
Development of the Life Roles Inventory-Values Scale

Donald Macnab

PsiCan Consulting Ltd.

George Fitzsimmons

University of Alberta

Catherine Casserly

Employment and Immigration Canada

Résumé

Cette article renferme les procédures prises dans l'interprétation de la version canadienne pour l'échelle des valeurs de l'inventaire des rôles de la vie (Canadian Work Importance Study, 1986). L'échelle des valeurs est le résultat qu'on obtenu des groupes de psychologues canadiens et internationaux. Cette article démontre les études faites sur le coefficient de fidélité (alpha, test retest et forme alternative), et la validité (conceptuelle, convergente, discriminante et concurrente) de l'inventaire.

Abstract

This article outlines the procedures involved in the construction of the Canadian version of the Life Roles Inventory—Values Scale (Canadian Work Importance Study, 1986). The Values Scale is the product of the development of Canadian and international teams of psychologists. The Canadian version has been developed in both French and English. The article outlines studies of the reliability (internal consistency, test-retest, and alternate form), and validity (construct, convergent, discriminant, and concurrent) of the inventory.

The Work Importance Study (WIS) is a consortium of autonomous research teams from a number of countries in Europe, North America, and Australia, interested in what values and satisfactions people seek in work and in other life roles, and in the relative importance of work and these other roles. The WIS started in 1979 under the guidance and coordination of Professor Donald Super. The countries represented in the first phase of the research included Australia, Canada, Czechoslovakia, France, the Federal Republic of Germany, Greece, Italy, the Netherlands, Poland, Portugal, Spain, Switzerland, the United Kingdom, the United States, Yugoslavia, and Zimbabwe.

The purpose of the Work Importance Study is to assess the relative importance of the work role in relation to other major life roles and to produce an integrated and cross culturally comparable series of assessment tools to measure the various aspects of the rewards sought from life roles and the importance attached to major life roles. In addition the aim of the project was to "establish conceptually adequate models of work values and work salience, and of the relationship between these two concepts..." (Knasel, Super, & Kidd, 1980).

Each national team undertook a review of their national literature on the topic of work importance and work salience. Two literature reviews were carried out by the Canadian team: "The Work Importance Study in the Canadian Context" by Casserly and Cote (1980); and "Work Importance and Work Values: A Review of the French Canadian Literature" by Bujold (1980). The reviews from the different national teams were integrated by the teams from the United Kingdom and the United States. It was decided on the basis of the national and international literature reviews, that two instruments were essential for the project: (1) an inventory of values sought in work, study, homemaking, and other major life roles; (2) an inventory of role salience, that is, of the relative importance of each of these roles. These were provisionally named the Values Scale and the Salience Inventory. The principal aim of this paper is to delineate the construction and related empirical studies of the Canadian version of the Values Scale.

VALUES SCALE

Since the 1930's, motivational concepts such as values, needs, and preferences have assumed an important role in both the theory and practice of vocational and organizational psychology. Several instruments have been developed from the theories related to these concepts. These instruments range from scales concerned with the measurement of the value an individual places on such factors as personal development and self actualization and which give scores on one broad construct (e.g., Warr, Cook, & Wall, 1979); to measures based on wide ranging scales offering indices of numerous different constructs. For example, the Minnesota Importance Questionnaire (Gay, Weiss, Hendel, Dawis, & Lofquist, 1971) which measures 20 vocationally relevant needs; or the Work Aspect Preference Scale (Pryor, 1981) designed to assess preferences individuals have for 13 aspects of their work; or the Work Values Inventory (Super, 1970) which was constructed to measure 15 values affecting the motivation to work. A number of these instruments, notably the Work Values Inventory, have gained popularity in the United States and are also extensively used in Canada. They have also provided the basis for instrument development in other countries or have been adapted or translated (see Bujold, 1980 for literature on French-Canadian versions of the Work Values Inventory).

The Values Scale was thus developed to have the same wide range of variables as the Work Values Inventory; to cover more values that have emerged as important in recent research in this and other countries; to increase the reliability of the scales; to increase the applicability of the use of the developed scale for cross cultural research; and to develop an instrument that reflected the social changes since the 1970's both in

terms of the values assessed and of normative data. An additional goal of the Canadian team was to develop two parallel forms of the Values Scale; one in French and one in English.

