Reliability and correlation of interest inventories: Strong interest inventory (SII) and self-directed search (SDS)

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The study examined the reliability and correlation of the strong interest inventory (SII) and self-directed search (SDS). In Iran, these two instruments are relevant for assessing interest. Thus, college students in the University of Isfahan in Iran were taken as participants in the university to examine the reliability and correlation of SII and SDS. The mean internal consistency coefficients for the SII and SDS were 0.90 and 0.86, respectively, and mean test-retest reliability for SDS subscales was high. Mean correlation between the same SII and SDS scales of participants who took both versions was high. For this group, the Realistic, Social, Investigative, Artistic, conventional and enterprising were subscales that produced the configuration of a RIASEC-order hexagon. These results highly support the further use of SII and SDS.

Key words: Strong interest inventory (SII), self-directed search (SDS), college students, University of Isfahan, Iran.

INTRODUCTION

In childhood, all people think about the future and ask themselves what they want to be when they grow up. That can be called career aspiration. As people grow older and enter adolescence, their career aspiration becomes their foremost concern, as what they want to do in their life time. In other words, we can say that career aspiration of people is the career interest that represents an individual’s personal preferences for specific leisure and vocational activities and environments. They are typically involved within five domains: personality, motivation or drive, expression of the self-concept, heritability, and influences within the environment (Hansen, 1994; Bailey et al., 2008). Efforts by career counselors to answer the question of how individual differences contribute to important vocational outcomes have resulted in the emergence of several integrative theories. Interest is the central construct in such theories. For example, Ackerman and Heggestad (1997) proposed a theory where interests provide the motivation for the selection of activities, whereas personality and abilities determine the success of those actions (Chartrand et al., 2002). Lubinski and Benbow (2000) described a theory where individuals are drawn to occupational and educational activities by their interests, personality, and abilities; and over time, occupational niches are created based on these stable predispositions.

One of the most influential theories regarding career interests is that of John Holland. In his theory, Holland (1985, 1997) divides both people and environments into some combination of six interest domains. These six domains are hexagonally organized, and include realistic (outdoors, mechanical), investigative (science, math),

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artistic (art, language), social (helping, teaching), enterprising (selling, business) and conventional (details, clerical). Bullock and Reardon (2005) suggested that the construct of profile elevation, the sum of the six RIASEC scores across the five sections of the SDS, could be another indicator of the client’s career situation. A client’s profile elevation on the SDS provides information about a client that may not be otherwise uncovered through the interpretation of other aspects of the SDS (example, the code, congruence, differentiation, consistency, coherence). Holland’s (1997) theory and approach to career counseling is one of the most dominant and widespread (Swanson and Gore, 2000). Unlike many other approaches, Holland’s model puts assessment and assessment devices in the center of its procedures and makes special use of them (Reardon and Lenz, 1999; Barak and Cohen, 2002).

Strong interest inventory (SII) has evolved beyond the occupational scales, which is the original component that emanated from the 1927 strong vocational interest blank (SVIB). The occupational scales are empirically derived scales that have been expanded and updated. For years, the occupational scales have been used by counselors as predictor variables to help clients shape career goals. The Basic Interest Scales were added to the SII, thus providing new content that corresponds to Holland’s hexagonal constructs. This revision included scale development methodology beyond the original empirical approach used by E. K. Strong. Inclusion of this new material complemented the information provided by the Occupational Scales, thus allowing a better understanding of how general styles (example, investigative) and basic interests (example, mathematics) relate to occupations (example, electrical engineering). Holland’s themes are arguably the most influential taxonomy in vocational psychology, and some have persuasively argued that basic interests provide the optimal level of information for conceptualizing interests. So, by the 1970s, interests could be viewed from the general (Holland-based themes), the specific (basic interests), and in relation to occupational groups (occupational scales). The personal styles scales were expanded in the 1994 revision of the SII, and they represent a clear link between interest items and the personality domain (Chartrand et al., 2002).

