# A SHORT FORM MEASURE OF CAREER ORIENTATIONS:
# A PSYCHOMETRIC EVALUATION

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October, 1992

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## ABSTRACT

This paper reports on the results of two studies involving the development and construct validation of a short form of the Career Orientations Inventory. The short form was factor analytically derived and tested in two separate field studies of IS employees. The short form measures nine career orientations: technical, managerial, autonomy, job security, geographic security, service, pure challenge, lifestyle and entrepreneurship. Extensive evidence of the reliability and validity of the measure was demonstrated in both studies (the development - Study 1- and the validation - Study 2). A nomological network of the relationships between career orientations and various individual difference and satistfaction measures was tested and provided additional evidence of the construct validity of the short form measure.

Keywords: IS management, IS career, Career orientation,

# A SHORT FORM MEASURE OF CAREER ORIENTATIONS: A PSYCHOMETRIC EVALUATION

Researchers and managers in the information systems (IS) field have been increasingly interested in issues related to the recruitment, development, and retention of IS personnel (Baroudi, 1985; Bartol & Martin, 1982; Couger, 1988; Ginzberg & Baroudi, 1988; Keen, 1991). This interest reflects the recognition that information systems employees represent a valuable resource critical to the successful implementation and use of sophisticated information technology in organizations (Amoroso, Thompson, & Cheney, 1989; Baroudi, 1985; Keen, 1991; Niederman, Brancheau & Wetherbe, 1991; Watson, 1990). Outlining the critical issues facing the IS profession in the 1990's, Niederman, et al.(1991) identified human resource management (HRM) as one of the areas requiring immediate attention. HRM was ranked as the fourth most important issue facing the IS field. The importance of effective human resource management is also reflected in the fact that personnel expenses consumed an average of 43 percent of the IS budget in 1988, and IS executives felt that no reductions in the magnitude of this number were likely in the near future (Lockwood & Sobol, 1989).

An important facet of IS human resource planning is IS personnel career management. This type of HRM planning assures the organization that it has the right mix of people, with the right mix of skills, at the appropriate organizational levels. Much of the research on IS career management has focused on defining career paths for IS employees. Career paths are examples of organizationally defined careers, and as such, are referred to as external careers. Baroudi and Ginzberg (1988), after an extensive review, concluded that little attention has been devoted to examining other important aspects of careers, such as, the "internal careers" of IS personnel. Internal careers focus on the individual's self-concept and

career values. An important element of an employee's internal career is the career anchor (Schein, 1971; 1975) or career orientation (DeLong, 1982; Ginzberg & Baroudi, 1992; Igbaria, et al., 1991). A career anchor refers to an individual's self-perceived needs, values, and talents that gives shape to his or her career decisions. It can be thought of as a central component of the self-concept that an employee is unwilling to relinquish, even when forced to make a difficult choice. The career anchor or career orientation is significant because it influences career choices, affects decisions to move from one job to another, shapes what one is looking for in life, determines an individual's views of the future, influences the selection of specific occupations and work settings, and affects the employee's reactions to his or her work experiences (Schein, 1975). Measuring an individual's career anchors makes explicit the career orientations of that individual employee. This information may allow the organization to restructure jobs to respond to individuals needs. It also serves as a useful information base for individuals contemplating career change and for organizations seeking to help individuals plan their careers (DeLong, 1982; Igbaria, et al., 1991).

Ginzberg and Baroudi (1988) noted that building a dual career ladder was the most commonly recommended IS HRM solution in both the IS practitioner and research literatures. The dual career ladder allows an individual's career to progress in either technical or managerial directions. It recognizes that IS employees may have differing career needs and attempts to provides incentives that are consistent with employees' underlying career values. The dual ladder, however, may not deal effectively with the various career options desired by IS employees as it assumes two options will be sufficient. Baroudi (1988) provides evidence that such a division is ineffective. More recent research also points out the inadequacy of this technical/managerial division (Crook, Crepeau & McMurtrey, 1991; Ginzberg & Baroudi, 1992; Igbaria, et al., 1991).

Schein (1987) who orginated work into individual career orientations has identified eight career anchors that guide the career decisions of employees:

- <u>Security,</u> deals with both geographical security (e.g., individuals who link themselves to a particular geographic area - putting down roots in the community, investing in a house and stable life-style), and organizational/job security.

- <u>Autonomy</u>. According to Schein, autonomy oriented individuals seek work situations in which they will be maximally free of organizational constraints and restrictions to pursue their professional competence.

- <u>Managerial competence</u>. Managerially oriented employees, who wish to supervise, influence, and lead others, seek promotions to general manager positions as a vehicle to achieve feelings of success.

- <u>Technical competence</u>. Employees with strong technical orientations focus primarily on the intrinsic, technical content of the work, and the functional area represented by the work.

- <u>Creativity and entrepreneurship</u>. These individuals need to create something on their own by developing a new product or service, by building a new business enterprise through financial manipulation, or by starting and building a business of their own.

- <u>Sense of service</u>. Employees who have a service orientation are dedicated to serve other people and to make the world a better place in which to live and work.

- <u>Pure challenge</u> assesses the preference for overcoming impossible obstacles, solving unsolvable problems, and winning against extremely capable opponents.

- <u>Life-style integration</u>. Individuals with a high score desire to develop a life-style that integrates family and career concerns, with concerns for self-development.

Several IS researchers (e.g. Crook, et al., 1991; Ginzberg & Baroudi, 1991; Igbaria, et al., 1991) have used variations of Schein's career orientation measure. While the three measures have significant overlap they also have significant differences which makes direct comparison of their results difficult. This situation calls for a standard measure of career orientations with well established psychometric properties, and of a reasonable length, so that its administration is not too time-consuming. A standard short form measure has three advantages. First, a standard measure allows comparison of scores across functions, organizations, and industries. Second, a standard measure allows both practitioners and researchers to utilize a readily available instrument, avoiding the time-consuming process of developing a new measure each time an assessment of internal career (career orientation) is required. Finally, a short form instrument insures that the length of the instrument will not be a barrier in its use.

