

GO

Advanced Search

*Electronic Journals*

About DLA

Collections

Copyright

ETDs: Theses and Dissertations

EJournals

News

VT ImageBase



# Journal of Career and Technical Education

**Current Editor:**

Dr. Thomas R. Dobbins: [tdbbns@clemsun.edu](mailto:tdbbns@clemsun.edu)

Volume 18, Number 2

Spring 2002

[DLA Ejournal Home](#) | [JCTE Home](#) | [Table of Contents for this issue](#) | [Search JCTE and other ejournals](#)

## **A Comparison of Field-Dependence Cognitive Styles of Professionals in Purchasing and Consumer Service and Secondary Marketing Education Students, with Implications for Workforce Development**

**Robert L. Fritz  
Barbara Stewart  
Marcella Norwood**

**University of Houston**

### **Abstract**

The field-dependence cognitive styles of 44 professionals in purchasing and customer service occupations as assessed by the Group Embedded Figures Test provided a benchmark to interpret cognitive style data for 239 secondary marketing education students. The professionals were more field-independent than students. Professional males were more field-independent than professional females and both student gender groups. Male marketing education students were more field-independent than female students. These field-dependence cognitive style differences suggest that males have greater access to analytic traits such as restructuring skill, problem solving interest, and skill with abstractions. Theoretical and practical implications for workplace skill development are discussed.

## Introduction

While career and technical education professionals expect 21st century job skills to move toward greater complexity, much of the concern involves the cognitive domain (Duffy, 1999). The projected trend reflects the upward evolution of the past century in workbased skills and employer demands for greater sophistication in a variety of academic and job skills (Barner, 2000; Martin, 2000). The skill expectation outlined by Hunt (1995) suggests that workers will need increasingly sophisticated skills to solve problems that are more often ill-defined, unstructured, and without obvious resolution. Hunt (1995) even wondered if the workforce will be smart enough for future challenges.

Clarity of thought about cognitive skill has been elusive. Indeed, after more than a century of research on cognition (Tanner & Tanner, 1992), such contemporary authors as McCaslin and Good (1992) saw educational plans to improve cognitive skill, including the study of math and science (U.S. Department of Education, 2000), as overly simplistic. Earlier, Snow (1989) reported that research that evaluates aptitude for complex tasks tends to lack precision. Thus, while the expectation exists that work will demand more cognitive skill, insight to this topic is often vague. The purpose of this study was to gain insight into this complex issue. Witkin's (1978) fielddependence cognitive style theory was used as a tool. According to Bertini, Pizzamiglio, and Wapner (1986), it is a comprehensive theory that was once ranked among the 100 most frequently cited research constructs in the world.

With Witkin's theory as a problem solving tool, this study compared the field-dependence cognitive styles of professionals in purchasing and customer service occupations with secondary students in marketing education programs. The goal was to identify specialized personality and cognitive style traits and to relate them to job skills that are evolving upward, and are focused on cognition. A rationale for this approach, according to Holland (1985), is that successful practitioners have specialized behavioral traits that facilitate adaptation to job expectations. Support for this approach also includes Snow's (1989) aptitude complex theory, and Bruer's (1997) belief that theoretical knowledge about cognitive skills still requires substantial development. Beck (1991) and Schmidt (1992) called for research to extend knowledge about the learning characteristics of vocational students. In sum, each shows the need for greater clarity and precision about performance on complex cognitive tasks. Such an analysis can facilitate implications for today's marketing education students, many of whom could be tomorrow's purchasing managers and customer service executives. A literature review in career and technical education did not identify similar published research studies.

### *Background*

Many future jobs will reflect an upward evolution in skill levels (Gitman & McDaniel, 2000; Lambert, Stock, & Ellram, 1998). The problem, as always, has been to translate this message into precise meaning for cognition. Though there is long-standing support for the view that course content can enhance cognitive skills (Tanner & Tanner, 1992; U.S. Department of Education, 2000), research support is lacking. For some (Bruer, 1997; Snow, 1989) a lack of insight about individual factors-for example, personality and cognitive development-which mediate advanced performance exists. Others (Bruner, 1997; Fritz, 1998) linked this concern to the education community. Clearly, cognitive skill is a critical issue. For example,

the anticipated shortage of workers with good analytic skill was cited by Marshall and Tucker (1992). In a high-employment economy, when high-skill worker shortages are common, problems of demand could become acute (Gitman & McDaniel, 2000).

