

**Improving Career Services and Research with the  
Computer Version of the Self-Directed Search (Form R):  
Technical Report Number 15**

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**Improving Career Services and Research with the Computer Version  
of the Self-Directed Search (Form R): Technical Report Number 10**

**Abstract**

The purpose of this study was to examine the use of the Self-Directed Search: Computer Version (SDS:CV) in a university career center's service delivery and research activities. Data were collected from a sample of 180 clients over a 16 month period, using the information provided in the professional summary report of the SDS:CV. Social and Enterprising types were the most common client codes (57%), and the mean Vocational Identity score from the My Vocational Situation was 5.26. Additional data about the client group was examined regarding the secondary constructs from Holland's theory of congruence (expressed vs. assessed Holland codes), differentiation, consistency, commonness, need for information, and vocational choice barriers. Low vocational identity items endorsed by 80% of the clients were also identified. An analysis of cost information for software and staff resources indicated that the SDS:CV was used at a cost of \$10.10 per client in this setting. Discussion focused on the application of research information provided by the SDS:CV in designing career interventions, using the secondary constructs in career counseling, developing outreach programs, comparing and contrasting the paper and computer versions of the SDS, and the use of theory-based career interventions.

**Improving Career Services and Research with the Computer Version  
of the Self-Directed Search (Form R): Technical Report Number 10**

**Introduction**

The Self-Directed Search: Computer Version Form R (SDS:CV) (Reardon, 1987) was introduced in 1985, but only one research article has been published regarding this form of the SDS. Reardon and Loughead (1988) described an effort to assess the degree of equivalence between the paper and computer forms of the SDS with a group of psychology undergraduates seeking career assistance and course credit for participation in an experiment. They concluded that the two forms of the SDS were equivalent in interest measurement characteristics, and that the users had a preference for the computer form over the paper form of the SDS. Reviews of the SDS:CV by McKee and Levinson (1990) and Urich (1990) have been encouraging, but have not mentioned the data collection and research features available in the software.

The purpose of this paper is to report on a university career center's use of the SDS:CV to (1) improve career counseling services and (2) improve research and evaluation activities related to those services. The following paragraphs explore some of the issues the career center staff examined in determining how to most effectively use the SDS:CV in improving career services and research, and integrating theory and practice.

The setting of this exploratory study was a university-based career center. The philosophy of career service delivery is to use self-directed career decision making as a focal point in service-delivery, supplemented by career counseling, workshops, and curricular interventions. The career center is staffed by career advisors, who include professional career counselors with national certification, masters level career counselor trainees completing two semester half-time internships, and advanced doctoral students developing specialized skills in career interventions (Peterson, Sampson, & Reardon, 1991).

In a review of the literature, we found no articles describing the programmatic use of the Self-Directed Search: Paper Version Form R (SDS:PV) or SDS:CV in a service setting. The majority of the literature has focused on (1) using the SDS:PV as an intervention and assessing its impact on clients (Winer, White, & Smith, 1987); (2) assessing the impact of the SDS:PV in comparison to other interventions (Holland, 1980; Krivatsy & Magoon, 1976; Krieschok, 1987); (3) examining the relationship between client characteristics assessed by the SDS and other constructs (Alvi, Khan, Hussain, & Baig, 1988; Henry, 1989); and (4) comparing the scales of the SDS:PV to other assessment devices (Ahadi, 1991; Atkinson, Murrell, & Winters, 1990). There have been some handbooks/resource guides (Kennedy, 1991; Rosenberg & Smith, 1989) published that describe the application of the SDS and Holland codes to career counseling interventions, but these were not research-based. The absence of assessment program management reports in the extensive literature on Holland's theory and the SDS is remarkable.

Furthermore, with the advent of computer administrations of many popular paper and pencil inventories, there appears to be a need to examine feature-cost considerations for use of the paper and computer forms of instruments. Among the variables to be considered in analyzing feature-cost factors associated with the operation of a career interest assessment program in an organization are (1) examination of the costs of the actual testing materials, (2) scoring services and procedures, (3) time required of staff proctors, (4) training and retraining staff to use the instruments, (5) time required for administration and interpretation of results, (6) client reported benefits of assessments, (7) space needed for assessments, (8) reuse of assessment materials, (9) scheduling interpretation sessions if necessary, and (10) report preparations and filing (Levinson, 1990; Sampson, Reardon, Peterson, Humphreys, Evans, & Domkowski, 1990). The interaction of these factors, together with the philosophy and theoretical orientation of the agency, define how a particular career interest

assessment program will be structured in a setting in terms of outcome effectiveness and cost efficiency.