These scales were developed to be used primarily in career counselling although they are being used on an experimental basis in career education courses and for personnel selection. The predominant use for this type of scale in the counselling setting is as an exploratory tool; to stimulate the client's thinking about work related values, providing tangible referents for values, and to facilitate the process of information gathering for career decision making.

Test development. The Values Scale has gone through a number of developmental stages. The initial step included literature searches and literature reviews undertaken by a number of different national WIS groups. In Canada, this work was undertaken by Bujold (1980) and Casserly & Cote (1980). On the basis of these literature reviews, a taxonomy of values was prepared and adopted (Knasel, Super, & Kidd, 1980). These were Ability Utilization, Achievement, Advancement, Aesthetics, Associates and Social Interaction, Authority, Autonomy, Creativity, Economic Rewards, Economic Security, Environment, Intellectual Stimulation, Life Style, Participation in Organization Decision Making, Prestige, Responsibility, Risk Taking and Safety, Spiritual Values, Supervisory Relations, Variety, Cultural Identity, and Physical Activity.

The WIS value scale items were drafted and field tested in a number of countries with large samples. In Canada, two forms of the WIS value scales were constructed. Both forms had 22 values each represented by five items. Form A items were phrased in a general fashion. Form B items were directly related to work. For example, a Life Style Form A item would have the form "be able to live according to my own ideas." The equivalent work related item was "Be free from organization rules, expectations, and obligations." Items were developed in English, translated into French and back translated into English as a check on comparability across languages. The WIS Value Scales asked respondents to indicate how important it is or would be for them on a five point scale. The five point scale consisted of 1 = very important; 2 = important; 3 = neither important or unimportant; 4 = unimportant; 5 = very unimportant.

The WIS Value Scales were administered to a high school and adult sample (Fitzsimmons & Macnab, 1981). On the basis of response analysis, inter-item correlations, scale reliability analysis, and factor analytic analyses of the data the five "best" items for each Value Scale were selected from the four forms of the test.

The results of this pilot study and those of the other national teams were used to revise the WIS Value Scales (Work Importance Study, 1981). Intellectual Stimulation, Participation in Organizational Deci-

sions, Responsibility, and Spiritual Values were either dropped from the instrument or merged with other values. Economic Rewards and Economic Security were merged into one scale called Economics. The Associates scale and the Supervisory Relations scale were used to create two new scales call Social Interaction and Social Relations, Form A of the Environment scale was merged with Life Style, and Form B of the Environment scale with emphasis on work related items were renamed Working Conditions. A new scale was developed called Personal Development as was Physical Prowess. The revised form of the WIS Value scales includes the following 20 values: Ability Utilization, Achievement, Advancement, Aesthetics, Altruism, Authority, Autonomy, Creativity, Economics, Life Style, Personal Development, Physical Activity, Prestige, Risk, Social Interaction, Social Relations, Variety, Working Conditions, Cultural Identity, and Physical Prowess.

The revised version of the WIS Value Scales was renamed the Life Roles Inventory—Values Scale (*Inventaire des Rôles de la Vie-Valeurs*) (Canadian Work Importance Study, 1986). The LRI-VS is in essence a national and international instrument. Each scale is represented by 5 items, three of which are common to all countries and will be used for international comparisons, the other two items are unique to each national project. In addition, it was decided that the instrument should contain both general and work related items. It was also decided that the response format would be changed from a five point scale to a four point scale. The revised response scale was 1=Little or no importance; 2=Of some importance; 3=Important; 4=Very Important.

Description of the LRI-VS. The current version of the Value Scales is a 100 item inventory which consists of 20 separate scales, each of which measures a value or satisfaction that most people seek in life. Each scale is represented by 5 items. The items are preceded by the stem "It is now or will be important for me to..." ("Il est ou il sera important pour moi..."). The first twenty items attached to the 20 values in order are presented in Table 1.

