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

**Table 6. Beta Sample Scale Intercorrelations, N =1483**

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

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 7 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 7. In all cases where there was a statistically significant difference, the larger teams had a lower average than the smaller teams.

Table 7. Team Survey Means: Small ($N=147$) and Large Teams ($N=52$)

	Small Teams	Large Teams
	Mean	Mean
Trust Scale	3.44*	3.25*
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**



	Small Teams	Large Teams
	Mean	Mean
Conflict Scale	3.84*	3.66*
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
Commitment Scale	3.41	3.30
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 agreed upon.	3.62*	3.42*
Team members support group decisions even if they initially disagreed.	3.88	3.73
Accountability Scale	3.55	3.44
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
Results Scale	3.60	3.51
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 8 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 8. Team Culture Items: Small (N=804) and Large Teams (N=679)**

	Small Teams	Large Teams
	Mean	Mean
Trust: There would be more trust on our team if people...		
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%*
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%*
Commitment: I sometimes don't buy into the team's decisions because...		
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%*



	Small Teams	Large Teams
	Mean	Mean
Accountability: Our ability to hold one another accountable could improve if we challenged one another to...		
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%
Results: Some distractions that keep us from focusing on results are...		
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 9 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 9. Acceptance of Conflict Behaviors: Small (N=804) and Large Teams (N=679)

	Small Teams	Large Teams
	Percent of Team	Percent of Team
Raising your voice when you get passionate		
Unacceptable	27.4%	25.3%
Tolerable	56.0%	59.2%
Perfectly Acceptable	16.7%	15.5%
Going beyond the meeting end time to resolve an issue*		
Unacceptable	2.4%	5.2%
Tolerable	38.6%	36.1%
Perfectly Acceptable	59.1%	58.8%
Using strong language when you're upset		
Unacceptable	63.4%	67.5%
Tolerable	30.8%	27.4%
Perfectly Acceptable	5.7%	5.2%
Avoiding someone when you're angry		
Unacceptable	38.8%	38.1%
Tolerable	46.5%	46.2%
Perfectly Acceptable	14.7%	15.6%



	Small Teams	Large Teams
	Percent of Team	Percent of Team
Excluding other team members from difficult conversations		
Unacceptable	66.4%	66.0%
Tolerable	27.0%	27.2%
Perfectly Acceptable	6.6%	6.8%
Being outwardly emotional**		
Unacceptable	20.9%	28.4%
Tolerable	62.8%	57.4%
Perfectly Acceptable	16.3%	14.1%
Expressing anger through indirect actions rather than voicing it directly		
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 10, 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 10. Percent of Team Admitting to Behaviors: Small (N=804) and Large Teams (N=679)

	Small Teams	Large Teams
	Percent of Team	Percent of Team
Percent of individuals that admit to doing this at work		
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 of The Five Behaviors of a Cohesive Team Assessment Evaluation

- 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.



The Individual Assessment: All Types™

Introduction to All Types

The All Types™ assessment uses categories originated by Swiss psychiatrist Carl Jung in the 1920s. His typological theory was further popularized in the 1940s by Isabel Briggs Myers and Katherine Briggs, in the 1950s by David Keirsey, and, more recently, by Linda Berens and others. Today, the All Types assessment combines Jung’s insights with contemporary psychological measurement and theory. It has been woven into this experience to help organizations already using Jung’s constructs benefit from Patrick Lencioni’s model and enhance the team’s ability to collaborate.

The All Types assessment measures four continua, as shown in Table 11.

Table 11. The Four All Types Continua

Continua		Definitions
Extraversion/Introversion	E/I	E: Directs energy toward the outside world; Is sociable and talkative I: Directs energy toward the internal world; Is reserved and reflective
Sensing/Intuition	S/N	S: Concrete thinker; practical N: Abstract thinker; imaginative
Thinking/Feeling	T/F	T: Focuses on logic and objectivity; Tough-minded F: Focuses on personal values and compassion; Tender-minded
Judging/Perceiving	J/P	J: Has a high need for closure; Structured and scheduled P: Has a high need for openness; Unstructured and adaptable

Item Administration and Scoring

The four All Types continua are measured using a series of 7-point items. Respondents are shown two statements on either end of a continuum and are asked to choose the point on the line that best describes them. A sample item is shown in Figure 1.