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Results of a recent survey of vocational assessment practices indicated that Strong Interest Inventory (SII) is used more frequently by counselors than any other career interest inventory (Watkins et al., 1994). Vocational assessment is most commonly performed in college and university settings, more so than in private practice, community mental health centers, and other outpatient settings (Watkins, 1993). It has been an effective tool in helping college students engage in career planning and exploration, including such activities as selecting a major, planning for employment after college, and choosing extracurricular activities of interest (Harmon et al., 1994). Much of the research evaluating the beneficial effects of interest inventory assessment in career counseling has focused on the use of the SII with college student populations (Luzzo and Day, 1999). The 1994 Strong interest inventory has recently been revised; a new form of the traditional strong vocational interest blank (SVIB) was released to the public in early 2005 (Donnay et al., 2005). Differences between the 1994 and 2005 SII include new occupational scales, the expansion of the basic interest scales (BISs) from 25 to 30 scales, and the addition of a teamwork scale to the personal style scales (PSSs). The current study focuses on the concurrent validity of the 41 content scales in the 2005 SII, and especially the new BISs, for differentiating college majors in a large national sample. The 2005 SII is a 291-item measure of vocational interests based on Holland’s RIASEC model (Holland, 1997).

Differences between the 1994 and 2005 SII include the expansion of the BISs from 25 to 30 scales, the inclusion of another PSS (the teamwork scale), and a format change from a 3-point to 5-point differentiation of interest preference. These changes allow for the expression of new career options that have become available in the workforce in the past decade (Luzzo and Day, 1999). The reigning structural model of vocational interests is that of Holland (1985, 1997) who proposed that interests are composed of combinations of six types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (collectively known as RIASEC). Prediger and Vansickle (1992) demonstrated that these six types exist in two-dimensional space defined by the dimensions People/Things and Data/Ideas. In a series of structural meta-analyses, Tracey and Rounds (1993) demonstrated support for both the circular arrangement of the RIASEC types and for the presence of Prediger’s two dimensions underlying them.

In Iran, the strong interest inventory (SII) and self-directed search (SDS) are used frequently by investigators to assess the interests of students in high schools and universities but they seldom evaluate the reliability and validity of these instruments. But we know that the reliability and validity of instruments is very important and needs to be implemented. This investigation was motivated in an attempt to answer the question: what is the reliability and validity of the strong interest inventory (SII) and self-directed search (SDS)? In this article we want to investigate the reliability and correlation between strong interest inventory (SII) and self-directed search (SDS) in Iran. The hypotheses proposed in this investigation are: the reliability of strong
interest inventory (SII) and self-directed search (SDS) is fair and correlation between strong interest inventory (SII) and self-directed search (SDS) is high.

METHODS

Participants

Participants were college students who studied for a bachelor's degree in the University of Isfahan in Iran. Participants in this study were 80 students, chosen randomly. The sample for this study contained 53 females and 37 males, with mean years of 19.

Instruments

SII

The 2005 strong interest inventory contains 291 items and three types of content scales: six general occupational themes, 30 basic interest scales, and five personal style scales. The SII comprises 291 items and was designed to capture an individual's career interests. The revision of the 1994 SII resulted in some items being deleted, some items being slightly revised, and some new items being added. In short, there were 20 items with min or word deleted, some items being slightly revised, and some new interests. The revision of the 1994 SII resulted in some items being deleted, some items being slightly revised, and some new items being added. In short, there were 20 items with min or word deleted, some items being slightly revised, and some new items added to the 2005 SII. Major differences between the 1994 and 2005 SII scales include the expansion of the BISs from 25 to 30 scales and the inclusion of another PSS (the Team Orientation scale). As mentioned previously, these changes allow for the expression of new career options that have become available in the workforce in the past decade. Another important change in the 2005 SII was the expansion of the 3-point item response (choice of like, neutral, dislike) to a 5-point item response (choice of strongly like, like, indifferent, dislike, and strongly dislike). This change permits the participant to express more extreme likes and dislikes.

Also, preliminary data suggest that this wider range of response options increases the sensitivity of the SII, thus increasing the reliability of the instrument (Donnay et al., 2005; Bailey et al., 2006). There are 291 items on the newly revised SII. For each of the items, the respondent is asked to indicate his or her preferences from among five response categories on an answer sheet. The answers are then analyzed by computer (the SII cannot be scored by hand) to derive scores on measures of interest type, called scales. The results are printed on a report called a profile, which presents the scale scores in an organized format and offers interpretive information. Comparing the individual's pattern of responses to the patterns of responses of a general representative sample of people of different types and in different occupations, the SII then gives the respondent five main types of information:

1. Scores on 6 general occupational themes (GOTs), which reflect the respondent's overall orientation to work based on Holland's types of theory (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional);
2. Scores on 30 basic interest scales (BISs), which report consistency of interests or disinterests in 30 specific areas, such as art, science, teaching, and education;
3. Scores on 244 occupational scales (OSs; 122 for each gender), which indicate the degree of similarity between the respondent's interests and the characteristic interests of people working in those occupations;
4. Scores on five personal style scales (PSSs), which measure aspects of style with which an individual likes to learn, work, assume leadership, take risks, and work within teams; and
5. Summary of item responses to help identify inconsistent or unusual profiles for special attention (Donnay et al., 2004; Leierer et al., 2008).

