Research Report

Finnish Validation: Everything DiSC Workplace®
Supplement for Adaptive Testing Assessment

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Finnish Validation: Everything DiSC Workplace®

The purpose of this **supplement** is to expand the *Everything DiSC® Research Report for Adaptive Testing Assessment* by Wiley (2012), with validation results from research conducted on the Finnish *Everything DiSC Workplace®* assessment. Included in this supplement are descriptions of the translation and validation of the Finnish Everything DiSC Workplace Adaptive Testing (AT) items and Continua Scale items. For information about the background and research on Everything DiSC and the circumplex representation of the DiSC model, including information about the validation process, please consult the ***Everything DiSC Research Report for Adaptive Testing Assessment*** (hereafter referred to as the AT Research Report).

Description of the Finnish Validation

Sample

A total of 1061 Finnish speaking men (42%) and women (58%) responded to a total of 265 items. All participants were working adults who were participating in various training programs. The demographics of the sample are shown in Table 1.

Table 1. Everything DiSC Assessment Development Finnish Sample Demographics

Gender	Male	42
	Female	58
Age	18–25	11
	26–30	12
	31–35	14
	36–40	18
	41–45	14
	46–50	15
	51–55	7
	56–60	7
	61+	2
Education	Ammatillinen koulutus	25
	Lukio	5
	Peruskoulu	2
	Yliopisto/muu korkea-asteen koulutus tai jatko-opiskelija	68
Employment	Asiantruntija	1
	Eläkeläinen	2
	Itsenäinen ammatinharjoittaja	12
	Kouluttaja	<1
	Johtava esimies	16
	Opiskelija/harjoittelija	1

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	Toimihenkilö	<1
	Työntekijä (ei esimiesasemassa)	50
	Väliasteen esimies	13
	Yrittäjä	<1
	Other	2
Location	Etelä-Pohjanmaa	<1
	Häme ja Pirkanmaa	9.8
	Keski-Suomi	3.4
	Kymenlaakso ja Etelä-Karjala	4.5
	Lappi ja Kainuu	<1
	Oulu	<1
	päijät-Häme	<1
	Pohjanmaa	5.9
	Pohjois-Karjala	1.5
	Pohjois-Pohjamaa	<1
	Satakunta	4.1
	Savo	6.9
	Uusimaa	56.5
	Varsinais-Suomi	5.6

N=1061

Translation of Items

The quality of the translation of the items was ensured through a six step process. 1) The items were translated by a professional translator from English (source language) to Finnish (target language). It was required that the translator´s native language is the target language. 2) Another professional translator, also a native speaker of the target language, was then tasked with back-translating the items from target language to source language. 3) The original items and the back-translated items were reviewed by two bilingual subject matter experts. 4) In situations where there were differences in meaning/connotations between the source and the back-translation this was fed back to the first translator. 5) The translator looked at the differences and, when appropriate, argued why a word should remain the same or substituted with a more suitable word to match the meaning of the original English item. 6) In situations where extra input was needed to aid the translation, the product development team was contacted to establish the intended meaning/connotation of an item.

Reliability Measure: Internal Consistency for Workplace Items

The AT Research Report includes an overview of the validation of the Everything DiSC® assessment, stressing the importance of testing internal consistency. Analysis of internal consistency was performed on the Finnish items and is documented below. This analysis 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 statements, such as *I am direct*, *I tend to be calm, I want things to be exact, I am lively).* 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 to evaluating internal consistency. This analysis was performed on the Finnish data to ensure that the construct

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developed and tested on a US population could be adapted to a Finnish population using the translated items and the Finnish test group.

Cronbach´s Alpha expresses the degree of consistency as a specific number, which typically varies between 0 and 1. If the value of Alpha is 0 then there is no relationship among the items/statements that have been grouped as a scale. On the other hand, if all the statements in an assessment 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 DiSC® 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, suggesting that the respondent is asked to respond to the same thing many times repeatedly, not providing any new information about the respondent.

In the Everything DiSC® assessment, all respondents are required to respond to the items on the eight *base scales*. A computer algorithm then looks at the variance of a person's responses to the items on each of those scales. If the variance is above a predetermined cutoff, the person is issued five additional items. This person is said to have received the *extended scale*. As shown in Table 2, the correlations between the base and extended scales range from .96 to .98, suggesting that there is a high degree of equivalence between them.

Alpha coefficients were calculated for the Finnish sample (N=1061). The base scales on the Everything DiSC instruments demonstrate good-to-excellent internal consistency, as shown by the Alpha values listed in Table 2. All reliabilities are well above. 70, with a median of .88. The median reliability for the extended scales was .91.