EMPIRICAL STUDIES

The target population to which the LRI-VS is intended to apply include adults, post-secondary students, and high school students. The standardization sample included 6382 adults, 623 post-secondary students, 1481 grade 10 students, and 1634 grade 12 students. Descriptive statistics and percentile tables are available for these subsamples as well as for males and females, and occupational groups by version of the scale (Macnab, Fitzsimmons, & Casserly, 1986). Full details of the standardization sample and related descriptive information can be found in Fitzsimmons, Macnab, and Casserly (1985). The focus of the present section will be on the reliability and validity of the LRI-VS. This

TABLE 1

The first English and (French) items attached to the 20 values of the LRI-VS

ABILITY UTILIZATION	use all my skills and knowledge (d'utiliser toutes mes habilités et toutes mes connaissances)
ACHIEVEMENT	obtain results which show that I have done well (d'obtenir des résultats qui montrent que j'ai bien réussi)
ADVANCEMENT	get ahead (de progresser)
AESTHETICS	make life more beautiful (de rendre la vie plus belle)
ALTRUISM	help people with problems (d'aider les gens qui ont des problèmes)
AUTHORITY	be able to take charge at work when necessary (de diriger le travail au besoin)
AUTONOMY	act on my own (d'agir de ma propre initiative)
CREATIVITY	discover, develop, or design new things (de découvrir, mettre au point, ou inventer de nouvelles choses)
ECONOMICS	be able to afford the things I want (de pouvoir offrir ce que je veux)
LIFE STYLE	live according to my own ideas (de vivre en accord avec mes idées)
PERSONAL DEVELOPMENT	develop as a person (de me développer)
PHYSICAL ACTIVITY	exercise (de prendre de l'exercice)
PRESTIGE	be admired for my knowledge and skills (d'être admiré(e) pour mes connaissances et mes habilités)
RISK	do things that involve some risk (de faire des choses qui comportent un certain risque)
SOCIAL INTERACTION	take part in activities with other people (de prendre part à des activités avec d'autres personnes)
SOCIAL RELATIONS	spend time with people who are special to me (de passer du temps avec les gens que j'aime)
VARIETY	have each day be different in some way (que chaque jour soit d'une certaine façon différent des autres)
WORKING CONDITIONS	have good space and light in which to work (de disposer de suffisamment d'espace et de lumière pour travailler)
CULTURAL IDENTITY	live where people of my religion and race are accepted (de vivre là où les gens de ma religion et de ma race sont acceptés)
PHYSICAL PROWESS	work hard physically (de travailler dur physiquement)

information was collected both during the standardization and in a number of independent studies before and after the standardization.

Reliability

A reliable test produces scores that remain relatively stable when the test is administered repeatedly under similar conditions. The reliability of the LRI-VS is described by several kinds of data.

Internal Consistency of the Value Scales. A frequently used measure of reliability is Cronbach's alpha (Cronbach, 1951), which provides a coefficient based on a single administration of a test. The alpha coefficient was used to estimate the consistency of performance from item to item within each scale of the LRI-VS. The alpha coefficients for the adult and post-secondary student standardization samples range from .64 for Achievement to .84 for Authority for the French version of the scale. The median internal consistency coefficient is 0.80. The English version of the LRI-VS has a median alpha of 0.80 for the Adult sample. The alphas range from .67 for Achievement to .88 for Altruism. The English version of the LRI-VS has a median internal consistency coefficient of 0.83 for the post-secondary student sample. The alphas range from 0.68 for Achievement to 0.91 for Altruism. The alphas for Grade 10 French students range from .60 for Life Style and Cultural Identity to .85 for Physical Prowess. The median alpha coefficient is .72. The Grade 12 French high school students internal consistency coefficients range from .60 for Life Style to .88 for Physical Prowess with a median alpha of .74. The Grade 10 English students alphas range from .66 for Life Style to .89 for Altruism with a median value of .78. The Grade 12 English alphas range from .65 for Cultural Identity to .90 for Altruism with a median value of .79.

Repeated Administrations: Short Interval. Test retest correlations were obtained in the fall of 1984 by administering the LRI twice to the same students in Grades 10 and 12. Retesting was done four to six weeks after the initial testing. The lowest test-retest correlation for the French version of the LRI-VS is for Cultural Identity (0.53), the highest is for Physical Prowess (0.83) with a median correlation of 0.65. The English Version of the LRI-VS has a median test-retest correlation of 0.69, with the highest coefficient for Physical Prowess and Physical Activity (0.82), and the lowest coefficient for Ability Utilization (0.63).