This study examines in depth a proposed short form of a recent Career Orientations Inventory developed by Schein (1985). The primary purpose of this study is to develop and psychometrically evaluate a short form career orientation measure where the validity and reliability of the instrument are established.

The research reported in this paper was based on two studies. The first study (Study 1) involved the generation of the short form and consisted of administering Schein's complete Career Orientation Inventory to a sample of IS employees. An analysis of the responses was made to determine if the theoretical dimensionality, proposed by Schein, and designed into the measure was supported by factor analysis. In addition the reliability of each factor was evaluated. Two or three items from each of the factors were selected, based on their psychometic

properties, for use in our short form measure. The short form was then re-analyzed using a holdout sample to determine the stability and reliabiity of each dimension. The purpose of the second study (Study 2) was to reconfirm the reliability and dimensionality of the short form derived in Study 1 using an entirely different sample of subjects, and more importantly, to identify and test a nomological network of relationships. The extent to which the nomological net is confirmed will provide evidence, beyond the factor analysis, of the short form's construct validity (Cronbach and Meehl, 1981; Schwab, 1980).

**METHOD**

**STUDY 1**

Sample and procedure

Study 1 consisted of two parts. In the first step, we examined the underlying dimensionality of the Career Orientation Inventory instrument and each dimension's reliability. Based on the results of the first step, an initial pool of items for use with the short form career orientations measure was generated. The short form was then tested with a different sample and the underlying factor structure and reliabilities were again examined.

In early 1990, a sample copy of an IS Career Attitude Survey was mailed to presidents of 20 Mid Atlantic chapters of the Data Processing Management Association (DPMA). Seven chapters agreed to participate in this research project. Each chapter provided the authors with membership mailing lists and a copy of the survey was mailed to each member. The survey was accompanied by a cover letter from the president of the chapter strongly encouraging participation. A postage-paid envelope was enclosed with each survey for the return of the completed survey. Participation was strictly voluntary and members were assured that individual responses to the survey would be treated confidentially. Surveys

were mailed to a total of 1,152 DPMA members with thirty one returned because of incorrect addresses. Four hundred and fourteen completed surveys were received by the researchers for a 36.9% response rate. The elimination of surveys with missing data resulted in a final sample of 396 IS employees representing a broad cross-section of DPMA chapters in the Mid Atlantic Region.

Of the 396 IS employees, 300 (75.8 percent) were men and 96 (24.2 percent) were women. The average age of the IS participants was 41.6 years (Median = 42.00, S.D. = 8.9) and their age ranged from 22 to 66. Their average length of service in their current organization (i.e., organizational tenure) was 9.75 years (S.D. = 8.7). The length of time spent in their current job (i.e., job tenure) was 4.56 years (S.D. = 4.53), and average number of years in the IS field was 15.68 years (S.D. = 8.67). A summary of chapter representation and the demographic characteristics of the sample are presented in Tables 1 and 2.

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Insert Tables 1 and 2 about here

To develop and test the short form, the sample was split into two subgroups (S1 and S2). The division was accomplished by putting all responses from questionnaires with even identification numbers into one sample (S1), and all the responses with odd identification numbers into a second sample (S2). We should emphasize that there was no a priori reason to expect any systematic differences between the two samples. The resulting sample size for each of the subgroups (S1 and S2) was 198. The dimensionality of the Career Orientation Inventory was tested using the first sample (S1) of responses, and revisions to shorten the instrument were based on this initial factor analysis. The new short form was tested using the second sample (S2).

Analysis and Results

Career orientation was assessed with the 41-item Career Orientations

Inventory (Schein, 1985) (See Table 3). Respondents indicated the importance of each of 21 career items (e.g., "to build my career around some specific functional or technical area") on a five-point scale from 1 (of no importance) to 5 (centrally important). Additionally, individuals indicated the extent to which they thought that each of 20 career preference items (e.g., "During my career I have been mainly concerned with my own sense of freedom and autonomy") was true of them, using a response scale from 1 (not at all true) to 5 (completely true).

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Insert Table 3 about here

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Since the factor structure of the Career Orientations Inventory has not been firmly established, a factor analysis (with varimax rotation) was conducted. The initial factor analysis using sample S1 produced 11 factors with eigenvalues greater than or equal to 1.0, that accounted for 69.9 percent of the total variance. All 11 factors were examined against the 9 career anchors specified by Schein (1985). The criteria used to identify and interpret factors were that a given item should load .50 or higher on a specific factor and have a loading no higher than .35 on other factors. The homogeneity of the items within each factor was established further by computing their internal consistency reliability scores (coefficient alpha) by applying the formula recommended by Cronbach (1951). This formula is widely used as a measure of internal consistency, and represents a conservative estimate of the reliability of a scale (Armor, 1974).

Examination of the initial factor results using sample S1 revealed that eight factors were identical to or corresponded very closely to eight of Schein's career anchors. Only the challenge anchor was problematic. Table 4 shows the results of factor analysis using Sample S1.

- Factor one included four of the five items that Schein considered relevant to creativity and entrepreneurship. These individuals need to create

something on their own by developing a new product or service, by building a new business enterprise through financial manipulation, or by starting and building a business of their own. The internal consistency reliability of the four-item scale was .89.

- A second factor consisted of five items identified by Schein as reflecting managerial competence. Managerially oriented employees, who wish to supervise, influence, and lead others, seek promotions to general manager positions as a vehicle to achieve feelings of success. The internal consistency reliability of the five-item scale was .81.

- A third factor consisted of the five items developed by Schein to measure technical competence. The five items tapped the technical features of the job situation, focusing on a primary interest in the intrinsic, technical content of the work, and the functional area represented by the work. The five-item scale had an internal consistency reliability of .79.

- A fourth factor consisted of the five items developed by Schein to measure autonomy. According to Schein, autonomy oriented individuals seek work situations in which they will be maximally free of organizational constraints and restrictions to pursue their professional competence. The internal consistency reliability (coefficient alpha) of the five-item scale was .74.

- A fifth factor included five items identified by Schein as reflecting a dedication to a cause or sense of service. Employees scoring high on this factor are dedicated to serve other people and to make the world a better place in which to live and work. The alpha reliability of the

five-item scale was .76.