For each of the eight scales, Table 2 also shows the percentage of respondents who would receive the five extra extended scale items. This percentage varies substantially based on the scale, ranging from 15% to 52%.

Table 2. Internal consistency of the *Everything DiSC®* Scales in Finnish

Scale	Base Scale		Extended Scale		% of respondents receiving extended scale	Correlation between base and extended scales
	# items	Alpha	# items	Alpha		
DI	9	.89	14	.95	15	.98
I	8	.90	13	.92	22	.98
IS	9	.89	14	.92	18	.98
S	10	.84	15	.87	24	.98
SC	12	.89	17	.92	27	.98
C	11	.81	19	.87	52	.97
CD	12	.84	18	.86	40	.96
D	8	.87	13	.89	21	.98

N=1061

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Construct Validity: Scale Intercorrelations for Workplace Scales

As part of examining the construct validity of the DiSC® scales, the Finnish item scores from each respondent on the eight DiSC scales were examined. 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 SC and S scale (.45) should be substantially lower than the Alpha reliability of the SC (.89) or S (.84). Moreover, scales that are theoretically opposite (e.g., i and C) should have strong negative correlations. Table 3 shows data obtained from a sample of 1061 respondents who completed the Everything DiSC® assessment in Finnish. The correlations among all eight scales show strong support for the model. That is, we find moderate positive correlations among adjacent scales and strong negative correlations between opposite scales.

Table 3. Scale Intercorrelations

	Di	i	iS	S	SC	C	CD	D
Di	**.89**							
i	.47	**.90**						
iS	.11	.45	**.89**					
S	-.45	-.14	.38	**.84**				
SC	-.72	-.68	-.22	.45	**.89**			
C	-.46	-.64	-.50	-.02	.47	**.81**		
CD	-.09	-.30	-.64	-.52	-.01	.30	**.84**	
D	.45	.20	-.34	-.72	-.55	-.19	.38	**.87**

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. N=1061, as shown in Table 1.

Reliability Measure: Internal Consistency for Continua Scales

The *Everything DiSC® Comparison Report* allows any two Everything DiSC participants to see their similarities and differences in six out of nine areas. These scales were also constructed on the Finnish items and below are the research findings. As this is a supplement, please consult section 6 (Comparison Report Research) in the AT Research Report for information about the background of the scales and selection of the six out of nine possible continua.

Alpha internal reliability coefficients were calculated for each of the nine continua, as shown in Table 4, using a sample of 1061 Finnish speaking participants. These coefficients range from .78 to .89, with a median reliability of .84. 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 4. Alpha Coefficients of the Continua Scales in Finnish

Continua Scale	Number of items	Alpha
Patient - Driven	10	.86
Soft-spoken - Forceful	10	.83
Outgoing - Private	8	.87
Calm - Energetic	9	.84
Skeptical - Accepting	7	.83

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Daring - Careful	10	.89
Tactful - Frank	10	.86
Accommodating - Strong-willed	9	.78
Lively – Reserved	10	.84

N=1061

Summary

Analysis of data collected on the Finnish version of the Everything DiSC® Adaptive Testing Assessment using Finnish participants indicate that the development of the assessment was successful. The findings show support for the **eight DiSC® Scales**, which are used as the basis of the *Everything DiSC Workplace®* profile, and the **nine Continua Scales** used in the *Everything DiSC Comparison Report*.

- With high Cronbach´s Alphas (.81-.90) for the eight base DiSC scales, the **reliability** of the instrument is very satisfactory. The assessment is adaptive and these reliability measures are results from analysis on the scale that only includes the base items. Moreover, the results include all responses, even responses from individuals who will receive the extra items to increase the precision of their score on a specific DiSC scale. Hence, this is a conservative measure because dependent upon the scale, somewhere between 15 and 52 percent of the respondents will be taking the extended scales (i.e., asked to respond to extra items).

- The **reliability** of the instrument on the nine continua scales in the Comparison Report, indicated by internal consistency, shows acceptable to good degrees of consistency with Cronbach´s Alphas ranging from .78 to .89.

- The construct **validity** of the eight DiSC scales, indicated by scale intercorrelations, supports the circumplex structure of the DiSC model. Using Finnish data, previous findings of the English Everything DiSC Assessment were confirmed, with adjacent scales showing moderate correlations and opposite scales showing strong negative correlations, as predicted by the model.

- Further analysis on the circumplex structure including correlations between the Everything DiSC scales and the scales of the NEO PI-R and 16PF® are thoroughly documented in the AT Research Report.

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