Consequently, congruence is a key construct in this study. It is central to Snow's (1989) aptitude complex theory, Holland's (1985) vocational development theory, and Witkin and Goodenough's (1981) theory of field-dependence cognitive styles. Individual-task agreement impacts performance, especially when tasks are complex and demanding. Snow (1989) anticipated that the interaction of a sophisticated blend of abilities, interests, and volitions impacts performance on complex tasks. Witkin's (1978) model corroborates this view, and is substantially developed.

An additional appeal of Witkin's (1978) theory is its anthropological perspective. It employs an adaptive paradigm that seems highly relevant to this report. Where job demands were largely stable for centuries, today's quick changes can rapidly challenge personal skills. Consequently, adaptability is an important concern.

Evidence for this postulate started to emerge when a shortage of high skilled workers in the U.S. in 1998 caused some industries to ask the U.S. Government to relax immigration laws to enable access to foreign labor supplies. There are also anecdotal examples that, since 1996 industrial firms have required extended search time to locate qualified workers for high skill jobs in logistics (M. Durr, personal communication, February 9, 1998) and purchasing (L. Payne, personal communication, May 20, 1998). Similarly, firms that historically did not recruit college graduates now do so to compete internationally (M. DeHart, personal communication, October 15, 1998). Since then, the shortage of workers with advanced job-skills has been portrayed as a crisis with no short-term solution (Gitman & McDaniel, 2000).

Therefore, the use of experienced professionals in this study achieved a basic goal. If substantial change in workplace skill is now a given, the experienced worker can provide a preliminary congruence estimate with contemporary job tasks and a window to the future. Long-term job tenure infers satisfactory performance with today's evolving task demands. Thus, by examining current professionals and comparing them to students, consideration can be given to the differences which emerge and, perhaps, implications can be drawn for career preparation in these fields.

### *Field-Dependence Cognitive Styles*

There are several theories of cognitive style (Biehler, 1978; Sigel & Coop, 1974; Witkin & Goodenough, 1981). While a variety of cognitive style research efforts flourished more than two decades ago, questions remain unanswered. Field-dependence cognitive style theory is a complex theory based in psychological differentiation, a branch of cognitive psychology. Field-dependence cognitive style describes characteristic patterns of individual functioning that cross sensory and task situations. Witkin and Goodenough (1981) depict it on a continuum, with the two ends occupied by the field-dependent and field-independent cognitive styles. Each cognitive style represents a coherent but different pattern of adaptive skills that include reasoning, interest, and attitude structures. According to Bruer (1990) and Messick (1987), cognitive style is a "bridge" between cognition and personality; it is

a vehicle to meet life's expectations, including those in the workplace.

Of Witkin's two cognitive styles, various researchers (Bertini, Pizzamiglio, & Wapner, 1986; Witkin & Goodenough, 1981; Witkin et al., 1977) put the field-dependent cognitive style in a social paradigm. Field-dependent cognitive style includes having social or with people interests, interpersonal and communications skills, and a reasoning style that suggests a systematic or chain-link learning style. In contrast, the field-independent cognitive style correlates to individual and analytic interests, problem solving skills, and a hypothesis-testing reasoning style. These traits caused Witkin to view the field-independent cognitive style as an analytic cognitive style by the late 1970s.

Witkin (Witkin & Goodenough, 1981; Witkin et al., 1977) believed that cognitive style differences are most important when individuals face new and unfamiliar tasks that demand a specialized response. Similar examples include Bloom's (1984) application-level and higher cognitive problems, and Snow's (1989) complex and demanding tasks. These tasks may be most critical when learning a new management position or upgrading skills.

Within this context, Cronbach and Snow (1977) believed that the restructuring skill of the field-independent cognitive style (similar to Bloom's (1984) structuring construct) can facilitate quality performance on advanced and complex tasks. Indeed, Bloom correlated the lack of structuring skill to partial and incomplete performance on advanced specialized problems. A U.S. Department of Education (2000) report of performance on advanced math courses suggests that restructuring skill, thus high differentiation, remains limited among secondary students. Skill with multi-step problem solving and algebra was attributed to only 6% of students in 1982 and 7% in 1996.