- · A sixth factor consisted of five items related to life-style integration. Individuals with a high score desire to develop a life-style that integrates family concerns, career concerns, and concerns for self-development. The internal consistency reliability of the five-item scale as used in this study was .67.

- Two factors (Factors number 6 and 8) were related to security. Factor 6 dealing with geographical security (e.g., putting down roots) consisted of 3 items. The second factor (factor number 8), also consisting of three items, reflects the desire for secure ties with the organization or job security. The two factors were analyzed separately. The internal consistency reliability of the three-item scale was .76 for geographical security and .91 for job security.

The final career anchor identified by Schein - challenge- did not load cleanly in our analysis. Challenge separated into two closely related factors (factors number 9 and 10).

- The two factors (one containing three items and the other containing two items) assessed the preference for overcoming impossible obstacles, solving unsolvable problems, and winning against extremely capable opponents. These five items are supposed to represent the pure challenge orientation. The 5-item scale had an internal consistency reliability of .61 in this study.

None of the items of factor number 11 loaded at the .50 level. Since all the items of this factor also loaded on other factors and their loadings here were very

low, we decided to exclude factor number 11 from our analysis.

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Insert Table 4 about here

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In summary, the factor analysis largely confirmed the dimensionality of the Career Orientations Inventory. These results are also largely consistent with the findings of Igbaria, et al. (1991). However, in this study, unlike Igbaria et al (1991) the two security dimensions (geographic and job) were examined separately as Schein's theory would suggest.

The reduction in the number of items to develop the short form was dictated by the desire to develop a shorter, more parsimonious as well as reliable measure of career orientations that would be widely usable in future research. The criterion used in pruning the number of items was to select the three highest loading items from each of the 7 factors with five-item scales (i.e., technical, managerial, autonomy, service, pure challenge, lifestyle and entrepreneurship) and the two highest loading items from each of the two security dimensions (geographic and job) identified here using Sample S1. The three items retained for each of the seven career orientations and the two items for each of the security dimensions resulted in a 25 item short form measure of career orientation. The 25 items used in the short form measure of career orientation are listed in Table 5.

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Insert Table 5 about here

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The validity of the short form measure of career orientations (constructed using sample S1) is now evaluated using sample S2. The first step is to determine the short form's validity by again performing a factor analysis to determine the stability of the nine dimensions. The second step is to recalculate the nine reliabilities with this new sample. A factor analysis (with varimax rotation) of the data obtained from sample S2 produced nine factors, as expected, with eigenvalues $\geq 1.0$ that accounted for 74.8 percent of the total variance. Table 6

shows the results of the factor analysis for the short form using Sample S2. The resulting factor structure was consistent with the nine factors derived using Sample S1 and the nine career orientations of Schein (1985). The coeffient alphas for the nine career orientations were relatively acceptable: technical competence (alpha = 80); managerial (alpha = .78); autonomy (alpha = .69); job security (alpha = .82); geographic security (alpha = .88); service (alpha = .79); pure challenge (alpha = .62); lifestyle (alpha = .68); and entrepreneurship (alpha = .93). The three items within each of the seven career orientations (i.e., technical, managerial, autonomy, service, pure challenge, lifestyle and entrepreneurship) and the two items of the security dimension (geographic and job security) were then summed and averaged to form nine career orientation scales.

Insert Table 6 about here

Discriminant validity is the degree to which items differentiate between constructs, or measure distinct concepts. To assess discriminant validity, the correlations between the measure of the two constructs are examined. The variance shared between measures of two different constructs (the squared correlation) should be lower than the average variance extracted by the items measuring each construct. In other words, measures of constructs should correlate more highly with their own items than with measures of other constructs in the model (Fornell, Tellis & Zinkhan, 1982).

Table 7 presents the matrix of intercorrelations among the nine career orientations. An examination of the correlations between the constructs and the variance shared between them, reveals zero violations (all of the 36 entries were found not to exceed the diagonals of the specific constructs) of the conditions for discriminant validity.

Insert Table 7 about here

We also compared the within factor inter-item correlations with the between factors inter-item correlations. In this case, according to Campbell and Fiske (1959) evidence of discriminant validity is provided if more than half of the correlations among items within a factor are greater than their correlations with items in other factors. Examination of the correlation matrix (not presented) of the 25 items revealed that of the 300 comparisons only 9 did not meet the criteria specified by Campbell and Fiske (1959). Almost all of the 25 items correlated much higher with the items in their group than with items in other groups.

Table 7 also presents the means and standard deviations of the nine career orientations. The means range from 2.66 (on a scale 1 to 5) for technical career orientation to 4.03 for job security. While two career orientations - job security and service - are rated high, two career orientations - technical and entrepreneurship - are rated low. The remaining career orientations fall somewhere in between. These rankings are somewhat consistent with the rankings reported by Ginzberg and Baroudi (1992).

## STUDY 2

Factor analysis and internal consistency reliability estimates represent one source of evidence concerning the construct validity of the short form (Nunnally, 1978; Pedhazur, 1982). Another important basis for determining construct validity and moving toward empirically grounded theory is specification and testing of the probable linkages between the short form measure and measures of other variables, i.e, the nomological net (Cronbach & Meehl, 1981; Schwab, 1980). Therefore, the purpose of Study 2 was to: (1) reconfirm the reliability and factor structure of the short form derived from Study 1 using a different sample of subjects; and (2) to identify and test a network of relationships between selected variables and the short form.

Previous empirical research suggests that gender and age are potential correlates of career orientations. Recent studies (Crook, et al. 1991; Igbaria, et al., 1991) have reported gender differences in career orientations, with women found to be more lifestyle oriented than men, while men tend to be more technically or managerially oriented than women. It is also expected that age may be related to career orientations, with older employees having greater security orientations than younger employees. Thus, in the present study, we examined the relationships between gender, age and career orientations. The following relationships are hypothesized:

H1: Women will have greater lifestyle orientations than men.

H2: Older employees will have greater security orientations (both job and geographic) than younger employees.

H3: Men will have greater managerial orientations than women.

H4: Men will have greater technical orientations than women.