SDS

The SDS Form R (Holland, 1994) is a 228-item self-report interest inventory that yields scores for six RIASEC types. The SDS assessment booklet includes four sections yielding five scores. The activities section includes six RIASEC scales of 11 items each, which are endorsed "like" or "dislike." The competencies section also includes six RIASEC scales with 11 items of self-rated skills or proficiencies, which are marked "yes" or "no." The occupations section includes the six RIASEC scales with 14 items (occupational titles) each, which are endorsed "yes" or "no." The final section of the SDS, Self-Estimates, includes the six RIASEC scales rated twice (from 1 to 7) with respect to ability and skill. Clients are asked to rate themselves "as you really think you are when compared with other persons your own age." The SDS also incorporates individuals' occupational aspirations or daydreams. In addition to a three-letter RIASEC code, the SDS measures various secondary constructs, for example, congruence, coherence, consistency, and differentiation.

The construct of profile elevation can be calculated by summing the six section scores on the SDS (the total number of positive responses and the two self-estimates scores). Test–retest reliabilities for SDS summary scores range from 0.76 to 0.89, and internal consistencies (KR-20s) range from 0.90 to 0.94 (Holland et al., 1994). Spokane and Holland (1995) noted the effects of the SDS on the test taker that have been documented by 22 experimental studies. The interpretation of SDS scales is also supported by a substantial literature. Ruff et al. (2008) reported over 1,609 reference citations related to Holland's theory and applications from 1953 to early 2007 (Sampson et al., 2009). SDS includes the six RIASEC scales (Emling et al., 1980):

1) **Realistic (R):** These people usually have good physical skills and enjoy creating things. They like working with their hands, and prefer working with things to people. They are generally conventional in political and economic opinions.

2) **Investigative (I):** These people tend to center around activities which are scientific. They like solving problems and prefer thinking things through. They have a tendency toward creative and original thoughts.

3) **Artistic (A):** These people like situations which offer opportunities for self-expression. There is generally little interest in problems that are very structured, and they are less assertive about their own opinions and capabilities.

4) **Social (S):** The extreme types are very sociable with humanistic orientations. They express themselves well and like group attention. They like situations with group problem solving, and establishing relationships with others. They often describe themselves as popular and good leaders.

5) **Enterprising (E):** Usually very good with words and are effective in transmitting ideas and in leading. They are self-confident and
Table 1. Cronbach alpha coefficients for SII and SDS.

<table>
<thead>
<tr>
<th>Inventory</th>
<th>N</th>
<th>Cronbach α</th>
</tr>
</thead>
<tbody>
<tr>
<td>SII</td>
<td>80</td>
<td>0.90</td>
</tr>
<tr>
<td>SDS</td>
<td>80</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Table 2. Means and standard deviations and Cronbach alpha coefficients for Holland theme scores on the strong interest inventory (SII).

<table>
<thead>
<tr>
<th>Theme</th>
<th>M</th>
<th>SD</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>SII realistic</td>
<td>39.7</td>
<td>7.11</td>
<td>85</td>
</tr>
<tr>
<td>SII investigative</td>
<td>42.13</td>
<td>9.82</td>
<td>76</td>
</tr>
<tr>
<td>SII artistic</td>
<td>45.73</td>
<td>9.39</td>
<td>72</td>
</tr>
<tr>
<td>SII social</td>
<td>50.72</td>
<td>10.82</td>
<td>81</td>
</tr>
<tr>
<td>SII enterprising</td>
<td>47.53</td>
<td>9.87</td>
<td>88</td>
</tr>
<tr>
<td>SII conventional</td>
<td>49.87</td>
<td>9.87</td>
<td>78</td>
</tr>
</tbody>
</table>

dominant, and prefer roles of leadership. They are generally impatient with precise work.

6) Conventional (C): These people prefer very organized settings, such as large organizations. They like well established rules in order to know what is expected of them. They describe themselves as stable, well controlled, and dependable.