Figure 1. Example of an All Types Question



Respondents are first presented with 43 *base* items, each of which measures one of the four continua. The variance among item responses within each of these scales is then calculated. If there is a scale on which the variance is above a predetermined threshold, the respondent is administered a set of additional items (i.e., *extended* items) that measure that same construct.

For instance, a respondent may respond to one E/I item in an extremely extraverted manner but another item in an extremely introverted manner. If the variance in this respondent's responses on the E/I scale items is above a predetermined threshold, she will be administered a pre-set number of additional items (i.e., *extended* items). In practical terms, because this respondent was inconsistent in her responses to the items on the E/I scale, she is being asked additional questions to clarify the earlier responses.

Respondents can receive extended items on any number of scales, but fewer than 40% of respondents receive even one set of extended items. In a sample of 728 respondents, only 1.6% received all four sets of extended items. Depending on the scale, the number of extended items ranges from 4 to 6, as shown in Table 12. Extended items are designed to mirror the base items on a given scale in terms of difficulty and meaning. If extended items have been administered to a respondent, these items are scored in the same way that base items are scored. Scale scores are generated for all continua by averaging the administered items and standardizing the averages.

Table 12. Correlations Between Base and Extended Scales

Scale	<i>r</i>	# of Items	
		Base	Extended
E/I	.99	10	15
S/N	.97	12	18
T/F	.99	11	16
J/P	.97	10	14

This method of adaptive testing (AT) allows the assessment to identify if sufficient information is present to estimate a scale score or if additional information is necessary. Practically speaking, the assessment is kept short for those who respond consistently to conceptually similar items. On the other hand, extra information is gathered from those who answer inconsistently to conceptually similar items. This methodology is shared with other adaptive testing assessments where the assessment is terminated not after the administration of a set number of items, but after a preset level of precision is met. As with other adaptive testing applications, the interpretation of a respondent's scores will be the same regardless of which specific items have been administered (Weiss, 2004). On a technical note, this method of AT is most comparable to the two-stage strategy of adaptive testing (Weiss, 1974) in which an initial set of items is administered and then, depending on the respondent's responses, a second set of items is administered. This is among the simplest forms of adaptive testing.

AT is also used in a second way within the All Types™ assessment. For participants whose dot placement on a continuum is close to the center, a set of clarifying questions are asked. In these items, respondents are presented with a four-point continuum. On either end of the



continuum is a short descriptor of a preference. The goal of these statements is to approximate the type of feedback that the respondent would receive in his or her report if that preference were assigned to him or her. Figure 2 shows an example of a clarifying question for the J/P scale. Respondents are asked to select the point on the continuum that best reflects them.

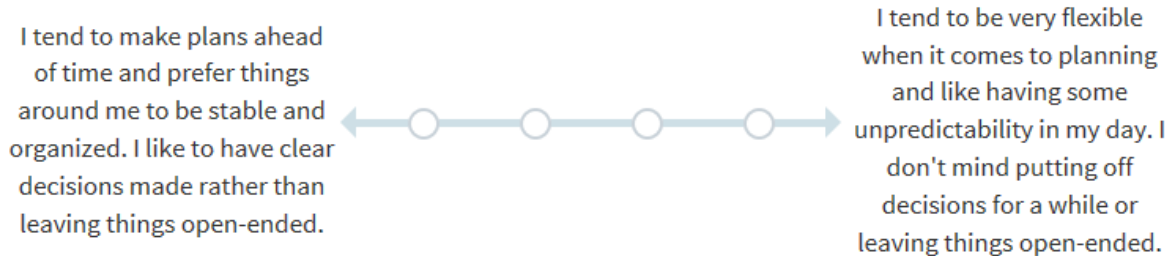


Figure 2. Example of a Clarifying Question

Respondents may receive sets of clarifying questions for all continua, but in a sample of 728 respondents, this only happened in 12% of the cases. After responses are gathered to clarifying questions, these items are averaged and scored in a manner similar to the base items. Therefore, the clarifying questions have a strong influence on eventual preference assignment, but original item responses are still included in the final score.