Baroudi (1988) examined the relationship between career orientations and career satisfaction. He found that in five out of the nine correlations between the career anchors and career satisfaction no significant relationships were found. The four significant correlations that did exist were all positive and were between career satisfaction and the managerial, job security, service, and identity orientations. Schein (1987) has suggested that this group of four orientations can be viewed as a variant of an overall security/stability career orientation and thus this finding is not surprising. We hypothesized, therefore, the following relationships:

H5: Scores on the measures of career satisfaction and managerial orientation should positively covary.

H6: Scores on the measures of career satisfaction and job security orientation should positively covary.

H7: Scores on the measures of career satisfaction and service orientation should positively covary.

Finally, Igbaria, et al. (1991) examined the relationships between job outcomes and the fit between career orientations and job type. They examined two career orientations (managerial and technical) and show that individuals who are technically oriented reported higher levels of job satisfaction and career satisfaction. We hypothesize therefore:

H8: Scores on the measures of career satisfaction and technical orientation should covary positively.

H9: Scores on the measures of job satisfaction and technical orientation should covary positively.

The above nine hypotheses comprise our nomological network.

Sample and procedure

The questionnaire designed for Study 2 was administered about a year and half after the collection of Study 1 data. Two companies with extensive operations in the eastern portion of the United States, a utility company (Company 1) and an IS consulting company (Company 2) agreed to participate in Study 2. The IS managers of each company were the entry point and introduced the researchers to IS employees who would be participating in the study. The survey was distributed through company mail to all IS employees. Participation was voluntary and participants were assured that their responses would be confidential. The survey was accompanied by a cover letter from senior management, encouraging participation in this study, as well as a postage-paid envelope addressed to the researchers for the return of the completed survey.

Through the procedure described above, 107 utility company IS employees and 100 consulting company IS employees were asked to participate in the study.

We received completed surveys from 94 employees in the utility firm (a response rate of 87.8 percent) and 67 employees in the consulting firm (a response rate of 67 percent). Of the 161 IS employees, 50 (31.1 percent) were analysts and the remaining 111 (68.9 percent) were programmers (including systems programmers and applications programmers). The utility company had a higher percentage of programmers than the consulting company (77.2 percent vs. 58.2 percent). Table 8 presents a summary of the demographic characteristics of the Study 2 sample.

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Insert Table 8 about here

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## Measures

Career orientations were measured by the 25 item short form measure developed in Study 1. The items used to measure career orientations in Study 2 are listed in Table 5. Individuals were asked to indicate the importance of each of 15 career items (See Table 5, items 1-15)) on a five-point scale ranging from (1) of no importance to (5) centrally important. Additionally, IS employees indicated the extent to which they thought that each of 10 items relating to career preferences (See Table 5, items 16-25) was true of them, using a five-point scale ranging from (1) not at all true to (5) completely true.

Career satisfaction. This was measured by a five-item scale adapted from Greenhaus, Parasuraman and Wormley (1990). Individuals were asked to indicate their agreement or disagreement with each statement on a five point Likert-type scale ranging from (1) strongly disagree to (5) strongly agree. Sample items include: "I am satisfied with the success I have achieved in my career," and "I am satisfied with the progress I have made toward achieving my overall career goals". This measure also included satisfaction with the rate of promotion, the pay level, and with the status that they had achieved during their careers. A factor analysis (with varimax rotation) of these items produced a single factor solution with an eigenvalue of 3.34 which accounted for 66.8 percent of the

explained variance. Responses to the five items were averaged to create a career satisfaction score, the cronbach's alpha for this measure was .88.

Job satisfaction. This was operationalized by a three-item scale developed by Hackman and Oldham (1975) reflecting overall satisfaction with the job. Each item required the respondents to indicate their agreement or disagreement on a five-point scale ranging from (1) strongly disagree to (5) strongly agree. A factor analysis (with varimax rotation) produced a single factor solution with an eigenvalue of 2.28 which accounted for 75.9 percent of the explained variance. Responses to the three items were averaged to produce a total job satisfaction score which has a cronbach's alpha of .84.

A factor analysis which included both the five-item scale of career satisfaction and the three-item scale of job satisfaction was used to examine the dimensionality of the two measures. The analysis produced a two factor solution. The five items that loaded highly on one factor were identical to the items measuring career satisfaction. The remaining three items that loaded highly on the other factor were identical to the three items measuring job satisfaction. This provides evidence that IS employees were able to distinguish between the extent they are satisfied with their job and their career.

Analysis and results

The first step in the analysis of Study 2 data was to determine the validity of the abbreviated measure of career orientations by conducting a factor analysis, and to evaluate the measure's internal reliability. The factor analysis of the short form career orientations scale produced nine factors, as expected, which accounted for 75.4 percent of the explained variance. The resulting factor structure was consistent with the nine factors derived in Study 1. Table 9 shows the results of the factor analysis. The alpha coefficients of reliability for the nine career orientations were acceptable with the exception of pure challenge. The alpha coefficients were: .76, .83, .73, .82, .90, .81, .62, .72 and .93, for

technical, managerial, autonomy, security-job, security-geographic, service, pure challenge, lifestyle and entrepreneurship, respectively. The three items within each of seven career orientations and the two items within the remaining two security orientations were averaged to form the nine subscales of career orientations.

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Insert Table 9 about here

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Discriminant validity was also examined using the data from Study 2. As described in Study 1, the variance shared between measures of two different constructs (the squared correlation) should be lower than the average variance extracted by the items measuring each construct. In other words, measures of constructs should correlate more highly with their own items than with measures of other constructs in the model (Fornell, Tellis & Zinkhan, 1982). An examination of the correlations between the nine career orientations and the variance shared between them reveals zero violations (all of the 36 entries were found not to exceed the diagonals of the specific constructs) of the conditions for discriminant validity (See Table 10).

Table 10 presents the means and standard deviations of the nine career orientations. The means range from 2.45 (on a scale of 1 to 5) for Technical career orientation to 4.08 for job security. Three career orientations - job security, life style and service - are rated high, and two career orientations - technical and entrepreneurship - are rated low. The remaining career orientations fall somewhere in the middle. These are again consistent with Ginzberg and Baroudi's (1992) findings and the results of Study 1.

