

Validity of the Strong Interest Explorer© Assessment:
Using the Strong Interest Inventory® assessment as a criterion measure.
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Using the Strong Interest Inventory® (SII) assessment as a criterion measure, the validity of the Strong Interest Explorer© (SIE) assessment was tested. A total of 513 individuals were administered the SIE assessment and SII assessment. Theoretically meaningful correlations between the two instruments provide initial support for the validity of the Strong Interest Explorer© assessment.

Interest, “one’s preference for a variety of activities,” is one of the most frequently researched topics. Several inventories have been developed that attempt to measure people’s interest. Examples include the Campbell™ Interest and Skills Survey (Campbell, Hyne & Nilsen, 1992), the Self-Directed Search® (Holland, Fritzsche & Powell, 1994), the Kuder® Occupational Interest Survey, (Kuder & Zytowski, 1991) and many more. This study focuses on the Strong Interest Inventory® (SII) assessment and an alternative form of this inventory known as the Strong Interest Explorer© (SIE) assessment.

The primary purpose of vocational interest inventories today is to help individuals match their work-related interests with educational, occupational, and leisure pursuits that are compatible with those interests. The SII assessment is a popular measure used to assess vocational interests. Assisting people in making educational and occupational choices is among the most common uses of SII. The Strong Interest Explorer© assessment was developed from the SII assessment as a self-scorable interest assessment.

Strong Interest Explorer© assessment

The SIE assessment is designed for students and early career explorers; it measures their vocational interests and links those interests to educational and occupational information. Respondents select school subjects, activities, and jobs that may be of interest to them. Items are categorized into six occupational themes based upon Holland’s Theory of Vocational Personalities and Work Environments: Realistic, Investigative, Artistic, Social, Enterprising and Conventional (RIASEC) (Holland, 1985). Each of these environments or themes is organized into 14 Specific Interest Scales, each consisting of 10 items, for a total of 140 items. Total scores are obtained by summing the number of checked items within each of the 14 Specific Interest Scales.

Within the broader domain of Realistic scale, there are three Specific Interest Scales: Outdoor Environment, Plants and Animals; Construction and Engineering; and Protective Services. The Investigative scale comprises two Specific Interest Scales: Working with Numbers, and Health and Science. The Artistic scale comprises two Specific

Interest Scales, namely, Music and Arts, and Writing and Mass Communications. The Social scale contains three Specific Interest Scales: Cultural Relations, Helping Others, and Teaching and Training. Within the Enterprising scale, there are two Specific Interest Scales: Law and Politics, and Business, Sales, and Marketing. The two Specific Interest Scales of the Conventional scale are Office and Project Management, and Working with Computers.

The SIE assessment is based upon and was developed as a simplified alternative to the popular and well-researched SII assessment. The assessments differ in a number of ways. First, the items that make up the SIE assessment are more basic than those of the SII assessment; the SIE assessment has fewer occupations and includes more school subject items. Second, the SIE assessment measures interests with respect to 14 specific domains of vocational activity, whereas the SII assessment is comprised of a much larger set including 6 General Occupational Themes, 30 Basic Interest Scales, 5 Personal Style Scales and 244 Occupational Scales. Third, the SIE assessment compares an individual's own interests across the fourteen Specific Interest Scales where the SII assessment provides extensive normative data and comparisons. Finally, the SIE assessment is self-scored whereas the SII assessment is computer scored.

The items on the SIE© assessment were selected using the following procedure. The first subset of items was derived from the 317 items of the 1994 version of the SII assessment, using factor analyses and item response analyses on a sample of 2,397 respondents. Only those items that provided information and did not appear

to function differently across ethnic groups were selected. Many of these items were found to be repetitive and some of the scales were found to be too narrow, thus additional items were needed. A new pool of items was written and items from the Newly Revised SII were also included to create the initial item pool of the SIE assessment. Finally, some items were modified and included from the 1994 SII and 2004 SII revision research forms. The initial item pool was then reviewed by high school students and several experts. Based on their feedback, a 181-item research form of the SIE assessment was developed and given to 321 freshman college students. On data collected from these respondents, initial analyses and item selection were done to narrow the list of items. Following this narrowing of items, a 154-item research form of the SIE assessment was developed and given to 343 high school students, from which the final item selection was made. The final version of the SIE assessment contains 140 items.