The addition of research objectives to service delivery objectives adds even more complexity to an agency's attempts to design and manage a career assessment program. For example, is it possible to recover efficiently individual career assessment results from the SDS:CV to learn more about patterns of client needs and characteristics on a program-wide basis? Can improved understanding of patterns of client characteristics related to career decision problems provide useful information for program development that might help in designing outreach and prevention programs in a center?

This report describes how we used the SDS:CV as one method for assessing client career needs and to improve our understanding of the interplay of variables related to Holland's theory (Holland, 1985a, 1987) in order to improve overall service delivery and research activities in our center.

The following research questions were investigated: (1) What are the most frequent Holland codes of difficult clients seeking assistance in this career center? (2) How do scores on the six SDS Summary Scales relate to client age and the secondary constructs of Holland's theory, including congruence, differentiation, commonness, consistency, vocational identity, need for information, and vocational choice barriers? (3) What are the mean client scores on the Identity, Information, and Barriers Scales of the My Vocational Situation? (4) What items on the My Vocational Situation are most frequently endorsed by clients, indicating low vocational identity, need for information, or barriers to vocational decision making? (5) What are the policy considerations and costs of administering the SDS:CV program in a career center?

## Method

### Sample

The sample used in this study included individuals coming to a career center in a large southeastern university for career planning and decision making assistance. One hundred eighty clients (N = 180) ages 18 to 23, including 62% females and 38% males with a mean age of 19.7, participated in the research over a 16 month period. Most participants were university students with 19% freshman, 43% sophomores, 21% juniors, and 11% seniors. The remaining 6% were area residents, graduate students, or persons not affiliated with the university. This group was not included in the study because our intent was to focus on the dominant client cohort of currently enrolled traditional age college students. Some additional clients using the SDS:CV were excluded from the study because the consent form was not completed or because the individual was concurrently enrolled in the career planning class and completing the SDS:CV was a class assignment.

### Procedures

Upon entering the career center, clients were interviewed for 15-30 minutes by a career advisor to assess their needs. The SDS:CV was typically assigned to those clients indicating a lack of adequate self-knowledge or schema with which to relate personal characteristics to occupations (Reardon & Lenz, 1991). After deciding to use the SDS:CV, career advisors informed the client of the on-going research and asked if the client would be willing to participate in the study. Clients who agreed to participate signed a consent form (See Appendix A) and completed the SDS:CV in a scheduled one hour appointment. Several persons who did not wish to participate in the study were allowed to complete the SDS:CV following normal center procedures.

### Instrument

The Self-Directed Search: Computer Version Form R (SDS:CV; Psychological Assessment Resources, 1987) is a computer-assisted version of the Self-Directed Search (SDS) (Holland, 1985b). The SDS:CV stores results for each client in a separate client file. The SDS:CV administers, scores, and provides two reports (a 10-12 page Interpretive Report and a 2-3 page Professional Summary), which include information regarding interpretation of the SDS (Holland, 1985b) and My Vocational Situation (MVS) (Holland, Daiger, & Power, 1980). The Fall 1993 Comprehensive Catalog (Psychological Assessment Resources, Inc., 1993) lists the SDS:CV Form R at \$295 for 50 uses, or \$5.90 per administration. (This does not include cost of the reusable Alphabetic Guide to Occupations.)

Following completion of the SDS:CV, the career advisor obtained a printed copy of the Interpretive Report which was shared with the client. This report includes an overview of the purpose of the SDS and a description of the six Holland types. Summary scores are reported along with a description of the SDS Summary Code and scores, level of differentiation, level of consistency, aspirations (daydream) codes, and lists of occupations for the five permutations of the three letter summary code. The report concludes with "Next Steps," suggestions on how to use the SDS results in career and educational planning and a list of reference materials. The SDS:CV stores information regarding each client in a separate client file. After Professional Summaries were obtained for data analysis, client files were individually deleted.