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Insert Table 10 about here

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The final step in establishing the construct validity of the short form was to

test the hypothesized relationships in our nomological network. Table 11 presents descriptive statistics and the pattern of correlations between gender, age, job satisfaction, and career satisfaction.

Insert Table 11 about here

Table 11 shows that of our nine hypothesized relationships, six were found to be statistically significant. For example, women were found to have greater lifestyle orientations than men (confirming H2) while men were found to be more managerially oriented (confirming H3). However, H4 that men would have greater technical orientations was not supported. As predicted by H1, older employees were found to have greater security orientations.

While the scores on the career satisfaction measure did covary with scores on the managerial orientation (confirming H5) no significant relationships were found between career satisfaction and the job security and service orientations (H6 and H7). As predicted by hypotheses 8 and 9 both job and career satisfaction covaried positively with scores on the technical anchor.

In general, the nomological network was confirmed (6 of 9 hypotheses supported) by the data. While this does provide additional evidence for the construct validation of our measure, the reader is cautioned that the relationships are quite small (the largest correlation was .21) and probably have little practical significance. Quite clearly, the nomological net needs to be cast much more broadly, including many more variables -- especially those variables which have practical implications for both the organization and the individual.

## DISCUSSION AND CONCLUSIONS

The research reported in this paper provides researchers and practioners interested in IS career issues with a streamlined, reliable, and valid measure of

Schein's career anchors. The instrument encompasses technical, managerial, autonomy, security (both, job and geographic), service, pure challenge, lifestyle and entrepreneurship orientations. Using the measure should provide both researchers and practioners with a clearer portrait of the internal career needs of IS personnel. In this section, a summary of our study is provided. Suggestions for additional research, and the practical uses of the career orientations instrument, are discussed.

This 25-item measure of career orientations was rigorously developed and tested in two separate field studies of IS employees. The dimensionality of the instrument as proposed by Schein, was confirmed in Study 1 (in both sample 1 and sample 2). The dimensionality was tested again and confirmed, by factor analysis, in Study 2 using a new population of IS personnel. This process provides extensive evidence of the stability of the measure's factor structure, and provides strong evidence of the measure's construct validity. The internal consistency reliability and the discriminant validity of the short form were also tested and confirmed in Study 1 and Study 2. Furthermore, additional evidence of the construct validity of the instrument was partially confirmed through analysis of a nomological network. The present study recognizes the importance of methodological rigor in the instrument development and validation process, and has attempted to develop an instrument which will be generally accessible and useful to those interested in investigating the career anchors of IS personnel.

Many studies (Igbaria et al, 1991; Ginzberg and Baroudi, 1992) have demonstrated that IT professionals are driven by a diverse set of career values and goals. Since rewards must be valued by the employee in order for them to have incentive value (Porter & Lawler, 1968; Vroom, 1964), and since employees holding different career orientations value different types of activities and accomplishments (Schein, 1987), somewhat different rewards may be necessary to motivate different types of employees. Rewarding a life-style oriented employee with a better job that requires a geographical transfer, a technically

oriented employee with a new managerial assignment, or an autonomy oriented employee with a lucrative but constraining promotion may well detract from motivation and performance. At the very least, organizations need to understand and consider their employees' career orientations in the development of their reward systems. Employees should also discuss their needs, values, and career orientations with their supervisors on an ongoing basis, so that realistic feedback is provided, challenging assignments are given, and meaningful career goals are established. This places supervisors in the role of "career developer" for their subordinates (Hall, 1976), a role for which they should be trained and rewarded. It is important that supervisors learn how to organize the career opportunities of their subordinates such that they match or are compatible with diverse career orientations.

Further research is needed to determine the consequences of a mismatch between career orientation and job setting. First, the effects of a mismatch on job performance need to be examined, as it is possible that incompatibility in job and career orientations results in deteriorated job performance over time. Second, as different people employed by the same department and performing similar tasks may have very different career orientations, empirical research needs to examine the kinds of job experiences that are most compatible with a wider array of career orientations. Third, the stability of MIS employees' career orientations should be empirically examined. For example, the career stage model of Dalton, Thompson, and Price (1977) may be a useful framework for viewing the career development of MIS employees over time (Ginzberg & Baroudi, 1988). It would be useful to determine whether and how career orientations change as people pass through the four stages of Dalton et al.'s (1977) model.

To conclude, further work is needed to examine the relationships between career orientations and important job outcomes -- including job satisfaction, organizational commitment, turnover, and productivity. Recruiting, managing, and

retaining IS personnel is a challenging and difficult job. Understanding the career orientations of IS personnel and their effects on job outcomes is one more step in making this process manageable.

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**Table 1.  Membership Represented in Study 1**

| Chapter Name | N (members) | Percentage |
|---|---|---|
| Baltimore | 151 | 38.1 % |
| Central Pennsylvania | 57 | 14.4 % |
| Cumberland Valley | 16 | 4.1 % |
| Lehigh Valley | 33 | 8.3 % |
| Montgomery County | 81 | 20.5 % |
| Pocono Northeast | 19 | 4.8 % |
| Schuykill Valley | 39 | 9.8 % |
| Total | 396 | 100.0 % |

**Table 2.  Demographic Characteristics of Study 1 (N = 396)**

Gender:
    Male (1)[+]                                 75.8 %
    Female (2)                               24.2 %

Job Title:
    Programmer (1)                     12.6 %
    Analyst (2)                          8.5 %
    Project Leader (3)                7.0 %
    MIS Manager (4)                55.1 %
    Other MIS (5)                    9.9 %
    Consultant (6)                    6.9 %

Organizational Level:
    Professional Staff or Consultant (1)     37.3%
    First Level Supervisor (2)         10.8%
    Middle Management (3)            38.8%
    Strategic Management (4)          13.1%

Education:
    Some High School or Less (1)       0.0%
    High School (2)                   4.3%
    Some College (3)               27.3%
    Bachelor's Degree (4)            23.0%
    Some Graduate School (5)        17.1%
    Graduate Degree (6)             28.3%

Annual Salary Categories:
    Below $25,000 (1)              4.9%
    25,000 - 34,999 (2)           10.7%
    35,000 - 44,999 (3)           21.0%
    45,000 - 54,999 (4)           26.2%
    55,000 - 64,999 (5)           15.6%
    65,000 or above (6)           21.6%

Size of the Computer Department (No. of Employees):
    1 - 5 (1)                          14.5%
    6 - 10 (2)                       9.6%
    11 - 20 (3)                    12.2%
    21 - 40 (4)                    12.7%
    Above 40 (5)                 51.0%

[+]    The numbers in parentheses represent the coding for the value of the specific variable.

