inscape publishing

I-Sight®
Research Report

I-Sight® Research Report
Item Number: **O-230**

Research Summary

I-Sight® is based on over twenty years of research and experience, which seek to explain individuals' responses to the world in which they live. This instrument has been developed specifically for young people, with preliminary input from 268 school-age persons and subsequent input from 968 respondents aged 12 to 21 living in the U.S. and Canada.

The reading level is approximately Grade 6, which allows all ability levels at ages 12 and up to participate in a learning experience with this tool. Internal consistency reliabilities range from .82 to .89 when adjusted for scale length. Validity is established in relation to scale independence and ability to represent the model on which the instrument is based.

Scores are well-distributed across the research sample and normed to reflect the distribution obtained on each scale. On this basis, respondents obtain a guide for interpretation which enables them to apply the instrument to their own lives.

Theoretical Background

I-Sight® is based on the *Personal Profile System*®, published Inscape Publishing of Minneapolis, Minnesota. These instruments identify four modes of interacting with one's environment, based on how the individual perceives it. A person sees the environment as either favorable or unfavorable, and himself or herself as either more or less powerful than the environment. Each combination of these four perceptions generates a dimension of behavior labeled Dominance (D), Influence (i), Steadiness (S), and Conscientiousness (C) or the DiSC® model of behavior. The model is related theoretically and empirically to models of interpersonal behavior, as well as to recent research on personality dimensions. (See Inscape Publishing's Research Report No. O-232 for a review of literature entitled *The Personal Profile System as a Measure of Personality*.)

Item Development

An initial pool of 136 items was developed for research purposes. A number of experts on DiSC theory generated items and critiqued results. Knowledge of each contributor's own *Personal Profile System* profile ensured that a personal, as well as professional, understanding of each scale was represented. Phrases and interpretive information were scored for reading level, with the goal of keeping it below the 7th grade level.

Test versions of the youth profile contained items which used the most current information about DiSC theory and measurement and offered items at a 6th grade reading level.

Psychometric Analysis

A preliminary "alpha" test of drafted items was designed to:

- examine the dimensionality of the instrument
- improve item content where indicated
- test participant response.

Participants were 286 school-age respondents from high schools in Minnesota and Arizona.

Based on item analysis, some phrases were replaced and others rewritten. The ten items which best measured each scale (D, i, S, and C) were selected and used to create a personal feedback instrument for beta test participants to score and keep.

Beta Test Sample

A total of 1167 responses were obtained from several schools in the U.S. and Canada to establish the psychometric properties of the refined measure and guide developers in selecting the best set of items for *I-Sight*®. Public and private school students from the following areas were sampled:

• Tannersville, Pennsylvania	N = 99
• Muskegon, Michigan	322
• Kalamazoo, Michigan	93
• Edina, Minnesota	198
• Fort Worth, Texas	178
• Etobicoke, Ontario	109
• Windsor, Ontario	168
Total:	1,167

When response pages were reviewed for accuracy, 968 were retained (83%). The earlier alpha test indicated that one-third of the returns were unusable, due to failure to implement instructions. The proportion of usable responses was significantly improved for the beta test phase, by providing more clear instructions to the teachers administering the instrument and by offering meaningful feedback to students which they could keep for themselves.

The demographic characteristics of the 968 respondents participating in the beta test are shown in the following table:

Table 1: Demographic Characteristics of the Sample (*N*=968)

Gender:		**Heritage:**	
Male	47%	Afro-American/Canadian	5%
Female	53%	Asian American/Canadian	3%
		Caucasian (non Hispanic)	64%
Age:		Hispanic	1%
Range:	12 – 21	Native American/Canadian	2%
Median:	15	Other	26%
Average:	14.8		

The "Other" category was marked by students of more than one heritage.

Internal Reliability

The first requirement for new scales is that each measure one concept and all items on the scale measure that concept. To determine whether this criterion was met, beta test results were submitted to reliability analysis using Cronbach's *alpha* coefficient as the measure. Based on all 34 items per scale, the following results were obtained:

34-item scales:	Dominance	α= .82
N=968	Influence	.84
	Steadiness	.80
	Conscientiousness	.83

Since the goal was to develop a ten-item instrument for use with school-age youth, further analysis identified the "best" ten items on each scale, using the following criteria:

1. Correlation of the item with the total score.
   Items selected for the ten-item version displayed item-total correlations in the .30s to .50s, indicating a good degree of congruity with in the scale. This set was selected for *I-Sight*® to measure D, I, S, and C.

2. Factor analysis of the 34-item set.
   Four factors were requested and examined following varimax rotation of the matrix. Results generally conformed to expectations, as reported under the section on Factor Analysis below. Most selected items had appropriate factor loadings of greater than .40.

Alpha reliability coefficients for each of the ten-item scales are shown in the table below, along with the estimates of "true" reliability, which adjust for the fact they are short scales. Adjusted coefficients estimate what the reliability would be if there were twice as many items in the scale.

Table 2: Internal Consistency coefficients (10-item scales)

	Obtained	Adjusted
Dominance	α = .78	α = .78
Influence	.80	.89
Steadiness	.69	.82
Conscientiousness	.74	.85

Using adjusted coefficients as the reference, the ten-item instrument is as or more reliable than the beta test on 34 items. This outcome resulted from selecting those items that maintained high internal reliability. It was also necessary to select items which achieved a degree of independence between scales. Thus, reliability was not maximized, because doing so would have increased inter-scale correlations.