To estimate the reliability and validity of the SIE assessment, it was administered to three samples: 343 high school students, 321 students at a large Midwestern university, and 143 employed adults (CPP, 2002).

Internal consistency was assessed on all three samples, and all the Specific Interest Scales across all the samples showed a high level of internal consistency. Internal consistency of the high school sample was .80-.91; for the college sample its range was .76-.90; and coefficients ranged from .69-.90 for the employed adults sample.

Stability over time was assessed with the sample of employed adults, who were retested on the SIE assessment six weeks later. All Specific Interest Scales

demonstrated coefficients of at least .70 with a mean of .79. Overall these results suggest that the SIE assessment demonstrates good internal consistency and stability.

Validity was assessed using the sample of employed adults, who were administered the SIE assessment as well as a supplemental questionnaire. Two sets of analyses were conducted, first on the self-expressed interest in each of the fourteen specific interest scales areas, and second on the open-ended response section about their current work and their desired work if they were to change careers. The supplemental questionnaire more directly assessed interest in each of the fourteen Specific Interest Scales. The results of the analyses indicated significant and positive correlations for all Specific Interest Scales. The mean correlation was .55 across all scales. Moreover, people's self-expressed interests correlated with the SIE Specific Interest Scale scores, people generally indicated higher interest on the SIE assessment in the area in which they were currently working, people generally indicated higher interest on the SIE assessment in the area in which they desired to work if they were to change careers (CPP, 2002).

Very few studies focused on the SIE assessment have been published, due, in part, to its recent development and self-scorable form. Two studies of the SIE assessment were found in addition to the publisher's studies on the development of the assessment (CPP, Inc.). Levinson, Ohler and Maus (2005) studied the validity of the SIE assessment using Career Key as a criterion measure with a sample of Latino junior high school students. Findings of this study offered support for the validity of the SIE assessment,

especially the Artistic scale and subscales, the Social scale, and Helping Others subscale of the SIE assessment. The Enterprising scale and Business and Sales subscale demonstrated adequate validity in this study. In another study, Betz and Wolfe (2005) examined the relationship between the SIE assessment and Expanded Skills Confidence Inventory (Betz et al, 2003). They calculated the internal consistency reliability values for the fourteen scales of the SIE assessment on a sample of 85 high school students. The obtained values ranged from .83 (Music and Arts) to .93 (Working with Computers).

The SIE assessment seems to possess adequate psychometric characteristics; the present study was conducted to further speculate its properties. The purpose of this study is to assess the validity of the SIE assessment using the well-validated SII assessment as a criterion measure.

Method

Participants

A sample of 513 individuals completed the SIE assessment and the SII assessment online as a part of a larger study of the Newly Revised Strong Interest Inventory® assessment. A total of 350 females and 163 males participated. Most participants did not provide specific demographic information such as ethnicity and occupation. Most were 15 years to 26 years old.

Measures

Strong Interest Inventory® assessment The validity of SIE assessment was determined using the Strong Interest Inventory® (2005) assessment as a criterion measure. The SII assessment is an empirically based

measure that is one of the most widely used psychological instruments in both research and practice (Hansen & Campbell, 1985). At present, the SII assessment offers a viable option for measuring parallel dimensions that correspond to Holland's general themes (Chartrand, Borgen, Betz & Donnay, 2002). People in diverse occupations show large and predictable differences in likes and dislikes, whether in terms of vocational interests or in terms of personal styles; and the SII assessment provides valid, structural, and comprehensive measures of these differences (Donnay & Borgen 1996). The 2005 version of SII assessment is a revision of the 1994 version. It reflects elements that relate it to important theoretical and practical developments.

The newly revised SII assessment was developed to assess patterns of vocational interests for general occupational themes, basic interests, specific occupations and personal styles. An individual's interests are compared with those of others across various occupations. The instrument contains 291 items for which respondents indicate interest across different areas: occupations, school subjects, personal characteristics, business activities, technology, teams, leisure and non work activities. Rating options include "strongly like", "like", "indifferent", "dislike", and "strongly dislike". The responses are then scored to derive individual results for a variety of measures of interest. The SII assessment provides respondents with scores on 6 General Occupational Themes (GOTs), 30 Basic Interest Scales (BISs), 244 Occupational Scales (OSs) and 5 Personal Style Scales (PSSs).