## Table 3. Career Orientations

| No. | Description |
|---|---|
| 1. | To build my career around some specific functional or technical area is |
| 2. | The process of supervising, influencing, leading, and controlling people at all levels is |
| 3. | The chance to do things my own way and not to be constrained by the rules of an organization is |
| 4. | An employer who will provide security through guaranteed work, benefits, a good retirement program, etc., is |
| 5. | The use of my interpersonal and helping skills in the service of others is |
| 6. | Working on problems that are almost insoluble is |
| 7. | Developing a life cycle that balances my career and family needs is |
| 8. | To be able to create or build something that is entirely my own product or idea is |
| 9. | Remaining in my specialized area as opposed to being promoted out of my area of expertise is |
| 10. | To be in charge of a whole organization is |
| 11. | A career that is free from organization restrictions is |
| 12. | An organization that will give me long-run stability is |
| 13. | Using my skills to make the world a better place to live and work in is |
| 14. | Competing with and winning out over others is |
| 15. | Developing a career that permits me to continue to pursue my own life style is |
| 16. | Building a new business enterprise is |
| 17. | Remaining in my area of expertise throughout my career is |
| 18. | To rise to a high position in general management is |
| 19. | A career that permits a maximum amount of freedom and autonomy to choose my own work, hours, etc., is |
| 20. | Remaining in one geographical area rather than moving because of a promotion is |
| 21. | Being able to use my skills and talents in the service of an important cause is |

22. The only real challenge in my career has been confronting and solving tough problems, no matter what area they were in

23. I have always tried to give equal weight to my family and to my career

24. I am always on the lookout for ideas that would permit me to start and build my own enterprise

25. I will accept a management position only if it is in my area of expertise

26. I would like to reach a level of responsibility in an organization whereby I would supervise others in various business functions and my role would primarily be to integrate their efforts

27. During my career I have been mainly concerned with my own sense of freedom and autonomy

28. It is more important for me to remain in my present geographical location than to receive a promotion or new job assignment in another location

29. I have always sought a career in which I could be of service to others

30. Competition and winning are the most important and exciting parts of my career

31. A career is worthwhile only if it enables me to lead my life in my own way

32. Entrepreneurial activities are the central part of my career

33. I would rather leave my company than be promoted out of my area of expertise

34. I will feel successful in my career only if I become a high level general manager in some organization

35. I do not want to be constrained by either an organization or the business world

36. I prefer to work for an organization that provides tenure (lifetime employment)

37. I want a career in which I can be committed and devoted to an important cause

38. I feel successful only if I am constantly challenged by a tough problem or a competitive situation

39. Choosing and maintaining a certain life style is more important than is career success

40. I have always wanted to start and build up a business of my own

41. I prefer to work for an organization that will permit me to remain in one geographical area

**Table 4. Factor Loadings for the Career Orientations***

| No.** | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 | #10 | #11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | .57 | | | | | | | | .47 |
| 9 | | | **.81** | | | | | | | | |
| 17 | | | **.78** | | | | | | | | |
| 25 | | | **.77** | | | | | | | | |
| 33 | | | .75 | | | | | | | | |
| 2 | | **.75** | | | | | | | | | |
| 10 | | **.76** | | | | | | | | | |
| 18 | | **.80** | | | | | | | | | |
| 26 | | .67 | | | | | | | | | |
| 34 | | .72 | | | | | | | | | |
| 3 | | | | **.72** | | | | | | | |
| 11 | | | | **.71** | | | | | | | |
| 19 | | | | .61 | | | | | | | |
| 27 | | | | .66 | | | | | | | |
| 35 | | | | **.71** | | | | | | | |
| 4 | | | | | | | | **.84** | | | |
| 12 | | | | | | | | **.83** | | | |
| 36 | | | | | | | | .68 | | | |
| 20 | | | | | | **.91** | | | | | |
| 28 | | | | | | **.91** | | | | | |
| 41 | | | | | | .90 | | | | | |
| 5 | | | | | .52 | | | | | | .48 |
| 13 | | | | | **.82** | | | | | | |
| 21 | | | | | **.79** | | | | | | |
| 29 | | | | | .76 | | | | | | |
| 37 | | | | | **.78** | | | | | | |
| 14 | | | | | | | | | | .78 | |
| 30 | | | | | | | | | | .79 | |
| 6 | | | | | | | | | **.61** | | .47 |
| 22 | | | | | | | | | **.79** | | |
| 38 | | | | | | | | | **.74** | | |
| 7 | | | | | | | .65 | | | | |
| 15 | | | | | | | **.66** | | | | |
| 23 | | | | | | | .54 | | | | -.43 |
| 31 | | | | | | | **.68** | | | | |
| 39 | | | | | | | **.69** | | | | |
| 8 | | | | .40 | | | | | .35 | | |
| 16 | **.87** | | | | | | | | | | |
| 24 | **.86** | | | | | | | | | | |
| 32 | .77 | | | | | | | | | | |
| 40 | **.85** | | | | | | | | | | |
| Eigenvalue | 6.72 | 5.07 | 3.10 | 2.67 | 2.31 | 1.82 | 1.74 | 1.53 | 1.36 | 1.27 | 1.07 |
| Cummulative % of explained variance | 16.4 | 28.8 | 36.3 | 42.8 | 48.5 | 52.9 | 57.1 | 60.9 | 64.2 | 67.3 | 69.9 |

* Note: Factor loadings less than .30 are not shown.