Validation Samples

Two samples were used in the current assessment of the All Types™ instrument’s validity. Sample 1 included 817 participants in a beta test of *The Five Behaviors™* with All Types program. Participants were from a variety of industries and partook in the program with their intact work team. Participants took the All Types assessment as pre-work for the program and were shown their results during the course of the program. The demographics of this sample are shown in Table 13.

Sample 2 consisted of 728 participants recruited to take a battery of assessments. These respondents were paid for their participation and took all assessments online. There were two rounds of test-taking. In the first round, participants took the All Types assessment and the MBTI® assessment. In the second round, two weeks later, participants took the All Types assessment again, the NEO™-PI assessment, and the *Everything DiSC Workplace®* assessment. The demographics of this sample are shown in Table 13.

Table 13. Demographics for Sample 1 and Sample 2

	Sample 1 %	Sample 2 %
Gender		
Female	55	51
Male	45	49



	Sample 1	Sample 2
	%	%
Heritage		
African	9	8
Asian	5	4
Caucasian	75	80
Hispanic	6	5
Native American	1	1
Two or more of the above	2	2
Other	3	0
Education		
College Graduate	34	50
Graduate/Professional Degree	42	21
High School Graduate	6	8
Some College	13	16
Some High School	1	1
Technical/Trade School	5	4
Age		
18–25	-	2
26–30	-	8
31–35	-	13
36–40	-	12
41–45	-	13
46–50	-	15
51–55	-	18
56–60	-	19
61–65	-	1
N	817	728

Reliability

Internal Reliability

Internal consistency 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. Researchers recognize that if all of the items on a given scale are in fact measuring the same construct, 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 used to evaluate internal consistency.

Alpha coefficients were calculated for two samples. As described earlier, one sample had 728 respondents and one had 817 respondents. The scales on the All Types[™] instruments



demonstrate good-to-excellent internal consistency, as shown by the alpha values listed in Table 14. All reliabilities are well above .70, with a median of .865 ($N = 728$) and .91 ($N = 817$).

Table 14. Internal Reliability Coefficients for the All Types Scales

Scale	# Items	Cronbach's Alpha	
		N = 817*	N = 728**
E/I	10	.93	.94
S/N	12	.88	.87
T/F	11	.92	.86
J/P	10	.90	.85

*Sample 1; **Sample 2

Test-Retest Reliability

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 the traits being measured are considered to be stable, a reliable assessment should produce results that are quite similar between two different administrations.

Stability can be quantified in the form of a reliability coefficient, the correlation between group members' initial scores on an instrument and their subsequent scores. Test-retest reliability coefficients generally range between 0 and +1. The closer that a correlation coefficient is to +1, 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 (Streiner, 2003).

A sample of 728 respondents took the All Types™ assessment twice over a two-week period. Test-retest correlations for the four All Types scales are shown in Table 15.

Table 15. Test-Retest Coefficients for the All Types Scales

Scale	# Items	<i>r</i>
E/I	10	.93
S/N	12	.88
T/F	11	.88
J/P	10	.87

N = 728; Data is from Sample 2.



These data suggest that the All Types™ scales are stable over repeated administrations. Consequently, test takers and test administrators should, on average, expect no more than small changes when the instrument is taken at different times. As the period between administrations increases, however, the divergent results of these administrations will become more and more noticeable.

Validity

When researchers assess the validity of an assessment, they are asking, “Does the instrument measure what it proposes to measure?” If, for instance, a scale proposes to measure a tendency toward abstract thinking, researchers would evaluate this claim, often using a variety of different methods.

Respondent Judgments of Fit

One very simple method for assessing the quality of the All Types assessment is to ask respondents how well they feel that the results of the assessment fit them.

Participants in a series of *Five Behaviors of a Cohesive Team*™ workshops took the All Types assessments and were debriefed of their results in the workshop. After the workshop, an anonymous online survey asked the participants two questions about their results.

The first question asked was, “Rate the overall fit of your individual Types feedback in the profile?” Responses are shown in Table 16. Excellent to good fit was reported by 94% of participants.