The career advisor also obtained a copy of the Professional Summary which provides a concise summary of information from the results of the SDS and MVS. The Professional Summary provides the complete matrix of SDS section scores, demographic information, scores and critical items from the My Vocational Situation, Aspirations (Daydream) occupations and codes, and information regarding congruence, consistency, commonness, and differentiation. The Professional Summary for each client lending consent was the source of data for analysis in this report.

### Data Analysis

As noted above, data for analysis were coded from the SDS:CV Professional Summary. For a complete description of the schema used in data coding see Appendix B. Data were analyzed using version 10 of the Statistical Package for the Social Sciences (SPSSX), (SPSS Inc., 1986). Basic frequency and condescriptive analyses were performed producing the statistics used in this report.

## **Results**

The presentation of results follows the order of the five research questions listed earlier.

### Vocational Personality of Users

The first question focused on determining the most frequently occurring Holland types seeking assistance in this university career center. Results indicated these were Social and Enterprising types (see Table 2). The first letter of both the SDS Summary Code and the Aspirations Summary Code was either S or E. Regarding the Summary Code, the most common first letter was S, 33%, followed by E, 24%; regarding Aspirations Codes, both the S and E appeared first in 33% of the cases. Realistic and Conventional types were least common, 11% and 16% on the SDS Summary Code, and 9% and 2% on the Aspirations Summary Code.

### Secondary Constructs

The second question focused on determining how scores on the six SDS Summary Scales related to client age and the secondary constructs of Holland's theory, including congruence, differentiation, commonness, consistency, vocational identity, need for information, and vocational choice barriers. Correlations among the six SDS Summary scales, client age, and the secondary constructs of Holland's theory are reported in Table 3. Scores on the R and I scales were

negatively correlated with congruence and differentiation, and I scale scores were also negatively correlated with consistency, but positively correlated with need for occupational information. Positive correlations were also shown for scores between the Artistic scale and consistency, and between the Social scale and differentiation, commonness, and vocational identity. Scores on the E scale were not correlated with age or any secondary construct, but scores on the C scale were positively correlated with age and negatively correlated with commonness.

Examination of relationships among secondary constructs showed positive correlations between congruence and differentiation, commonness, and vocational identity; between differentiation and commonness and consistency; between commonness and consistency and vocational identity; and between vocational identity and need for occupational information and barriers. There were no significant negative correlations among secondary constructs.

#### Vocational Identity and Obstacles

The third question focused on determining the client MVS scores on the Identity, Need for Information, and Barriers scales. Mean client scores for My Vocational Situation Identity, Occupational Information, and Barriers scales were 5.26, .79, and 2.90 respectively (see Table 4).

The fourth question focused on identifying specific MVS items where clients indicated low vocational identity, need for information, or barriers to vocational decision making. Table 5 presents My Vocational Situation items and the percentage of subjects that endorsed each item. Items endorsed by 80% or more of the subjects related to uncertainty about self, need for clarifying and confirming career goals, expanding occupational alternatives and obtaining additional information about occupations.

#### Costs

The fifth question focused on examination of assessment program policy considerations and costs of administering the SDS:CV in our university career center. In answering this question, it is important to review procedures for using the SDS:CV. Clients using the SDS:CV were often able to complete the inventory at the time of their first visit to the career center; otherwise, they were scheduled to complete the SDS:CV at their earliest convenience or when any one of the six computers was available. Following administration of the SDS:CV, Interpretive Reports of the results were immediately printed for clients, who could then read them and confer with a career advisor. SDS:CV Professional Summaries were retained for data analysis purposes. The SDS:CV was typically completed in one session lasting from 60 to 75 minutes. At \$5.90 per administration, the software cost of administration of the SDS:CV to 180 clients was \$1,062. We estimate an average of 45 minutes of career advisor time was spent per client before and after each use of the SDS:CV. Given the current cost per hour of career advising in our career center of \$5.60 (Reardon, 1993), staff time per administration was calculated at \$4.20. Thus, the service delivery cost of this program in terms of software and staff time was \$10.10 per client. The data collection and analysis provided by the Interpretive and Professional Reports for career advisor use with each client and for later research analysis were completed by the SDS:CV computer program at no additional cost.

