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Japanese Validation Addendum

to Everything DiSC® Research Report for ***Everything DiSC Workplace®*** Assessment

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Japanese Validation: *Everything DiSC Workplace®*

The purpose of this **addendum** is to expand the *Everything DiSC® Research Report for Adaptive Testing Assessment* by Wiley (2012), with validation results from research conducted on the Japanese *Everything DiSC Workplace®* assessment and with new continua scales related to the *Everything DiSC Catalyst* platform. Included in this supplement are descriptions of the translation and validation of the Japanese *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 Japanese Validation

Sample

A total of 124,469 Japanese speaking men (67%) and women (33%) responded to a total of 261 items. All participants were working adults. The demographics of the sample are shown in Table 1.

Table 1. Everything DiSC® Assessment Development Japanese Sample Demographics

Gender	Male	67.4%
	Female	32.6%
Age	18–25	16.8%
	26–30	14.7%
	31–35	13.3%
	36–40	14.1%
	41–45	13.8%
	46–50	12.1%
	51–55	9.0%
	56–60	4.8%
	61 or older	1.4%
Education	Graduated junior high school	0.4%
	Graduated high school	11.8%
	Graduated vocational school	9.8%
	Graduated junior college or university	62.1%
	Postgraduate or higher	15.9%
Location	Japan	98.2%
	Other	1.8%
Employment	Sales	23.2%
	Management	20.4%
	Professional	15.1%
	Technology	11.6%
	Other	29.7%

N=124,469

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 Japanese (target language). It was required that the translator´s native language be the target language. 2) Another professional translator, also a native speaker of the target language, was then tasked with back translating the items from the target language to the 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 be 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 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 Japanese items and is documented below. This analysis evaluates the degree of correlation among items 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 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 the items on a scale should be consistent with each other. A statistic called Cronbach´s Alpha is usually regarded as the best method for evaluating internal consistency.

This analysis is performed on the Japanese data to ensure that the construct developed and tested on a US population could be adapted to a Japanese population using the translated items and the Japanese test group. Hence, in order to leave room for local changes, the number of items tested is much larger than the number of items used in the US sample. As expected, the results show that the best fit of items for the 8 DiSC® scales in English and Japanese is similar but not identical. This explains minor differences between the Japanese and US construction of the scales, which, for instance, can be seen in the difference in the number of extra items on the SC and CD scale for responses with high variance (Table 3 in the AT Research Report).

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, and not provide any new information about the respondent.

Alpha coefficients were calculated for the Japanese sample (N=124,469). The 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 .80.

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

Scale	Number of items	Cronbach´s Alpha
Di	10	.90
i	8	.93
iS	8	.81
S	8	.75
SC	8	.75
C	12	.78
CD	13	.79
D	9	.80

N=124,469

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 additional items. This person is said to have received the *extended scale*. As shown in Table 3, the correlations between the base and extended scales range from .95 to .98 on the development sample, suggesting that there is a high degree of equivalence between them.

For each of the eight scales, Table 3 also shows the percentage of respondents who would receive the extra extended scale items. This percentage varies substantially based on the scale, ranging from 12% to 37%.

Table 3. Base and Extended Everything DiSC® Scales in Japanese

Scale	Base Scale # items	Extended Scale # items	% of respondents receiving extended scale	Correlation between base and extended scales
Di	10	15	12	.97
i	8	12	13	.98
iS	8	12	30	.96
S	8	11	29	.95
SC	8	12	32	.95
C	12	17	30	.95
CD	13	18	37	.96
D	9	13	37	.96

N=124,469

Construct Validity: Scale Intercorrelations for DiSC® Scales

As part of examining the construct validity of the DiSC® Scales, the Japanese items 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 (.48) should be substantially lower than the Alpha reliability of the SC (.75) or S (.75). Moreover, scales that are theoretically opposite (e.g., i and C) should have strong negative correlations. Table 4 shows data obtained from a sample of 124,469 respondents who completed the Everything DiSC® assessment in Japanese. 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 4. Scale Intercorrelations

	Di	i	iS	S	SC	C	CD	D
Di	**.90**							
i	.57	**.93**						
iS	.33	.61	**.81**					
S	-.02	.11	.56	**.75**				
SC	-.37	-.40	.01	.48	**.75**			
C	-.13	-.42	-.27	.11	.50	**.78**		
CD	.19	-.07	-.36	-.31	-.07	.42	**.79**	
D	.59	.46	.12	-.26	-.48	-.04	.45	**.80**

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=124,469, as shown in Table 4.