Table 16. Participant Ratings of Fit

Excellent Fit	43%
Good Fit	51%
OK Fit	7%
Poor Fit	0%
Very Poor Fit	0%

N=184

The second question asked was, “How does the fit of the All Types assessment compare to the fit of other Jungian-based Types assessments you’ve taken in the past?” Responses are shown in Table 17. Fifty-three percent of participants reported similar fit, while 45% of participants reported a better fit.

Table 17. Comparison to Other Jungian Assessments

Much Better	12%
Better	33%
About the Same	53%
Worse	2%
Much Worse	0%

N=123



Correlations with Outside Assessments

Researchers also evaluate the validity of an assessment by correlated results with other assessments that measure similar constructs. This is often referred to as a form of construct validity.

The MBTI®

The Myers-Briggs Type Indicator® (MBTI, Myers et al., 1998) is the most well-known measure of Jungian type. Form M of the assessment uses 93 self-assessed items to measure the four dichotomies. The instrument produces a four-letter type code and an indicator of preference clarity for each preference.

Participants in Sample 2 were asked to take the MBTI® Form M. Preference clarity indexes (pci) were transformed into continuous variables. For example, a participant with an extraverted preference and a pci of 20 was assigned an E/I score of -20. A participant with an introverted preference and a pci of 15 was assigned an E/I score of 15. The MBTI manual does caution that the use of pci data will produce less variance than the use of theta generated scores. This decreased variance, in turn, may create range restriction. Because the present research, however, is focused on the information received by classroom participants, the standardized pci data was used. Note that the All Types™ data used in these analyses were also standardized plotting scores, where extreme scores beyond a certain cut-off were limited. As such, the same issues of range restrictions may reduce the magnitude of correlations.

Table 18 shows the correlations between the All Types assessment and the MBTI Form M. Results demonstrate high correlations between all scales proposing to measure similar constructs.

Table 18. Correlations Among All Types and MBTI Data

MBTI	All Types			
	E/I	S/N	T/F	J/P
E/I	.89	-.23	-.20	-.15
S/N	-.18	.83	.31	.48
T/F	-.09	.32	.82	.26
J/P	-.21	.49	.28	.80

N = 678; Data is from Sample 2. The MBTI pci were used for this analysis.

The NEO™-PI

The NEO™ Personality Inventory (NEO-PI-3; McCrae & Costa, 2010) is a 240-item, self-report assessment of the five factor model of personality. It measures five domain scales (i.e., Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness) and 30 facet scales, with six facets per domain.



Tables 19 through 22 show the correlations between the All Types™ assessment and the NEO™ scales. For comparison, the correlations in this sample between the NEO and MBTI® scales are also shown.

Table 19. Correlations Between NEO-PI-3 and Extraversion/Introversion

NEO Scale	Extraversion/Introversion	
	All Types*	MBTI**
Neuroticism	.34	.33
Anxiety	.27	.24
Angry Hostility	.09	.14
Depression	.34	.33
Self-Consciousness	.50	.47
Impulsiveness	.07	.07
Vulnerability	.22	.24
Extraversion	-.71	-.73
Warmth	-.58	-.64
Gregariousness	-.76	-.76
Assertiveness	-.61	-.56
Activity	-.56	-.51
Excitement Seeking	-.39	-.40
Positive Emotions	-.46	-.50
Openness to Experience	-.06	-.09
Fantasy	-.01	-.05
Aesthetics	-.08	-.09
Feelings	-.13	-.17
Actions	-.36	-.35
Ideas	-.13	-.15
Values	-.02	-.05
Agreeableness	.14	.05
Trust	-.23	-.28
Straightforwardness	.17	.12
Altruism	-.20	-.28
Compliance	.09	.01
Modesty	.28	.24
Tender-Mindedness	-.03	-.06
Conscientiousness	-.07	-.06
Competence	-.24	-.24
Order	-.08	-.05
Dutifulness	-.07	-.10
Achievement Striving	-.30	-.29
Self-Discipline	-.20	-.19
Deliberation	.08	.08

Note: The five strongest correlations for the E/I scales are bolded for both the All Types and MBTI assessments. The MBTI E/I pci was used for this analysis.

* N = 457; **N=453; Data is from Sample 2.