Repeated Administrations: Alternate Forms. Alternate form correlations for the French and English versions of the LRI-VS were obtained by administering first one form and then the other to a sample of Grade 10 and 12 students after a short interval in the fall of 1984. Approximately half the students took the French version first; the remainder took the English version first. The resulting correlations indicate the stability of measurement of equivalent scores based on the parallel forms of the

LRI-VS. The alternate form reliabilities range from .62 (Achievement) to .88 (Physical Prowess) with a median coefficient of .74.

Validity of the Value Scales

A single study does not constitute the validity of any psychological instrument. Cronbach (1971) notes that test validation is an ever extending process of investigation and development. Even a tentative acceptance of the validity of an instrument requires an aggregation of both logical and empirical analyses. The following studies reflect a beginning of the assessment of the validity of the Values Scale and include evidence on both construct and criterion related validity.

Face Validity. Face validity was assured by the agreement of the project directors on the categorization of items written according to the agreed upon definitions of the values. Teams of at least three specialists from different countries wrote the items and all the project directors reviewed the items for face validity (Super & Nevill, 1984).

Construct Validity: Item factor analysis. In order to explore the factor structure of the items of the Value Scales and to provide some evidence of the validity of the a priori values scales, a principal components analysis was applied to the item data for both English and French versions using the data from the Adult samples. The principal components solution for the French version of the LRI-VS resulted in the extraction of 21 components with roots greater than 1.0. The 21 factor solution was rotated using a varimax procedure. The 21 factor solution gave meaningful and interpretable results. The 21 factors accounted for 62% of the total variance. The analysis of the English version resulted in the extraction of 19 components with eigenvalues greater than 1.0. The 19 factor solution was rotated using a varimax procedure. The 19 factors accounted for 60.7% of the total variance (see Fitzsimmons, Macnab & Casserly, 1985 for details of factor loadings, etc.). For both the English and French versions of the LRI-VS the 14 of the 20 a priori Value scales the items having the highest loadings belong to the corresponding Value Scale thus providing evidence of construct validity for these a priori Scales: these are Physical Prowess, Creativity, Altruism, Authority, Economics, Risk, Variety, Working Conditions, Physical Activity, Advancement, Ability Utilization, Aesthetics, Social Interaction, and Cultural Identity. Other factors are made up of items from more than one Value Scale, for example the items from Autonomy and Life Style both load on the same factor. This suggests that some of the Value Scales should be combined.

Construct Validity: Scale Intercorrelations. Further evidence for this can be garnered from the intercorrelations of the Value Scales. These are generally low to moderate. Related to this information are the factor

analytic studies which have been carried out on the LRI-VS. Fitzsimmons, Macnab, and Casserly (1985) report seven factor analyses that suggest five factors:

1. a factor which stresses the importance of Personal Achievement and Development with highest loadings on Ability Utilization, Achievement, Advancement, Prestige, and Personal Development.
2. a factor stressing the importance of a Social Orientation with highest loadings on Altruism, Social Interaction, and Social Relations
3. a factor stresses the importance of Independence with highest loadings on Autonomy, Creativity, Life Style, and Variety
4. a factor stressing the importance of Economic Conditions with highest loadings on Economics, Working Conditions, and Cultural Identity
5. a factor stressing the importance of Physical Activity and Risk with highest loadings on Physical Activity, Physical Prowess and Risk.

Convergent and Discriminant Validity. A number of instruments have been designed to measure work related motivational variables. Macnab (1985) looked at the similarities that existed between the LRI-VS, the Minnesota Importance Questionnaire (Gay, Weiss, Hendel, Dawis, & Lofquist, 1971), which measures 20 vocationally relevant needs; the Work Aspect Preference Scale (Pryor, 1981), which is designed to measure the preferences which individuals have for 13 aspects of their work; and Work Values Inventory (Super, 1970), which was constructed to assess 15 values which affect motivation to work. The "content analysis" carried out by Macnab (1985) suggests that the constructs of values, needs, and preferences are highly similar constructs, dealing with the same area of vocational behaviour, operating at the same level of generality, possessing similarities in the way social and work environments have been used to generate traits, and assessing what individuals think is important about their work. Macnab (1985) examined the relationship between eight traits that had common labels or operational definitions across all four instruments in a multitrait-multimethod design. The eight LRI-VS traits were (1) Authority; (2) Social Relations; (3) Creativity; (4) Autonomy; (5) Economics; (6) Altruism; (7) Work Conditions; (8) Prestige. The Campbell and Fiske (1959) criteria and confirmatory factor analysis demonstrated substantial convergent and discriminant validity. Correlations between each of the eight matched traits were consistently high demonstrating convergent validity. The agreement of each scale was relatively independent of agreement on other dimensions demonstrating discriminant validity as well. Although the scales contain some method variance