** The # corresponds to the career orientation number in Table 3.

| | | | | |
|---|---|---|---|---|
| Factor # 1 | Entrepreneurship | | Factor # 6 | Security-Geographic |
| Factor # 2 | Managerial | | Factor # 7 | Lifestyle |
| Factor # 3 | Technical | | Factor # 8 | Security-Job tenure |
| Factor # 4 | Autonomy | | Factors # 9,10 and 11 | Pure challenge |
| Factor # 5 | Service | | | |

**Table 5. Final Set of Items Measuring Career Orientations**

<u>No.</u>             <u>Description</u>

1. The process of supervising, influencing, leading, and controlling people at all levels is

2. The chance to do things my own way and not to be constrained by the rules of an organization is

3. An employer who will provide security through guaranteed work, benefits, a good retirement program, etc., is

4. Working on problems that are almost insoluble is

5. Remaining in my specialized area as opposed to being promoted out of my area of expertise is

6. To be in charge of a whole organization is

7. A career that is free from organization restrictions is

8. An organization that will give me long-run stability is

9. Using my skills to make the world a better place to live and work in is

10. Developing a career that permits me to continue to pursue my own life style is

11. Building a new business enterprise is

12. Remaining in my area of expertise throughout my career is

13. To rise to a high position in general management is

14. Remaining in one geographical area rather than moving because of a promotion is

15. Being able to use my skills and talents in the service of an important cause is

16. The only real challenge in my career has been confronting and solving tough problems, no matter what area they were in

17. I am always on the lookout for ideas that would permit me to start and build my own enterprise

18. It is more important for me to remain in my present geographical location than to receive a promotion or new job assignment in another location

19. A career is worthwhile only if it enables me to lead my life in my own way

20. I will accept a management position only if it is in my area of expertise

21. I do not want to be constrained by either an organization or the business world

22. I want a career in which I can be committed and devoted to an important cause

23. I feel successful only if I am constantly challenged by a tough problem or a competitive situation

24. Choosing and maintaining a certain life style is more important than is career success

25. I have always wanted to start and build up a business of my own

**Table 6. Factor Loadings for the Short Form of Career Orientations Using Study 1[*]**

| No.[**] | Pr.[***] | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 |
|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 9 | | .86 | | | | | | | |
| 12 | 17 | | .84 | | | | | | | |
| 20 | 25 | | .78 | | | | | | | |
| | | | | | | | | | | |
| 1 | 2 | | | | .82 | | | | | |
| 6 | 10 | | | | .78 | | | | | |
| 13 | 18 | | | | .82 | | | | | |
| | | | | | | | | | | |
| 2 | 3 | | | | | | | .65 | | |
| 7 | 11 | .38 | | | | | | .71 | | |
| 21 | 35 | | | | | .34 | | .71 | | |
| | | | | | | | | | | |
| 3 | 4 | | | | | | | | .87 | |
| 8 | 12 | | | | | | | | .87 | |
| | | | | | | | | | | |
| 14 | 20 | | | | | | .93 | | | |
| 18 | 28 | | | | | | .87 | | | |
| | | | | | | | | | | |
| 9 | 13 | | | .80 | | | | | | |
| 15 | 21 | | | .85 | | | | | | |
| 22 | 37 | | | .81 | | | | .30 | | |
| | | | | | | | | | | |
| 4 | 6 | .32 | | | | | | | | .64 |
| 16 | 22 | | | | | | | .30 | | .74 |
| 23 | 38 | | | | | | | | | .78 |
| | | | | | | | | | | |
| 10 | 15 | | | | | .74 | | | | |
| 19 | 31 | | | | | .77 | | | | |
| 24 | 39 | | | | | .73 | | | | |
| | | | | | | | | | | |
| 11 | 16 | .86 | | | | | | | | |
| 17 | 24 | .86 | | | | | | | | |
| 25 | 40 | .89 | | | | | | | | |
| | | | | | | | | | | |
| Eigenvalue | | 4.56 | 3.54 | 2.06 | 1.87 | 1.72 | 1.43 | 1.25 | 1.16 | 1.10 |
| Cummulative % of explained variance | | 18.2 | 32.4 | 40.6 | 48.1 | 55.0 | 60.7 | 65.7 | 70.4 | 74.8 |

[*]    Note: Factor loadings less than .30 are not shown.

[**]   The # corresponds to the career orientation number in Table 5.

[***]  Pr. corresponds to the career orientation number in Table 3.

| | | | |
|---|---|---|---|
| Factor # 1 | Entrepreneurship | Factor # 6 | Security-Geographic |
| Factor # 2 | Service | Factor # 7 | Autonomy |
| Factor # 3 | Technical | Factor # 8 | Security-Job tenure |
| Factor # 4 | Managerial | Factor # 9 | Pure challenge |
| Factor # 5 | Lifestyle | | |

# Table 7: Intercorrelations Among the Career Orientations Using Study 1

| | Mean | S.D. | Technical | Managerial | Autonomy | Security Job tenure | Security Geographic | Service | Pure Challenge | Life-style | Entrepre-neurship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Technical | 2.66 | 1.06 | .72 | | | | | | | | |
| Managerial | 3.50 | 1.01 | -.22••• | .69 | | | | | | | |
| Autonomy | 3.11 | .91 | .20•• | .17• | .61 | | | | | | |
| Security-Job tenure | 4.03 | .89 | .27••• | -.18•• | -.03 | .85 | | | | | |
| Security-Geographic | 3.38 | 1.29 | .28••• | -.13• | .13• | .25••• | .89 | | | | |
| Service | 3.76 | .83 | .04 | .07 | .23••• | .10 | -.07 | .71 | | | |
| Pure Challenge | 3.22 | .81 | .05 | .03 | .24••• | -.09 | -.05 | .11 | .56 | | |
| Lifestyle | 3.47 | .82 | .14• | -.04 | .35••• | .12• | .20•• | .27••• | .05 | .60 | |
| Entrepreneurship | 2.68 | 1.38 | .26••• | .30••• | .45••• | -.25••• | -.16• | .12• | .27••• | .20•• | .87 |

Note. The diagonals represent the total amount of variance explained, while the other matrix entities represent the intercorrelations.