**Table 20. Correlations Between NEO-PI-3 and Sensing/Intuition**

NEO Scale	S/N	
	All Types*	MBTI**
Neuroticism	.14	.13
Anxiety	.11	.09
Angry Hostility	.04	.06
Depression	.15	.14
Self-Consciousness	.10	.08
Impulsiveness	.21	.20
Vulnerability	.17	.17
Extraversion	.08	.05
Warmth	.07	.07
Gregariousness	.11	.08
Assertiveness	.09	.04
Activity	.03	-.02
Excitement Seeking	.17	.13
Positive Emotions	.09	.07
Openness to Experience	.67	.69
Fantasy	.61	.60
Aesthetics	.50	.53
Feelings	.37	.40
Actions	.47	.45
Ideas	.58	.55
Values	.25	.34
Agreeableness	.03	.09
Trust	-.04	.00
Straightforwardness	-.12	-.07
Altruism	.04	.06
Compliance	-.06	-.06
Modesty	-.10	-.06
Tender-Mindedness	.25	.30
Conscientiousness	-.30	-.31
Competence	-.20	-.19
Order	-.35	-.37
Dutifulness	-.26	-.22
Achievement Striving	-.12	-.14
Self-Discipline	-.26	-.27
Deliberation	-.30	-.27

Note: The five strongest correlations for the S/N scales are bolded for both the All Types and MBTI assessments. The MBTI S/N pci was used for this analysis.

* N = 457; **N=453; Data is from Sample 2.

**Table 21. Correlations Between NEO-PI-3 and Thinking/Feeling**

NEO Scale	T/F	
	All Types*	MBTI**
Neuroticism	.37	.38
Anxiety	.33	.34
Angry Hostility	.02	.06
Depression	.32	.32
Self-Consciousness	.25	.29
Impulsiveness	.24	.25
Vulnerability	.28	.33
Extraversion	.27	.21
Warmth	.38	.28
Gregariousness	.10	.07
Assertiveness	-.20	-.25
Activity	-.16	-.19
Excitement Seeking	.04	.01
Positive Emotions	.20	.18
Openness to Experience	.25	.26
Fantasy	.29	.35
Aesthetics	.22	.26
Feelings	.48	.45
Actions	.10	.09
Ideas	.07	.06
Values	.20	.15
Agreeableness	.50	.48
Trust	.19	.16
Straightforwardness	.22	.20
Altruism	.46	.38
Compliance	.24	.26
Modesty	.22	.20
Tender-Mindedness	.46	.45
Conscientiousness	-.23	-.28
Competence	-.22	-.24
Order	-.20	-.24
Dutifulness	-.12	-.18
Achievement Striving	-.13	-.18
Self-Discipline	-.21	-.28
Deliberation	-.24	-.25

Note: The five strongest correlations for the T/F scales are bolded for both the All Types and MBTI assessments. The MBTI T/F pci was used for this analysis.

* N = 457; **N=453; Data is from Sample 2.

**Table 22. Correlations Between NEO-PI-3 and Judging/Perceiving**

NEO Scale	J/P	
	All Types*	MBTI**
Neuroticism	.04	.05
Anxiety	.07	.07
Angry Hostility	.08	.08
Depression	.15	.12
Self-Consciousness	.08	.04
Impulsiveness	.20	.17
Vulnerability	.19	.14
Extraversion	.10	.16
Warmth	.01	.05
Gregariousness	.03	.08
Assertiveness	-.01	.02
Activity	-.08	-.03
Excitement Seeking	.24	.29
Positive Emotions	.03	.06
Openness to Experience	.35	.34
Fantasy	.38	.37
Aesthetics	.21	.21
Feelings	.14	.19
Actions	.30	.33
Ideas	.24	.24
Values	.19	.18
Agreeableness	-.02	.00
Trust	-.03	-.01
Straightforwardness	-.09	-.07
Altruism	-.05	.01
Compliance	-.09	-.07
Modesty	-.10	-.11
Tender-Mindedness	.16	.19
Conscientiousness	-.54	-.45
Competence	-.34	-.28
Order	-.58	-.46
Dutifulness	-.41	-.32
Achievement Striving	-.26	-.19
Self-Discipline	-.40	-.33
Deliberation	-.54	-.50

Note: The five strongest correlations for the J/P scales are bolded for both the All Types and MBTI assessments. The MBTI J/P pci was used for this analysis.