### Discussion

This exploratory project proved to be a useful way to combine service delivery with research in a university-based career center. The use of the SDS:CV enabled the staff to efficiently collect information about clients seeking services, while at the same time quickly provide clients with desired services.

The clients in this study were found to be predominantly Holland Social and Enterprising types, based on both their Summary Code and their Aspirations Summary Code. This finding is consistent with earlier research (Lenz, Reardon, & Sampson, 1993) on the nature of clients

presenting themselves for assistance in this setting. It also supports the earlier suggestion that Social and Enterprising types are more likely to present themselves for counseling (Bruch, 1978). Viewed in another way, these data suggest that Realistic and Conventional types are not seeking assistance in the career center for solving career problems or making career decisions. However, there is also evidence that the university student body is composed predominantly of Holland S, E, and I types, so the small number of Rs and Cs may not indicate a service delivery problem for the career center. Of the 153 majors and programs of study available at the university, the percent of undergraduate students ( $N = 10,439$ ) with declared majors across Holland codes is R, 5%; I, 19%; A, 13%; S, 34%; E, 19%; and C, 10% (Budget & Analysis, 1992).

These data may also have implications for staff selecting the types of interventions that are most likely to be effective with Social and Enterprising types (Rosenberg & Smith, 1989). These interventions might include information interviewing, mentoring, cooperative education, internships and externships, workshops, speakers, credit courses, individual and group counseling.

Examination of the six Holland codes in relation to age and the secondary constructs revealed several noteworthy relationships. Although statistically significant, the low magnitude of these correlations suggests somewhat limited practical significance. First, age was positively correlated with scores for the Conventional type. In this setting, older persons with career problems often have backgrounds in office related occupations and are seeking to move into a new occupational area. They also have uncommon codes. It is important for career advisors to recognize this pattern and to develop strategies to assist older C types in solving career dilemmas which may involve exploring occupations in non-Conventional environments.

Second, the S type is positively related to scores on differentiation, commonness, and vocational identity. In working with S types, career advisors need to be aware of these relationships, especially those involving vocational identity. Persons with high S scores may verbally present themselves as more confused or in need than other diagnostic signs on their SDS:CV Professional Report would indicate (Holland, 1987). Social types may have a tendency to "awfulize" their situation, and career advisors may find it useful to directly explore identity issues from the MVS with clients.

Third, Investigative scores were negatively related to congruence, differentiation, consistency, but positively related to need for occupational information. I types may especially benefit from an exploration and understanding of Holland's theory and typology, and for presentation of occupational information related to Holland codes.

Fourth, the secondary constructs of congruence, differentiation, commonness, consistency, and vocational identity were all positively intercorrelated in various ways for this client sample. This suggests that career advisors might want to look at clusters of these secondary constructs as signs of career decision making problems, and not overreact to one negative sign, e.g., low vocational identity (Holland, 1987). For example, Conneran and Hartman (1993) recently reported that two secondary constructs, low congruence and identity, are indicative of chronic career indecision in male and female vocational high school students. Fifth, scores on the Enterprising scale were not correlated with age or any of the secondary constructs.

In comparison to normative scores reported on the My Vocational Situation (Holland, Gottfredson, & Power, 1980), the scores for this client group were very low on the identity and need for information scales. These data suggest that career advisors were correct in assigning the SDS:CV to these clients, because the clients were experiencing genuine difficulties in career decision making (Holland, Johnston, & Asama, 1993). Table 5 shows the most frequently endorsed items on the MVS for this client group. It is important in career advisor training for staff to be prepared to positively intervene on each of these inventory items in assisting clients. This might include rehearsing specific counselor responses, identifying specific library and assessment



resources, and developing guidelines for specialized personal counseling referrals. A post-intervention administration of the paper form of the My Vocational Situation would enable the career center to document the effectiveness of interventions with this client group.