•     p ≤ .05

•••     p ≤ .01

•••     p ≤ .001

**Table 8. Demographic Characteristics of the Sample**

|  | Company 1 | Company 2 | Overall |
|---|---|---|---|
| **Gender** | | | |
| Male | 73.4% | 67.2% | 70.8% |
| Female | 26.6% | 32.8% | 29.2% |
| **Education** | | | |
| High school | 4.3% | 1.5% | 3.1% |
| Some college | 12.8% | 7.5% | 10.6% |
| Bachelor's degree | 45.7% | 50.7% | 47.8% |
| Some graduate school | 20.2% | 19.4% | 19.9% |
| Graduate degree | 17.0% | 20.9% | 18.6% |
| **Job Type** | | | |
| Programmers | 77.2% | 58.2% | 68.9% |
| Analysts | 22.8% | 41.8% | 31.1% |
| Age | 36.35 | 31.92 | 34.35 |
| Organizational tenure | 5.30 | 2.27 | 4.03 |
| Number of years in the IS field | 11.95 | 7.96 | 10.15 |

**Table 9. Factor Loadings for the Short Form of Career Orientations Using Study 2[*]**

| No.[**] | #1 | #2 | #3 | #4 | #5 | #6 | #7 | #8 | #9 |
|---|---|---|---|---|---|---|---|---|---|
| 5 | | | | .81 | | | | | |
| 12 | | | | .80 | | | | | |
| 20 | | | | .80 | | | | | |
| | | | | | | | | | |
| 1 | | .80 | | | | | | | |
| 6 | .30 | .83 | | | | | | | |
| 13 | | .85 | | | | | | | |
| | | | | | | | | | |
| 2 | | | | | | .77 | | | |
| 7 | | | | | | .83 | | | |
| 21 | | | | | | .70 | | | |
| | | | | | | | | | |
| 3 | | | | | | | .91 | | |
| 8 | | | | | | | .86 | | |
| | | | | | | | | | |
| 14 | | | | | | | | .88 | |
| 18 | | | | | | | | .88 | |
| | | | | | | | | | |
| 9 | | | .83 | | | | | | |
| 15 | | | .88 | | | | | | |
| 22 | | | .78 | | | | | | |
| | | | | | | | | | |
| 4 | | | | | | | | | .75 |
| 16 | | | | | | | | | .67 |
| 23 | | | | | | | | | .73 |
| | | | | | | | | | |
| 10 | | | | | .64 | | .37 | | |
| 19 | | | | | .89 | | | | |
| 24 | | | | | .78 | | | | |
| | | | | | | | | | |
| 11 | .87 | | | | | | | | |
| 17 | .90 | | | | | | | | |
| 25 | .93 | | | | | | | | |
| | | | | | | | | | |
| Eigenvalue | 4.21 | 3.46 | 2.28 | 2.14 | 1.79 | 1.39 | 1.31 | 1.25 | 1.01 |
| Cummulative % of explained variance | 16.8 | 30.7 | 39.8 | 48.4 | 55.5 | 61.1 | 66.3 | 71.3 | 75.4 |

[*]  Note: Factor loadings less than .30 are not shown.

[**]  The # corresponds to the career orientation number in Table 5.

| | | | |
|---|---|---|---|
| Factor # 1 | Entrepreneurship | Factor # 6 | Autonomy |
| Factor # 2 | Managerial | Factor # 7 | Security-Job tenure |
| Factor # 3 | Service | Factor # 8 | Security-Geographic |
| Factor # 4 | Technical | Factor # 9 | Pure challenge |
| Factor # 5 | Lifestyle | | |

# Table 10: Intercorrelations Among the Career Orientations Using Study 2

| | Mean | S.D. | Technical | Managerial | Autonomy | Security Job tenure | Security Geographic | Service | Pure Challenge | Life-style | Entrepre-neurship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Technical | 2.45 | .87 | .68 | | | | | | | | |
| Managerial | 2.85 | .99 | -.25••• | .74 | | | | | | | |
| Autonomy | 2.96 | .81 | .13• | .14• | .65 | | | | | | |
| Security-Job tenure | 4.08 | .80 | .07 | -.09 | -.04 | .85 | | | | | |
| Security-Geographic | 3.27 | 1.32 | .26••• | -.34••• | .07 | .28••• | .91 | | | | |
| Service | 3.67 | .83 | .02 | -.09 | .24••• | .08 | -.02 | .72 | | | |
| Pure Challenge | 3.13 | .76 | .08 | .07 | .27••• | -.08 | -.06 | .10 | .56 | | |
| Lifestyle | 3.76 | .75 | .05 | -.03 | .23••• | .16• | .28••• | .19••• | .06 | .64 | |
| Entrepreneurship | 2.46 | 1.22 | .22•• | .30••• | .31••• | -.14• | -.19• | .06 | .24••• | .08 | .87 |

Note.    The diagonals represent the total amount of variance explained, while the other matrix entities represent the intercorrelations.

•       $p \leq .05$

•••    $p \leq .01$

•••    $p \leq .001$

# Table 11: Relationships between Personal Variables and Career Variables and Career Orientations

| | Mean | S.D. | Technical | Managerial | Autonomy | Security Job tenure | Security Geographic | Service | Pure Challenge | Life-style | Entrepreneurship |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Personal Variables:** | | | | | | | | | | | |
| Gender (1=M; 2=F) | 1.29 | .45 | -.04 | -.14* | -.03 | -.08 | .03 | .06 | -.11 | .15* | -.19** |
| Age[1] | 1.53 | .10 | .08 | -.22** | .02 | .13* | .21** | -.01 | .09 | -.09 | -.14* |
| **Career Variables:** | | | | | | | | | | | |
| Job Satisfaction | 3.54 | .89 | .16* | .03 | -.23** | .08 | .18** | -.09 | .11 | -.07 | -.19** |
| Career Satisfaction | 3.42 | .90 | .20** | .18** | -.19** | .11 | .25*** | -.03 | .18** | -.30*** | -.21** |

[1] We took the log of age, organizational tenure and IS tenure because they are skewed and therefore are not normally distributed.

*   $p \leq .05$

**   $p \leq .01$

***   $p \leq .001$