* N = 457; **N=453; Data is from Sample 2.



For a more simplified look at the results, the five highest correlations for each All Types™ continua are summarized in Table 23.

Table 23. Five Strongest Correlations for Each All Types Continua

	E/I	S/N	T/F	J/P
1st Strongest	Gregariousness (-.76)	Openness to Experience (.67)	Agreeableness (.50)	Order (-.58)
2nd Strongest	Extraversion (-.71)	Openness to Fantasy (.61)	Openness to Feelings (.48)	Conscientiousness (-.54)
3rd Strongest	Assertiveness (-.61)	Openness to Ideas (.58)	Tender-mindedness (.46)	Deliberation (-.54)
4th Strongest	Warmth (-.58)	Openness to Aesthetics (.50)	Altruism (.46)	Dutifulness (-.41)
5th Strongest	Activity (-.56)	Openness to Actions (.47)	Warmth (.38)	Self-discipline (-.40)

Note: Correlations are shown in parentheses. Data is from Sample 2.

Looking at Table 23, the pattern of correlations is consistent with types theory. The E/I scale demonstrated strong correlations with all of the Extraversion facets. It is not surprising that the highest correlation was with the Gregariousness scale, given that many of the E/I items are designed to measure social attitudes and behavior.

The highest correlations for the S/N scale were all with Openness to Experience scales. Among the facet scales, the strongest correlations were with the Openness to Fantasy and Openness to Ideas scales. This may reflect the nature of the S/N items, many of which focus on imagination or conceptual thinking.

The T/F continua demonstrated its strongest correlations with scales from three different factors: Agreeableness, Openness to Experience, and Extraversion. Overall, the strongest correlations were with scales from the Agreeableness factor. Correlations with Openness to Feelings and Warmth, however, were not conceptually unexpected.

Finally, the J/P demonstrated its strongest correlations with scales from the Conscientiousness factor. The strong correlation with the Order scale most likely reflects the strong emphasis on structure among the J/P items. The other correlations suggests that J/P scale also assesses, to some degree, qualities like measured decision making and tendency to follow through on commitments.



Everything DiSC[®]

The *Everything DiSC*[®] tool (Scullard & Baum, 2015) is an adaptive testing assessment that measures two dimensions of personality: questioning vs. accepting and faster-paced vs slower-paced. The assessment uses eight scales to measure the interaction between these two dimensions, known as a circumplex. The correlation between the four All Types[™] scales and the eight Everything DiSC scales is shown in Table 24.

Table 24. Correlation Among All Types and Everything DiSC Scales

Everything DiSC Scales	All Types Scales			
	E/I	S/N	T/F	J/P
Di	-.60	.28	-.13	.19
i	-.85	.15	.17	.14
iS	-.38	.08	.55	.11
S	.16	.04	.48	.08
SC	.73	-.19	.07	-.07
C	.73	-.30	-.32	-.28
CD	.25	-.14	-.40	-.04
D	-.33	.04	-.36	.08

N = 470; Data is from Sample 2.

As expected, only two of the All Types scales showed strong relationships with the *Everything DiSC* scales. The E/I scale showed particularly strong correlations with the Di, i, SC, and C scales of *Everything DiSC*. This is not surprising given that all four of these *Everything DiSC* scales measure elements of social behavior and overall activity level.

The T/F scale showed meaningful correlations with the iS, S, C, CD, and D scales of *Everything DiSC*, all in the expected direction. Because the iS and S scales measure aspects of warmth and supportiveness, they were expected to be associated with the F preference. On the other hand, the C, CD, and D scales all measure elements of skepticism and a prioritization of logic and task completion. As such, they were expected to be associated with the T preference.

Scale Intercorrelations

Correlations were calculated to examine the relationship among the four All Types scales, as shown in Table 25. For comparison, the intercorrelations among the MBTI[®] scales are shown in Table 26.

**Table 25. Intercorrelations Among All Types Scales**

	I/E	S/N	T/F	J/P
I/E	-	.24	.14	.14
S/N	.24	-	.29	.46
T/F	.14	.29	-	.24
J/P	.14	.46	.24	-

N = 728; Data from Sample 2.