The GOTs reflect a respondent's overall orientation to work. The GOTs on the SII assessment correspond to Holland's six occupational themes: RIASEC. The BISs measure interests in 30 specific areas such as art, science and athletics. The PSSs measure styles with which an individual likes to learn, work, assume leadership, take risks, and work within teams. The five scales: Work Style, Learning Environment, Leadership Style, Risk Taking and Team Orientation. The OSs measures the degree of similarity between the client's interests & disinterests and those of people working in those occupations.

Procedure

Participants voluntarily completed the SII assessment and SIE assessment through the research website of CPP, Inc., publisher of the assessments. A lottery was conducted as an incentive for the participants to participate in the study.

Results

To assess the validity of the SIE assessment using the SII assessment as a criterion measure, a series of Pearson-product moment correlation coefficients were computed between scores on the two instruments.

First the six General Occupational Themes of the SIE assessment were computed from the fourteen Specific Interest Scales and were then correlated with the General Occupational Themes of the SII assessment. The internal consistency coefficients were also calculated for the General Occupational Themes of the SIE assessment.

Three more sets of analyses were conducted. For each, the fourteen SIE assessment Specific Interest Scales were

correlated with: 1. SII General Occupational Themes, 2. SII Basic Interest Scales and 3. SII Personal Style Scales.

Descriptive statistics were also computed, with means and standard deviations of the various scales for both the assessments shown in Tables 1 & 2.

Correlations between SIE and SII General Occupational Themes

Table 3 presents the correlations of the General Occupational Themes of the SIE assessment and the SII assessment; also shown are the internal consistency coefficients of SIE General Occupational Themes. Internal consistency coefficients were found to be high for all the General Occupational Themes of SIE assessment, with the values ranging from .42 to .71.

Across the correlational analyses conducted, there was evidence of both convergent and discriminant validity. A general trend of higher correlations between conceptually similar scales on the assessments, and lower correlations between dissimilar scales was observed.

Correlation between assessments on the Artistic scale was especially good; artistic scales on the two assessments correlate at .66. A similar effect is visible with the Social scale of both the assessments, which correlate at .57. Additionally it was found that the Conventional scale of the SIE assessment correlates highly with the Conventional scale (.55) of the SII assessment. The Enterprising scale, Realistic scale, and Investigative scale of SIE assessment correlate well with their corresponding scale on the SII assessment with coefficient values of .51, .53 and .53 respectively.

Correlations between SIE Specific Interest Scales and SII General Occupational Themes

Summarized in Table 4 are the results of the correlational analyses between Specific Interest Scales of the SIE assessment and the General Occupational Themes of the SII assessment. It was found that 63 of 84 correlations were statistically significant, 57 of those were significant at $p < .01$, and 6 were significant at $p < .05$.

SIE subscales of Realistic scale, Construction and Engineering (.45) and Protective Services (.41) showed significant correlation with the Realistic scale of the SII assessment. Similarly SIE subscale of Investigative scale correlated most highly with the Investigative scale (.53) of the SII assessment. The Artistic scale of the SIE assessment, which comprises Music and Art (.59) and Writing and Mass Communications subscale (.57) significantly correlated with the Artistic scale of the SII assessment. Also, Teaching and Training and Helping Others subscales of the Social scale of the SIE assessment showed a significant correlation with the Social scale of the SII assessment, with correlations coefficients of .49 and .56 respectively. It was also found that the Business, Sales and Marketing subscale of SII Enterprising scale showed significantly high correlations with the Enterprising scale of the SII assessment with correlation coefficient of .52. Additionally, the subscales of SIE Conventional scale, Working with Computers (.47) and Office and Project Management (.47) showed significant correlation with the Conventional scale of the SII assessment.

