

FIELD-DEPENDENCE-INDEPENDENCE AND CAREER  
COUNSELING: DIRECTIONS FOR RESEARCH<sup>1,2</sup>

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*Summary.*—This paper reviews relevant research concerning the utilization of Field-dependence-independence, cognitive style, in vocational decision-making as well as in implementation and adjustment of career choices. Need for further investigation is highlighted and how career interventions can be enriched by including cognitive style indicated. A test of cognitive styles offers complementary information to traditional career counseling but needs to be explicitly integrated into personal history, academic experiences, achievements, motivations, and vocational goals. New directions for research are offered.

Several vocational theories have identified internal and external factors which may interfere in career decisions (e.g., Holland, 1963, 1997; Vondracek, Lerner, & Schulenberg, 1986; Super, 1990; Lent, Brown, & Hackett, 1994; Gottfredson, 1999; Osipow, Leong, & Barak, 2001). In these theories, vocational decisions are conceptualized as a dynamic and continuous process that begins in childhood, is intensified during adolescence, and changed throughout adulthood. It is also conceived as a process of self-concept development wherein vocational preferences reflect the way people see themselves in each social context. Vocational success and satisfaction depends on the individuals' efforts to implement and change their needs, values, interests, aptitudes, and personal competencies in their educational and professional environments (Super, 1990). The process is affected by social factors related to family, education, economy, and social environment, as well as by individual factors related to personal experiences, knowledge, capacities, interests, lifestyles, and expectations.

Among the individual factors in this process is cognitive style which is related to the way people analyze and interpret the world, reflected in consistent patterns of behaviors over wide periods of time and through different contexts (Messick, 1994; Grigorenko & Sternberg, 1995; Sternberg & Zhang, 2001; Zhang, 2002; Zhang & Sternberg, 2006). The field-dependence-inde-

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pendence construct is a widely studied construct of the range of cognitive style dimensions appearing in the literature. Field-dependence-independence is conceptualized as a continuum (Witkin & Goodenough, 1981) from the field-dependent to field-independent, with each style along the continuum representing a coherent but different pattern of adaptive skills including reasoning, interest, and attitude structures. According to Messick (1987) cognitive style is a "bridge" between cognition and personality, and in this sense, it is a vehicle to meet career's expectations.

The field-dependent cognitive style is related to social interests, interpersonal and communication skills, with a reasoning style that tends to be a systematic learning style. In contrast, the field-independent cognitive style is defined in terms of individual and analytical interests, problem-solving skills, and as an evaluative reasoning style (e.g., Hansen, 1995; Fritz, Stewart, & Norwood, 2002; Pithers, 2002). These cognitive differences become more frequent and important when individuals face new and unfamiliar tasks (Witkin, Moore, Goodenough, Friedman, Owen, & Raskin, 1977; Witkin & Goodenough, 1981). For example, Cronbach and Snow (1977) believed that the restructuring skill of the field-independent cognitive style could simplify quality performance on advanced and complex tasks, as this characteristic is important to exploration and career choices.

Considering these characteristics, the field-dependent-independent cognitive style could be conceptualized as important reflecting how individuals develop their lives and career projects, as well as how they explore various vocational options. Thus, such a cognitive style could be an important predictive variable in decision-making, in implementing and adjusting to career choices, and in obtaining appropriate satisfaction and career success (e.g., Osipow, 1969; Witkin, *et al.*, 1977; Messick, 1984; Pithers, 2002).

This paper clarifies the role of the field-dependence-independence cognitive style in the process of construction, implementation, and adjustment to educational or professional choices throughout a person's career. One may assume that individuals with different cognitive styles tend to make different career choices, and those who make congruent cognitive style-career options decisions will have greater possibility of achieving success and vocational satisfaction, becoming individuals who personally feel more fulfilled and who are socially more productive.

Also, the assessment of cognitive styles can be seen as an addition to the traditional career counseling interventions, allowing consideration of other dynamic variables in the vocational process and use of other psychological tests in career counseling, i.e., cognitive styles tests such as the Portable Rod and Frame Test (Oltman, 1968), the Embedded Figures Test (Witkin, Oltman, Raskin, & Karp, 1971), the Children's Embedded Figures Test (Karp & Konstadt, 1971), the Group Embedded Figures Test (Witkin, *et al.*,



1971), and the Preschool Embedded Figures Test (Coates, 1972). See also the Auditory Hidden Tunes (White, 1954), and the Tactile Embedded Figures Test (Axelrod & Cohen, 1961).