Table 26. Intercorrelations Among MBTI pci

	I/E	S/N	T/F	J/P
I/E	-	.21	.16	.25
S/N	.21	-	.38	.55
T/F	.16	.38	-	.35
J/P	.25	.55	.35	-

N = 678; Data from Sample 2.

The intercorrelations show a large degree of independence among the scales. One notable exception is the relationship between the S/N and J/P scales. This trend was shown on both the All Types™ scales and the MBTI® pci. Item analyses suggest that this overlap may be explained, in part, by a shared tendency among the N and P preferences to remain open-minded and an enjoyment of exploration. On the other hand, the J and S tendencies appear to share a preference for known/proven approaches.

Summary of the All Types™ Assessment Evaluation

- Estimates of both internal and test-retest reliability fall in the excellent range. The median Cronbach's alphas were .91 and .865 for Samples 1 and 2, respectively. The median test-retest reliability was .88.
- Ninety-four percent of participants within *Five Behaviors of a Cohesive Team™* sessions indicated that the results were a good to excellent fit. No participants indicated that their results were a poor to very poor fit. Further, 53% of respondents felt that the fit was as good as results from previous Jungian assessments, while 45% thought the fit was superior.
- Analyses indicated strong correlations among the All Types scales and the MBTI pci. Correlations for scales measuring the same construct ranged from .80 to .89, with a median of .825.



- Correlations with the NEO™-PI-3 and the *Everything DiSC*® assessment were consistent with expectations and type theory.



Appendix A: Team Culture Items for the Beta Sample

Table A1. Team Culture Items, Beta Sample (N=1483)

	Percent of Team
Trust: There would be more trust on our team if people...	
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%
Commitment: I sometimes don't buy into the teams decisions because...	
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%
Accountability: Our ability to hold one another accountable could improve if we challenged one another to...	
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%



	Percent of Team
Results: Some distractions that keep us from focusing on results are...	
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%

Table A2. Acceptance of Conflict Behaviors, Beta Sample (N =1483)

	Percent of Team
Raising your voice when you get passionate	
Unacceptable	26.4%
Tolerable	57.5%
Perfectly Acceptable	16.1%
Going beyond the meeting end time to resolve an issue	
Unacceptable	3.6%
Tolerable	37.4%
Perfectly Acceptable	58.9%
Using strong language when you're upset	
Unacceptable	65.3%
Tolerable	29.3%
Perfectly Acceptable	5.5%
Avoiding someone when you're angry	
Unacceptable	38.5%
Tolerable	46.4%
Perfectly Acceptable	15.1%



	Percent of Team
Excluding other team members from difficult conversations	
Unacceptable	66.2%
Tolerable	27.1%
Perfectly Acceptable	6.7%
Being outwardly emotional	
Unacceptable	24.3%
Tolerable	60.4%
Perfectly Acceptable	15.3%
Expressing anger through indirect actions rather than voicing it directly	
Unacceptable	87.3%
Tolerable	11.9%
Perfectly Acceptable	0.9%

Table A3. Percent of Team Admitting to Behaviors, Beta Sample (N=1483)

Percent of team that admits to doing this at work	
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 B. References

- McCrae, R.R., & Costa, P.T., Jr. (2010). *NEO inventories: Professional manual*. Odessa, FL: Psychological Assessment Resources.
- Myers, I.B., McCaulley, M.H., Quenk, N.L., & Hammer, A.L. (1998). *MBTI manual: A guide to the development and use of the Myers Briggs type indicator* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Scullard, M., & Baum, D. (2015). *Everything DiSC manual*. Minneapolis, MN: Wiley.
- Streiner, D.L. (2003). Starting at the beginning: An introduction to coefficient alpha and internal consistency. *Journal of Personality Assessment*, *80*(1), 99-103.
- Weiss, D.J. (1974). *Strategies of adaptive ability measurement* (Research Report, 74-75). Minneapolis: University of Minnesota, Department of Psychology, Psychometric Methods Program, Computerized Adaptive Testing Laboratory.
- Weiss, D.J. (2004). Computerized adaptive testing for effective and efficient measurement in counseling and education. *Measurement and Evaluation in Counseling and Development*, *37*(2), 70-84.