Further, there was also substantial support for discriminant

validity throughout the analysis. According to Holland's theory, the six Themes (in RIASEC order) are placed at the six points of a hexagon with those presumed to be most closely related are located adjacent to each other (R-I or R-C), and those most dissimilar located across the hexagon from each other (R-S). In the present study, a trend of weaker correlations with dissimilar scales was also evident. No significant correlation was found between SIE subscales of Artistic scale, Music and Art; and Writing and Mass Communication with the Conventional scale of the SII assessment. And so was the case with the subscales of SIE Conventional scale, Working with Computers and Office and Project Management scale did not significantly correlate with the Artistic scale of the SII assessment.

Correlations between SIE Specific Interest Scales and SII Basic Interest Scales

Correlational analyses between SIE scales and SII Basic Interest Scales were computed, the results of which are presented in Table 5. Out of 420 correlations 277 correlations were found to be statistically significant.

Working with Numbers scale of SIE assessment; correlated most highly with SII BISs of Mathematics (.62) and Taxes & Accounting (.59). SIE Music and Art scale significantly correlates with Visual Arts and Design (.54) and Performing Arts (.58) scale of SII assessment. There were high correlations between the Health and Science scale of SIE assessment with Science (.51), Medical Science (.64) and Healthcare Services (.57) scales of SII assessment. Similarly for the Writing and Mass Communications scale of the SIE

assessment higher correlation coefficients were obtained with Performing Arts (.47) and Writing and Mass Communication scale (.69) of the SII assessment. Cultural Relations, which is a scale of SIE assessment, has been found to correlate most with the Social Sciences scale of SII assessment, correlation value obtained is .47. Further it was also found that the Teaching and Training scale of the SIE assessment correlated most with its comparable scale of SII assessment, namely Teaching and Education (.54) and Human Resources and Training (.43). Similarly, the Helping Others scale of the SIE assessment correlated most highly with the Counseling and Helping scale with correlation of .62 and Teaching and Education scale (.43).

A slightly different pattern emerged for the Law and Politics scale of the SIE assessment. On this scale, the highest correlation was obtained for the Counseling and Helping scale (.62) of the SII assessment. , despite its comparable scale in SII assessment being Law (.17). The Law scale of the SII assessment was found to be significant but had lower correlation comparatively.

As for the Business, Sales and Marketing scale of SIE assessment, it correlated highly with the Marketing and Advertising (.48), Sales (.47) and Management (.41) scales of the SII assessment. Additionally, Table 5 shows that the Working with Computers scale of the SIE assessment correlates with BISs of Computer Hardware and Electronics (.60) and Programming and Information Systems (.65) of the SII assessment. The Office and Project Management scale of the SIE assessment

correlated significantly with the Office Management scale (.48) of the SIE assessment. The Outdoor Environment, Plants and Animals scale of SIE assessment had its highest correlation with the Nature and Agriculture scale (.63) of the SII assessment. It was also found that the Construction and Engineering scale of the SIE assessment correlates significantly with the Mechanics and Construction scale (.53) of the SII assessment. And lastly among the correlations of scales of the SIE assessment with Basic Interest Scales of SII assessment, the Protective Services scale of the SIE assessment was found to correlate high with the Protective Services scale (.65) and the Military scale (.49) of the SII assessment.

Correlations between Specific Interest Scales of the SIE assessment and Personal Style Scales of the SII assessment

Correlation analyses of the SIE scales with the Personal Style scales of the SII assessment showed some consistent pattern (see Table 6). Of 70 correlations, 46 were found to be significant: 41 were significant at .01 level, and 5 were significant at .05 level. The Helping Others scale (.47) of the SIE assessment correlated the most with the Work Style scale of the SII assessment, whereas the Writing and Mass Communications scale of SIE significantly correlated with SII Learning Environment scale (.52). The highest score obtained for the Leadership Style scale of SII assessment was with Law and Politics subscale of SIE assessment (.43). For the Risk Taking scale of the SII assessment, the subscale Protective Services (.49) of the SIE assessment was found to be the highest correlation. The Teaching and

Training scale (.31) of the SIE assessment correlated significantly with the Team Orientation scale of the SII assessment.