In fact, cognitive style tests can be informative about how individuals approach learning and professional tasks, as well as the adaptation, satisfaction, and success they expect. This can promote vocational exploration process, which has been assumed to be very important in most recent vocational theory (Blustein & Phillips, 1988; Blustein, Pauling, DeMania, & Faye, 1994; Savickas, 2000). This paper offers a reinterpretation of research concerning the influence of field-dependence-independence in making career choices and further search to stimulate research as well as a more effective use of these tests in vocational intervention.

#### *Field-dependence-Independence and Career Counseling*

Studies that analyze the relationship of field-dependence-independence with the process of career decision making have consistently stated that field independent people tend to show interest in areas that demand ability to analyze and restructure, and in those that do not involve outstanding personal involvement, communication, and relational skills. On the contrary, field-dependent people seem to be attracted by academic or professional fields that involve social content and interpersonal skills but do not demand analytic and restructuring abilities (Witkin, *et al.*, 1977; Verma, 1984; Rhyne, 1985; Koroluk, 1987; Morgan, 1997). These studies indicate that field independent individuals tend to show theoretical and scientific interest in formal or natural sciences (Mathematics, Physics, Chemistry) and the associated technical professions, engineering or architecture, for example. Field-dependent individuals, on the other hand, tend to choose professions involving services and welfare (teachers, psychologists . . . (or those professions which incorporate persuasion and permanent relationships with other people and groups (sales, publicity, law).

In the 1960s, Holland (1963, 1997) suggested that people who showed different interests have different personalities and that the choice of a certain occupation reflects personal motivation, occupational knowledge and abilities, and also personality characteristics. In Holland's view, individual choices are the result of the interaction of their genetic heritage and personality as well as cultural and environmental forces. Choice and vocational adjustment are also conceptualized as expressions of individuals' personality classified into types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Individuals with similar personalities tend to make similar choices, which allows the definition of certain educational and professional environments that influence and reinforce the individual in each type of environment.

From these theories, several studies with high school and college students yielded correlations between professional preferences and the different cognitive styles and types of personality, as defined by Holland (Khan, Alvi, & Kwong, 1985; Khan & Alvi, 1986; Alvi, Khan, Hussain, & Baig, 1988). Some authors used the Group Embedded Figures Test (Witkin, *et al.*, 1971) and the Self-directed Search (Holland, 1979) to evaluate cognitive style and vocational preferences. Analysis showed that Realistic, Investigative, or Artistic students scored significantly higher on field independent than Social, Enterprising, or Conventional students. According to Khan, *et al.* (1985), students who were scored as field-dependent were "more likely to use the prevailing frames of reference in their social environment to define their attitudes, beliefs, and feelings" (p. 3).

These studies suggest that the educational and professional preferences may not be independent variables but are integrated expressions of the personality. The implication is that individuals prefer to look for, or to choose from, occupations which allow them to implement self-concept and to develop their personality. The decision of what occupation to choose implies that people are capable of listing their interests and of making a committed vocational option.

Studies of the relationship between field-dependence-independence and the process of implementation and adjustment to vocational choices show similar tendencies. The classic longitudinal study of Witkin and collaborators (1977) carried out a follow-up of the academic and professional trajectories of 1,584 college students over a 10-yr. period. In this study the type of studies in which these subjects engaged and the changes in their academic preferences and professional activities were registered. Analysis indicated that field independent individuals tended to follow studies of formal, natural sciences and of technical nature, while field-dependent individuals tended to study social sciences and related activities. Second, cognitive style was a better predictor of career choices than the aptitude tests and the questionnaires of vocational interests. Finally, for participants whose initial academic choices were congruent with their cognitive style, drop out and change of studies were significantly lower than for those who made inconsistent choices.

These results are congruent with other data from cross-sectional studies in which differences in the academic and career choices were related to cognitive style. Students who chose science classes and courses were significantly more field-independent than their colleagues in other academic fields (e.g., De Russy & Futch, 1971; Lotwick, Simon, & Ward, 1980; Lusk & Wright, 1981; Petrakis, 1981; Pincus, 1985; Young, Kelleher, & McRae, 1989; McRae & Young, 1990; Hansen, 1995; Kelleher, 1997).

In the same line of research, Amador, Forns, and Kirchner (1988) com-



pared the scores obtained on the Group Embedded Figures Test by college students enrolled in degree courses of Biology, Fine Arts, Engineering, Teaching, and Psychology. According to students' scores, the authors placed the different degree courses along the continuum of field-dependence-independence. The nearest to field-dependent were Teaching, followed by Psychology, Biology, Fine Arts, and finally Engineering, whose students scored most field-independent. These results were later supported by Wieseman, Portis, and Simpson (1992), who found beginning education students to be predominantly field-dependent in cognitive style. Murphy, Casey, and Young (1997) also noted that students in information management tended to be field-independent.