attributable to traits, the magnitude of this variance was smaller than the variance attributable to traits, as shown by the results of a series of confirmatory factor analyses. Taken together these results suggest that the eight matched traits of the LRI-VS, the Minnesota Importance Questionnaire, the Work Aspects Preference Scale, and the Work Values Inventory are measuring highly similar constructs. This provides good evidence for the convergent and discriminant validity of the LRI-VS.

The literature on the relationship between values and interests suggests that there should be low to moderate correlations between the two sets of concepts and that although somewhat related, they are distinct and measurable domains of affect (Pryor, 1981). Information supporting the validity of the LRI-VS would therefore be provided if it could be demonstrated that there were low to moderate correlations between the subscales of the LRI-VS and the subscales of a well established measure of interests. Information regarding the discriminant validity of the LRI-VS was deduced from the data collected by Madill (1985) on 1400 occupational therapists. In addition to the LRI-VS Madill administered the Vocational Preference Inventory and the Minnesota Satisfaction Questionnaire. Only 49 of the possible 120 correlations are significant. Of these only 5 could be considered moderate. Altruism and Social Service correlate .21; Advancement and Enterprising correlate .27; Authority and Enterprising correlate .27; Aesthetics and Artistic correlate .21; and Creativity and Artistic correlate .21. Considering the matrix as a whole, there does not appear to be very much overlap between the areas measured by the Vocational Preference Inventory and the LRI-VS. Thus, the two instruments seem to be measuring different aspects of vocational life. The LRI-VS does provide information that is not available from interest inventories like the Vocational Preference Inventory.

Concurrent Validity. Psychological differences among persons aspiring to or having different occupations have long been of major interest to vocational psychologists and occupational sociologists. A number of authors working within the occupational self selection framework (e.g., Holland, 1976) suggest that needs, preferences, and values are formed early in life and persist throughout an individual's work history and that people self-select themselves for occupations which are compatible with these already formed needs, preferences, and values. In this view it is hypothesized that occupational choice is a rational process in which persons try to maximize the occupational rewards that they most highly value (Blau, Gustad, Jessor, Parnes, and Wilcox, 1956). Similarly, Lofquist, and Dawis (1969) hold the view that during the course of their work careers, individuals attempt to maximize the correspondence between their personal needs and the "reinforcer system of the work environment."

A number of studies have looked at the values, needs, and preferences of post-secondary students (Rosenberg, 1957; Simpson & Simpson, 1960; Astin & Nichols, 1964; Davis, 1965; Super, 1970; Pryor, 1981). It is assumed that, as a group, post-secondary students' ideas about work are relatively undisturbed by the specific conditions of the job situation in which they will eventually find themselves. It is therefore easier to observe the influence of abstract factors such as values, needs, preferences, and attitudes as they bear on the decision making process. Overall, the studies indicate differences in values, needs, and preferences held by aspirants to different occupational groups. These studies empirically support the use of current occupational choice as a criterion for assessing the validity of the four instruments being examined; positive validity of the LRI-VS would be demonstrated if it could be shown that the subscales of the instrument discriminate significantly between students taking different courses. Macnab (1985) administered the LRI-VS, the Minnesota Importance Questionnaire, the Work Aspects Preference Scale, and the Work Values Inventory to 105 business students, 129 education students, and 83 rehabilitation medicine students. The sample was divided randomly into two; sixty per cent of the sample was used in the estimation stage of a discriminant analysis to generate the discriminant functions. The classification equation based upon this data was then applied to the remaining sample (cross validation holdout) to test the efficacy of the classification equation. Two significant discriminant functions were generated.