Discussion

The results here strongly suggest that the Strong Interest Explorer© assessment measures similar conceptual domains as the SII assessment. Evidence of convergent and discriminant validity with generally higher correlations between conceptually similar scales was identified, as well as lower correlations between dissimilar scales.

For example, the Artistic scale and subscales of the SIE assessment demonstrated significant positive relationships with the Artistic scale of the SII assessment and weaker relationships with other scales of the SII assessment. More importantly the Artistic scale and subscales of the SIE assessment showed a very weak relationship with the Conventional scale of the SII assessment, with this being desirable because these two scales do not compliment each other. People with strong Artistic interests have been found to have low scores on Conventional scale (SII Manual, 2005). A similar trend was observed for the Conventional scale and subscales of the SIE assessment; it showed a stronger relationship with Conventional scale of the SII assessment but weaker relationship with Artistic scale and subscales of the SII assessment.

Among the relationships between the scales of the SIE assessment and the Basic Interest Scales of the SII assessment, there was again the same trend with stronger correlations with similar scales of both instruments, as well as weaker relationships with the dissimilar scales.

For the Personal Style Scales of the SII assessment, previous research has found that the Learning Environment scale correlates most with the Artistic theme (SII Manual, 2005). As expected, the present analyses also revealed the same results, where the Writing and Mass Communications subscale of the Artistic scale of the SIE assessment showed a positive correlation with the Learning Environment scale.

Therefore, using the SII assessment as a criterion measure, it can be concluded that the scales and subscales of the SIE assessment demonstrate strong validity. First, the General Occupational Themes of the SIE assessment correlate well with the equivalent General Occupational Themes of the SII assessment. Second, the Specific Interest Scales of the SIE assessment correlate well with the matching General Occupational Themes of the SII assessment. Third, Specific Interest Scales of the SIE assessment correlate well with their corresponding Basic Interest Scales of the SII assessment. Last, General Occupational Themes and Specific Interest Scales of the SIE assessment have weaker relationships with conceptually dissimilar scales of SII assessment.

Together the results of these analyses show good evidence of the validity of the SIE assessment.

References

- Betz, N.E. & Wolfe, J.B. (2005). Measuring confidence for basic domains of vocational activity in high school students. *Journal of Career Assessment*, 13 (3), 251-270.
- Campbell, D.P., Hyne, S.A., & Nilsen, D.L. (1992). *Manual for the Campbell Interest and Skills Inventory*. Minneapolis, MN: National Computer Systems.
- Chartrand, J. (2001). *Strong Interest Explorer*. Palto Alto, CA: CPP, Inc.
- Chartrand, J.M., Borgen, F.H., Betz, N.E. & Donnay, D. (2002). Using the Strong Interest Inventory® and the skills confidence inventory to explain career goals. *Journal of Career Assessment*, 10 (2), 179-189.
- Donnay, D.A.C. & Borgen, F.H. (1996). Validity, structure, and content of the 1994 Strong Interest Inventory. *Journal of Counseling Psychology*, 43 (3), 275-291.
- Donnay, D.A.C., Moris, M.L., Schaubhut, N.A. & Thompson, R.C. (2005). *Strong Interest Inventory*. Mountain View, CA: CPP, Inc.
- Hansen, J.C., & Campbell, D.C. (1985). *Manual for the Strong Interest Inventory* (4th ed.). Palto Alto, CA: CPP, Inc.
- Holland, J.L. (1985). *The Self-Directed Search Professional manual: The 1985 edition*. Odessa, FL: Psychological Assessment Resources.
- Holland, J.L., Fritzsche, B.A., & Powell, A.B. (1994). *Technical manual for the Self-Directed Search*. Odessa, FL: Psychological Assessment Resources.
- Kuder, F., & Zytowski, D.G. (1991). *Kuder Occupational Interest Survey Form DD general manual*. Adel, IA: National Career Assessment Associates.
- Levinson, E.M., Ohler, D.L., Maus, M. & Christy, A. (2005). A test of the validity of the Strong Interest

Explorer with a sample of junior high and high school latino youth. *The High School Journal*, Dec 2005, 55-65.

Research Department (2002). Instrument Development: Reliability and validity of the Strong Interest Explorer. *CPP Inc. Technical Report. No. 2002-2*, 1-7.