Validity

Validity is measured in a number of ways. During instrument development, the first step is to examine the degree of independence among scales designed to measure different things. One approach is to intercorrelate the total scores from each scale. Correlations ideally should approach zero. Results are shown below for the ten-item version which constitutes the *I-Sight*® Profile.

Table 3: Scale intercorrelations

D	- .26		
I	- .57	- .07	
S	.08	- .62	- .19
	C	**D**	**I**

This relationship is typical of DiSC® measures and reflects the theory underlying the scales. The theory asserts that high "D" responses are made when the environment is perceived as *unfavorable* and when the individual perceives himself or herself as *more* powerful than the environment. High "S" responses are made in response to a *favorable* environment when the individual perceives himself or herself as *less* powerful than the environment. They are theoretical opposites. Nevertheless, it is significant that inter-scale correlations are all lower than intra-scale reliability coefficients, indicating that *items on a scale measure that scale better than they measure any other scale.*

What is noteworthy is there is little relationship at all between Scales D and I, indicating success in separating two dimensions of behavior which are often lumped together in personality measurement and labeled extraversion. Scales S and C also show almost no relationship, refuting any notion that these have something in common. And remaining pairs of scales show low levels of negative relationship.

Factor Analysis

The statistical method of factor analysis is an important tool for determining whether items belong on the same scale and for explaining the dimensionality of an instrument.

The 34-item per scale beta test results were submitted to a Common Factor Analysis, and four factors were requested. Varimax rotation was used. Not surprisingly, D and S items tended to load at opposite ends of Factor I and some C and I items loaded at opposite ends of Factor II. However, most C items had higher factor loadings on Factor III and some S items loaded on Factor IV, which provided additional help in selecting the ten-item set for *I-Sight*®. The ten selected items on each scale and their respective factor assignments and factor loadings are shown in table 4.

Table 4: Factor loadings for ten-item scales

Factor		Item	Factor loading (partial correlation coefficient)	
I		D1	-.54	
		D2	-.45	
		D3	-.48	
		D4	-.51	
		D5	-.49	
		D6	-.45	
		D7	-.41	
		D8	-.50	
		D9	-.58	
		D10	-.47	
I	IV	S1	.62	.13
		S2	.54	-.14
		S3	.41	-.11
		S4	.08	.55
		S5	.32	.19
		S6	.25	.38
		S7	.50	.03
		S8	.46	.17
		S9	.44	.11
		S10	.21	.41

When "S" items loading on Factors I and IV are compared, subtle differences are suggested, which may be unique to youth. Items loading primarily on Factor I emphasize helpfulness and agreeableness—e.g., Item S1 is "listen patiently to others," Item S2 is "willing to follow orders," and Item S7 is "like to help others out." "S" items loading primarily on Factor IV emphasize deference to other—e.g., Item S4 is "will go along with others," Item S10 is "let others lead," Item S6 is "let others have what they want."

Both concepts characterize the theory that "S" behaviors are a response to a favorable environment when the individual perceives the environment (including other people) as more powerful than himself or herself.

Those items loading primarily on Factor I appear to reflect more the favorable environment; those loading primarily on Factor IV appear to reflect a lower power position.

Items defining I and C scales on the *I-Sight*® are found on separate factors, as follows:

Table 4 (continued): Factor loading for ten-item scales

Factor	Item	Factor loading (partial correlation coefficient)
II	I1	.53
	I2	.59
	I3	.43
	I4	.45
	I5	.63
	I6	.53
	I7	.54
	I8	.42
	I9	.55
	I10	.45
III	C1	.44
	C2	.9
	C3	.59
	C4	.44
	C5	.48
	C6	.55
	C7	.65
	C8	.49
	C9	.51
	C10	.42

Distribution of Scores

Responses on the youth scales are obtained in groups of four phrases, and respondents rank order their preferences; thus total scores on each scale are formed by summing the ranks. They cover the whole range from 10 to 40 in *I-Sight*®.

The dispersion of total scores for this group is normal (i.e., follows a bell-shaped curve) for Scales S and C and is somewhat skewed for scales D and I. Thus, there is a tendency for the group as a whole to reject "D" items more often than they accept them and to endorse "I" items more often than they reject them. However, individual respondents are distributed across the entire total-score range from 10 to 40 for Scale D and from 11 to 39 for Scale I.

The median scores for Dominance is 22 (in a range of 10 to 40), for Influence it is 29, for Steadiness 24, and for Conscientiousness it is 25. Respondents are instructed to identify which scales are meaningful by whether their score exceeds the corresponding median.

Conclusions

I-Sight is a highly reliable instrument for its length and offers a valid interpretation of the model on which it is based, as determined by internal psychometric analysis and representation of expected relationships among scores.

It was developed on a broad sample of school-age persons, whose demographic characteristics fairly well represent the U.S. and Canadian population. The reading level allows all ability levels at ages 12 and up to participate in a learning experience with this tool. And the scoring and interpretation guidelines allow for the fact that youth are changing.

This instrument serves as a guide to further understand oneself and others without unduly categorizing or assigning value to scores. An instructor's guide with handouts offers guidance for the teacher, counselor, or other adult in helping respondents derive the most benefit from the instrument.