RESULTS

Reliability

Internal consistency of the interest scales

The participants who took SII and SDS were used to compute Cronbach alpha internal consistency coefficients of the interest scales and their subscales. The results are presented in Table 1. As can be seen, alpha coefficients of the interest inventories are very similar, yielding a mean alpha coefficient high for scales. Furthermore, the internal consistency coefficients of scales are high; that is, they are in the satisfactory range for vocational assessment. It should also be noted that the findings reported in Table 1 resemble the internal consistency coefficients reported by Holland et al. (1994). Means and standard deviations for the Holland themes on the SII are presented in Table 2. Test-Retest Reliability Coefficients of the Self-Directed Search(SDS) subscales are presented in Table 3 and correlation between subscales SII & SDS are presented in Table 4.

Content validity

Examination of the validity of any measure of interests or of personality characteristics is a very complicated mission. Validating the SII and SDS as such might take a very long time and require numerous criterion variables and samples. However, as the SII has been found to be sufficiently reliable and highly correlated with the SDS, it would be fair to examine some aspect relating to validity.

DISCUSSION

The results of this study support the reliability of the SII and SDS scales. The SDS scales showed adequate internal consistency with an estimates ranging: Two week test–retest assessments yielded good correlations ranging, indicating that these scale scores are fairly stable over time. Another implication of the current study was that the SII and SDS used with the college population should be encouraged. The current study’s major finding was that there was support for the valid use of these instruments with a college population. Furthermore, the SII and SDS are able to separate the interests of female college majors, and this finding is general to male college majors. Specifically, the SII and SDS had utility in correctly classifying the interests of college majors. Although replication of these findings is necessary, the current study laid the groundwork for future validity work and provided evidence of the utility of the SII and SDS. Therefore, because this instrument appeared to be valid, it has much utility in helping individuals to gain valuable information and insight regarding vocational interests. Along this line of reasoning, there were other practical implications.

Based on the current study's findings regarding the ability of the sets of SII and SDS scales to classify college majors, the following clinical recommendations are suggested. If a client is struggling to find an appropriate career, these findings provide support for the use of the SII and SDS in helping the client narrow down the list of potential majors. In career counseling, the SDS should be used by the counselor to create a general framework of the client’s career interests, and the SII should add to fleshing out that general framework. However, the career counselor should pay most attention to a client’s scores on the SII to guide the client toward potential major choices. Assuming that the client finds this profile to be accurate, in this case, the career counselor could help guide the client toward exploring careers. Hence, the specificity of the SII and SDS can add to how a career counselor conceptualizes an individual’s career interests, as well as informing the client about specific interest areas to pursue or avoid in exploring major and career choices. The special utility of the SII for guiding the selection of college major was also demonstrated by the Ralston et al. (2004) study of the 1994 SII (Gasser et al., 2007).
Table 3. Test-retest reliability coefficients of the self-directed search (SDS) subscales.

<table>
<thead>
<tr>
<th>SDS subscales</th>
<th>Activities</th>
<th>Competencies</th>
<th>Occupations</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Realistic</td>
<td>72</td>
<td>69</td>
<td>66</td>
<td>76</td>
</tr>
<tr>
<td>Investigative</td>
<td>72</td>
<td>75</td>
<td>69</td>
<td>68</td>
</tr>
<tr>
<td>Artistic</td>
<td>73</td>
<td>80</td>
<td>81</td>
<td>83</td>
</tr>
<tr>
<td>Social</td>
<td>71</td>
<td>77</td>
<td>79</td>
<td>78</td>
</tr>
<tr>
<td>Enterprising</td>
<td>77</td>
<td>73</td>
<td>80</td>
<td>78</td>
</tr>
<tr>
<td>Conventional</td>
<td>84</td>
<td>80</td>
<td>83</td>
<td>74</td>
</tr>
</tbody>
</table>

Table 4. Correlation between subscales SII and SDS.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>realistic</td>
<td>69</td>
</tr>
<tr>
<td>investigative</td>
<td>73</td>
</tr>
<tr>
<td>artistic</td>
<td>67</td>
</tr>
<tr>
<td>social</td>
<td>76</td>
</tr>
<tr>
<td>enterprising</td>
<td>61</td>
</tr>
<tr>
<td>conventional</td>
<td>78</td>
</tr>
</tbody>
</table>

The SII and SDS results were used in the current project for the purpose of career exploration. Career exploration could be much enriched by associating personal assessment, on one hand, with the world of work, on the other, in terms of possible occupational opportunities and relevant education and training. Career exploration, self-knowledge and career planning is necessary in career assessment and career counseling. College students who participated in this study will use the SII and SDS to know about their interest and then engage in career exploration.

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