The primary dimension of separation among occupational choice groups represented the difference between rehabilitation medicine students and business students. The secondary dimension of group differences separated education students from rehabilitation medicine students. The discriminant functions derived from the LRI-VS analysis were then used to differentiate the respondents in the holdout (validation) sample on the basis of their Value scores into business, education, and rehabilitation medicine groups. 74% of the total estimation sample were correctly classified. When the function was applied to the raw data of the validation sample the overall correct classification was 67%, a drop of 7%. The classification of the holdout sample is significant ($Q=54.00$, chi square (1 d.f.)=10.83, $p \leq .001$). These results indicate that the LRI-VS demonstrated an acceptable level of concurrent validity in its capacity to correctly classify post-secondary students into different groups.

In addition Macnab (1985) demonstrated that in comparison to the Minnesota Importance Questionnaire, the Work Aspect Preference Scale, and the Work Values Inventory the LRI-VS showed the highest correct classification rate for the cross validation holdout sample.

A number of other studies have looked at group differences. Madill, Brintnell, Stewin, Fitzsimmons, and Macnab (in press) looked at the

differences in Values of two groups of occupational therapists; changers and leavers. Leavers were defined as individuals who were no longer practicing occupational therapy; changers were occupational therapists who undertook administrative or supervisory positions. As expected, the changers valued Advancement, Economics, and Creativity more highly than the leavers. Other studies have also shown differences between groups that provide support for the concurrent validity of the LRI-VS. Madill, Fitzsimmons, Macnab, Stewin, Brintnell, and Casserly (1986) showed differences between professional/managerial women ($n=1400$) and a national sample of occupational therapists ($n=1400$). Macnab and Fitzsimmons (1985) showed differences between unemployed and employed.

DISCUSSION

The information summarized in the present paper represents over 7 years of research which has led to a set of instruments that are truly Canadian and international in nature. The results of these studies suggest:

1. the Value Scales generally manifest moderately high levels of internal consistency, test retest, and alternate form reliability and can be used for both diagnostic and research purposes.
2. the nature of the a priori scales receive some support from the item principal components analyses. However, it is suggested that a few of the scales could be amalgamated to form new scales (e.g., Life Style and Autonomy).
3. this is further supported by the interscale correlations and scale factor analysis data. These suggest that in addition to the a priori scales it would be advantageous to develop a scale based upon the factor analytic studies.
4. the Value Scales manifest a high degree of convergent validity with other instruments purporting to measure similar traits.
5. the Values Scale manifests good discriminant validity characteristics
6. the Values Scale shows acceptable levels of concurrent validity in its ability to discriminate between groups.

In general, the psychometric properties of the Values Scale indicate that the instrument has good structural, reliability, and validity characteristics. On the whole, the research on the LRI-VS suggests that it should be a useful tool for use in the counselling process. The reliability coefficients are comparable to other scales measuring similar constructs. The validity studies generally suggest that the LRI-VS is measuring a

distinct construct similar to needs and preferences but distinct from interests. As such it should add useful additional information to the counselling process. The concurrent validity studies indicate that the scales are useful for discriminating between groups and as such give credence to their use in vocational counselling. In addition, the development process offers both the researcher and counsellor some advantages. The LRI-VS was developed simultaneously in Canada and abroad allowing the researcher access to an instrument that is ideal for cross-cultural studies; it was also developed in Canada in both French and English for use in a Canadian setting; and Canadian norms are available for adults, high school, and post-secondary students.

These studies must be considered a beginning rather than an end; research on the instrument is continuous and includes additional validity studies including predictive validity; development of factor based scales; development of a short form of the instrument; and the collection of specific occupational norms.