Additionally, research shows that the relationship of field-dependence-independence to the academic and professional career remained when individuals had enrolled in a profession or in a specific academic discipline affecting their choices in those domains. For example, Johnson and White (1981) found significant differences when students, classified as field dependent and field independent by scores on the Group Embedded Figures Test, chose specific domains in Sciences of Information (the former tended to choose the social branches, and the latter preferred those related to Arts and Sciences). Also, Frank (1986) obtained similar results with students in Teachers Education. While students classified as field independent tend to specialize in areas of Natural Sciences and Mathematics, those classified as field-dependent preferred Humanities, Childhood and Family Development. Finally, Tinajero and Páramo (1998) verified that students of Psychology who chose graduate optional subjects related to Organizational Psychology scored as more field independent than those who were enrolled in Clinical Psychology; these choices can be related to task characteristics of each field.

The tendencies described in these studies seem to have an early beginning, affecting the process of vocational differentiation. Glatt (1970) found a preference toward engineering in adolescents scoring more field-independent. Data of Witkin and collaborators (1977) corroborated these tendencies in high school students. At this educational stage, field-independent students enrolled more often in optional subjects like Mathematics and Sciences than those who scored higher in field dependent style.

Also, the research also highlights the relationship of sex to the differences found in interests and vocational choices across the cognitive styles (Petrakis, 1981; Young, *et al.*, 1989; Murphy, *et al.*, 1997). While men tend to have interest in areas which require analytic abilities, women usually choose activities which require interpersonal skills. This correspondence seems logical if one considers several studies in which the highest scores for field-dependence were for women (Rollock, 1992; Fritz, 1994; Kalgo, 2001; Fritz, *et al.*, 2002). However, as Witkin (1979) suggested, one cannot sup-

pose that the differences found in interests and vocational choices of men and women are totally explained by field-dependence-independence.

Finally, one should stress that a considerable number of the studies presented here have focused on the way vocational decision-making process takes place. De la Orden (1983) obtained data in two fundamental aspects: (a) conceptualization of the different studies and professional occupations (field-independent people tend to have a more appropriate conceptualization criterion than those who are field-dependent and (b) ease in making decisions (field-independent people show higher preparation and disposition in making choices, while field-dependent people are usually more undecided). These aspects can be related to the importance attributed by people of different cognitive style to the factors that affect vocational decisions. According to Gul, Huang, and Subramanian (1992), college students classified as field-dependent were more influenced by their social and economic environment and tended to follow other people's recommendations (e.g., parents, professors, and friends) in decision-making (e.g., regarding their careers). This idea reinforces the importance of integrating cognitive styles into interventions in career counseling.

#### *Final Comments*

The evidence- and theory-based literature review made here points to the relevance of cognitive styles in decision-making processes, implementation, and career adjustment, stressing the relevance of more research, as well as integrating effectively information in this cognitive variable into professional practice.

In fact, and thinking about field-dependence-independence cognitive style, one can see its influence in educational choices, quality adjustment to those choices, as well as decision-making. For example, field-independent students have preferences for scientific and technological areas, and field-dependent students prefer areas related to humanities and services. Those who make decisions in accord with their cognitive style tend to report better satisfaction, more success, and lower drop-out rate. Field-dependent students seem to value the relevance of economical and social factors as well as the opinion of relevant others on their vocational decision-making process. These characteristics further reinforce the importance of field-dependence-independence in career counseling, arguing in favor of the effective utilization of these cognitive styles in career guidance with youngsters.

Concerning the first contribution referred to above, the results, though promising, open other possibilities for research. Amongst these is the need to explore further the relation between field-dependence-independence and vocational interests, e.g., knowing if it is the cognitive style that contributes to interests and both educational and professional choice or if this is deter-



mined by contextual factors which influence the development of cognitive styles in a certain direction. Researchers should also study the relationship between field-dependence-independence and other variables in career counseling. Other variables could include vocational identity, self and context exploration, and variables in the vocational decision process.

These results justify the need of an effective use of these variables in career counseling programs for youngsters. In fact, even when confronted with other intellectual variables, cognitive style evaluation seems a more significant predictor of choices actually made. These cognitive styles can also inform about the nature of exploratory activities in which students want to be involved, as well as about factors which may contribute to decision-making, allowing professionals to define an individualized intervention program. These cognitive styles allow a more integrative reading of students' interests, attitudes, and motivations to increase understanding of their cognitive intellectual abilities.

The range of tests available to evaluate the field-dependence-independence can be considered an advantage. Various tests, addressing different age groups, in different formats (more figurative or verbal), and for special populations who might present some physical or sensory limitation, are available. Considering more standard intelligence tests, the field-dependence-independence evaluation forms allow a more qualitative and compressive understanding of the cognitive functioning of subjects. This information can shape search of one's own characteristics, as well as of the academic and professional environment in career choice.

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