The use of the SDS:CV rather than the SDS:PV (Paper Version) in our career center is based on several considerations. First, a computer-based career guidance laboratory with six computers and eight software programs is a featured component of the career center. The use of the SDS:CV is highly consistent with this service delivery system. Second, the SDS:CV removes the need for maintaining separate paper components for an SDS interest assessment activity (Assessment Booklets, Occupations Finders, You and Your Career Booklets, and My Vocational Situation). Third, the SDS:CV collects, scores, and files client test data, so a separate paper system of client files is not needed. Fourth, the SDS:CV administers and scores the SDS and MVS more quickly than can be completed by hand with the paper version. Fifth, the SDS:CV quickly produces theory based diagnostic scores and information related to congruence, differentiation, commonness, consistency, and vocational identity, which can assist career advisors in designing career interventions with clients. And, sixth, users prefer the computer version of the SDS (Reardon & Loughhead, 1988).

The Fall 1993 Comprehensive Catalog (Psychological Assessment Resources, Inc., 1993) lists the cost per administration of the paper version of the SDS Form R at \$3.04. This includes \$50 for the Assessment Booklet and Occupations Finder, \$17 for the You and Your Career Booklet, and \$8.95 for the My Vocational Situation for 25 administrations. The cost of the SDS:CV is \$2.86 more per use than the SDS:PV. Despite this cost difference, we prefer the SDS:CV because of the greater efficiencies in administration and data collection; the quality of the client and professional reports generated by the computer; the research and program evaluation capabilities of the Professional Report; and the greater client satisfaction.

Finally, this exploratory study of the use of the SDS:CV as one part of a career center's service delivery and research program has identified new ways to combine theory, research, and service in an applied setting. The SDS:CV provides an efficient procedure for collecting client data, for using that data to examine important theoretical issues in Holland's RIASEC typology, and to applying this information in making more thoughtful decisions about the design of service programs, including staff training. The SDS:CV may be useful in reducing the theory-practice gaps that so bedevil some aspects of career counseling.

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Table 1

Client Characteristics

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Age	Mean	S.D.
	19.8	1.2
Gender	N	Percent
Male	68	38
Female	112	62
Educational Level	N	Percent
Freshman	33	18
Sophomore	77	43
Junior	39	22
Senior	20	11

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Table 2

Percentage Distributions of First-Letter Codes for Career Center Clients and College-Wide Major Field Choices

Category	<u>Clients (N=180)</u>		<u>College-Wide (N=10,439)</u>
	SDS	Aspiration	Majors
R	6	5	5
I	14	20	19
A	14	7	13
S	33	33	34
E	24	33	19
C	9	1	10

TABLE 3  
Pearson-Product Moment Correlations Among All Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1) Realistic	-													
2) Investigative	0.49***	-												
3) Artistic	.15*	0.06	-											
4) Social	-0.12	0.10	0.10	-										
5) Enterprising	0.11	0.13*	0.06	0.26***	-									
6) Conventional	0.08	0.22**	-0.09	0.15*	0.33***	-								
7) Age	0.02	0.01	-0.05	-0.05	0.07	0.19**	-							
8) Congruence	-.15*	-.14*	-0.01	0.12	-0.01	0.11	-0.12	-						
9) Differentiation	-.20**	-.13*	-0.08	0.34***	0.04	-0.09	-0.01	0.19**	-					
10) Commonness	0.04	0.09	-0.05	0.41***	-0.12	-.25***	-0.08	0.21**	0.16*	-				
11) Consistency	-0.12	-0.29***	0.14*	0.04	0.12	-0.11	0.01	0.09	0.16*	0.24***	-			
12) Vocational Identity	0.06	0.07	-0.01	0.19**	0.07	-.00	0.04	0.18**	0.09	0.19**	0.01	-		
13) Occup. Information	0.09	.14*	-0.05	0.04	-0.02	-0.12	-0.02	0.05	-.00	0.06	-0.05	0.27***	-	
14) Barriers	-.00	0.10	0.10	.02	.15*	-.00	-.00	-0.01	-0.02	-0.02	0.06	.20**	-0.04	-

\* p ≤ .05  
 \*\* p ≤ .01  
 \*\*\* p ≤ .001

Table 4

Means and Standard Deviations for My Vocational Situation

Scale	Mean	SD
Vocational Identity	5.26	3.15
Occupational Information	.79	.97
Barriers	2.90	1.13