Reliability Measure: Internal Consistency for Priority Scales in Japanese

Alpha internal reliability coefficients were calculated for each of the eight *Everything DiSC Workplace®* priorities, as shown in Table 5, using a sample of 124,469 Japanese-speaking participants. These coefficients range from .70 to .81, with a median reliability of .76. Therefore, these scales demonstrate acceptable to good internal consistency. This finding suggests that each of these priority scales is measuring a single, unified construct.

Table 5. Alpha Coefficients of the Priority Scales in Japanese

Priority Scale	Number of items	Alpha
Results	12	.81
Action	8	.76
Enthusiasm	4	.77
Collaboration	11	.76
Support	10	.76
Stability	8	.80
Accuracy	5	.72
Challenge	5	.70

N=124,469

Reliability Measure: Internal Consistency for Continua Scales in Japanese

The Everything DiSC® Comparison Report and Catalyst platform allow any two Everything DiSC participants to see their similarities and differences in several areas. These scales were also constructed on the Japanese items and below are the research findings. As this is an addendum, please consult section 7 (Comparison Report Research) of the AT Research Report for information about the background of the scales and selection of the continua for results presentation in the Everything DiSC Comparison Report.

Alpha internal reliability coefficients were calculated for each of the continua, as shown in Tables 6 and 7, using a sample of 124,469 Japanese-speaking participants. The coefficients for Everything DiSC Workplace range from .70 to .79, with a median reliability of .73, while those for the Catalyst platform range from .70 to .89, with a median reliability of .74. Therefore, these scales demonstrate adequate to excellent internal consistency. This finding suggests that each of these continua scales measures a single, unified construct.

Table 6. Alpha Coefficients of the *Everything DiSC Workplace*® Continua Scales in Japanese

Continua Scale	Number of items	Alpha
Patient - Driven	10	.73
Soft-spoken - Forceful	6	.73
Outgoing - Private	6	.70
Calm - Energetic	8	.70
Skeptical - Accepting	9	.72
Daring - Careful	7	.79
Tactful - Frank	7	.71
Accommodating - Strong-willed	6	.75
Lively – Reserved	7	.74

N=124,469

Table 7. Alpha Coefficients of the Catalyst Continua Scales in Japanese

Continua Scale	Number of items	Alpha
Accommodating – Strong-willed	6	.75
Private - Outgoing	6	.70
Focused on feelings – Focused on logic	11	.73
Tactful - Frank	7	.71
Structured - Unstructured	5	.81
Focused on realities – Focused on possibilities	5	.89
Skeptical - Accepting	9	.72
Fast-paced – Steady-paced	14	.86

N=124,469

Summary

Analysis of data collected on the Japanese version of the Everything DiSC® Adaptive Testing Assessment using Japanese participants indicates 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, the **nine continua scales** used in the *Everything DiSC Comparison Report,* and the **eight continua scales** used in the *Everything DiSC Catalyst* platform.

- With high Cronbach´s alphas (.75 to .93) for the eight base DiSC scales, the **reliability** of the instrument is very satisfactory. The assessment is adaptive, and these reliability measures are results of 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, some of the respondents will be taking the extended scales (i.e., asked to respond to extra items).

- The construct **validity** of the eight DiSC scales, indicated by scale intercorrelations, supports the circumplex structure of the DiSC model. Using Japanese 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.

- The **reliability** of the instrument on the eight *Everything DiSC Workplace* priority scales, indicated by internal consistency, shows acceptable to good degrees of consistency with Cronbach´s alphas ranging from .70 to .81.

- 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 .70 to .79.

- The **reliability** of the instrument on the eight continua scales in *Catalyst*, indicated by internal consistency, shows acceptable to good degrees of consistency with Cronbach´s alphas ranging from .70 to .89.

- 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.