References

- Astin, A., & Nichols, R. C. (1964). Life Goals and Vocational Choice. *Journal of Applied Psychology, 48*, 50-58.
- Blau, P. M., Gustad, J. W., Jessor, R., Parnes, H. S., & Wilcox, R. S. (1956). Occupational Choice: a conceptual framework. *Industrial Labor Relations Review, 9*, 531-543.
- Bujold, C. (1980). *Work Importance and Work Values: A Review of French Canadian Literature*. Ottawa: Employment and Immigration Canada.
- Campbell, D. T., & Fiske, D. W. (1959) Convergent and discriminant validation by the multitrait multimethod matrix. *Psychological Bulletin, 56*, 81-105.
- Canadian Work Importance Study. (1986). *The Life Roles Inventory*. Edmonton: PsiCan Consulting Ltd.
- Casserly, M. C., & Cote, L. (1980). *The Work Importance Study in the Canadian Context*. Ottawa: Employment and Immigration Canada.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297-334.
- Cronbach, L. J. (1971). Test Validation In R. L. Thorndike (Ed.), *Educational Measurement* (pp. 443-507). Washington DC: American Council on Education.
- Davis, T. A. (1965). *Undergraduate Career Decisions: Correlates of Occupational Choice*. Chicago: Aldine.
- Fitzsimmons, G. W., & Macnab, D. (1981). *Development of the Canadian Work Importance Survey*. Canadian Work Importance Study Meeting, Ottawa.
- Fitzsimmons, G. W., Macnab, D., & Casserly, M. C. (1985). *Life Roles Inventory Technical Manual*. Edmonton: PsiCan Consulting Ltd.
- Gay, E. G., Weiss, D. J., Hendel, D. D., Dawis, R. V., & Lofquist, L. H. (1971). *Manual for the Minnesota Importance Questionnaire*. Minnesota Studies in Vocational Rehabilitation, XXVIII.
- Holland, J. L. (1976). *Manual for the Vocational Preference Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Knasel, E. G., Super, D. E., & Kidd, J. M. (1980). *Work salience and work values: their dimensions, assessment, and significance*. Technical report, National Institute for Career Education and Counselling, England.
- Lofquist, L. H., & Dawis, R. V. (1969). *Adjustment to Work*. New York: Appleton Century Crofts.

- Macnab, D. (1985). *Work related needs, preferences, and values. An empirical integration*. Unpublished doctoral dissertation: the University of Alberta, Edmonton.
- Macnab, D., & Fitzsimmons, G. W. (1985). *Work values and role salience of job seekers and the employed*. Ottawa: Employment and Immigration Canada.
- Macnab, D., Fitzsimmons, G. W., & Casserly, C. (1986). *Administrator's Manual For the Life Roles Inventory*. Edmonton: PsiCan Consulting Ltd.
- Madill, H. M. (1985). *Work related issues in occupational therapy*. Unpublished doctoral dissertation, the University of Alberta, Edmonton.
- Madill, H. M., Brintnell, E. S. G., Stewin, L. L., Fitzsimmons, G. W., & Macnab, D. (in press). Career patterns in two groups of Alberta occupational therapists. *Canadian Journal of Occupational Therapy*.
- Madill, H. M., Fitzsimmons, G. W., Macnab, D., Stewin, L. L., Brintnell, E. S. G., & Casserly, M. C. (1986). Work related issues in occupational therapy: your values do count. *Canadian Journal of Occupational Therapy*, 53, 13-19.
- Pryor, R. G. L. (1981). Tracing the development of the Work Aspect Preference Scale. *Australian Psychologist*, 16, 241-257.
- Rosenberg, M. (1957). *Occupation and Values*. Illinois: Free Press.
- Simpson, R. L., & Simpson, I. H. (1960). Values, personal influence, and occupational choice. *Social Forces*, 39, 116-125.
- Super, D. E. (1970). *Work Values Inventory*. Boston: Houghton Mifflin.
- Super, D. E., & Nevill, D. D. (1984). *The Values Scale and the Salience Inventory of the Work Importance Study*. Gainesville: University of Florida.
- Warr, P. B., Cook, J., & Wall, T. D. (1979). Scales of measurement of some work attitudes and aspects of psychological well being. *Journal of Occupational Psychology*, 52, 129-148.
- Work Importance Study. (1981). *Report of the fourth working conference of the Work Importance Study*. Dubrovnik, Yugoslavia.

About the Authors

Donald Macnab is involved in research and test development with PsiCan Consulting Ltd. at the University of Alberta. His interests include test development and measurement in vocational education and achievement test development.

George W. Fitzsimmons is a professor in the Department of Educational Psychology at the University of Alberta. His research interests include vocational test development, career counselling, and achievement test development.

Catherine Casserly is Head of Career Information Research with Employment and Immigration Canada in Ottawa, Ontario.

Correspondence and requests for reprints should be directed to Dr. Donald Macnab, PsiCan Consulting Ltd., Box 170, Room 103, Students' Union Building, University of Alberta, Edmonton, Alta. T6G 2J5.