Importantly, several theorists (Bertini et al., 1986; Messick, 1987; Witkin & Goodenough, 1981) contend that a cognitive style reasoning process such as restructuring skill achieves high stability by middle teenage years. And, because this skill is an integrated and intricate behavioral mode that is highly automatic and consistent, it resists later modification. Indeed, it would be difficult to develop in later life (Bertini et al., 1986; Witkin & Goodenough, 1981; Witkin, et al., 1977). Thus, the cognitive styles of adults can be viewed as consistent across task situations.

In terms of development, Witkin and Goodenough (1981) portrayed cognitive style development as evolutionary. Early life "child-rearing practices that encourage continued reliance on parental authority" (p. 89) produce less differentiation and thus a field-dependent cognitive style. In contrast, "family environments that encourage separate functioning in children are likely to produce children who achieve greater differentiation, i.e. development in the direction of greater field-independence" (p. 89).

Werner and Kaplan (1956) believed that developmental experiences should move individuals from a relative lack of differentiation (field-dependence) to increased differentiation, articulation, and hierarchic integration (field-independence). As this occurs, Witkin and Goodenough (1981) would expect individuals to establish a unique, individual, and separate identity from parents and siblings that manifests itself in self-selected interests, an independent goal orientation, and skill with analytic tasks.

That developmental experiences do not promote broad-based differentiation is suggested by frequent reports of gender differences in cognitive style. Decades of research (Fritz, 1994; Witkin & Goodenough, 1981; Witkin et al., 1977) report statistical differences where females are more often field-dependent, and males more often field-independent. While the above ontogeny suggests a basis for this outcome, solutions are clearly absent (Snow, 1989).

This is not a new realization. For more than a quarter century, since the 1970's, researchers have been interested in examining mental functioning in a cultural context. Snow (1989) contended that the impact of developmental experience on cognitive behavior requires deep insight as skills become increasingly complex. Given the need for highly skilled workers in today's working economy, the need for deeper knowledge about personal development was a critical justification for this study.

### *Related Research*

Field-dependence research in vocational-technical education has had several forms. They included student-teacher match (Fritz, 1981), correlation with brain dominance (Hansen, 1997), and agricultural distance education programs (Miller, 1997). However, no research studies used field-dependence cognitive style theory to understand factors that involve experienced workplace professionals.

However, Fritz (1993), in a study of 678 secondary marketing education students, reported that almost half were field-dependent, less than ten percent were field-independent, and the rest were in a mixed group. In another study, Fritz (1994) reported gender differences in cognitive style and established implications for vocational development. Data complied with expectation. Females were more field-dependent. Yet, without a workplace comparison, it was difficult to interpret this data.

## **Objectives**

To gain insight about the evolving job and analytic skill issue, this study determined the following:

1. Differences in the field-dependence cognitive styles of selected professionals in purchasing and consumer services, and secondary marketing education students with the Group Embedded Figures Test (GEFT). Field-dependent cognitive style was selected because of its possible links to specific types of skill development. Professionals and students were selected for comparison.
2. Field-dependence gender differences by professional and student sub-groups with the Group Embedded Figures Test. Gender was examined to enable consideration and comparison of gender differences.

## **Method**

### *Subjects*

The sample for this study included two groups. The first was 44 professionals in marketing-related careers in purchasing and consumer service, who were members of the National Association of Purchasing Management (NAPM) and the International Customer Service Association (ICSA)/Society of Consumer Affairs

Professionals (SOCAP). Most had management-level job titles in corporate operations, and many worked in global markets. The second group was 239 secondary marketing education students from a southern state. Demographic data are shown in Table 1.

The gender balance was 63.6% female and 46.4% male. The average age for NAPM and ICSA/SOCAP members was 40.01 years, and 17.5 years for the students. The work experience reported for NAPM and ICSA/SOCAP members was time in purchasing and consumer service occupations, not necessarily total years of work experience. The professionals averaged 11.4 years in-field work experience.

### *Instrumentation*

Demographic information was collected with an investigator-developed inventory, and cognitive style data was collected with the Group Embedded Figures Test (GEFT). Witkin and Goodenough (1981) reported that the GEFT is a standard measure of the fielddependence cognitive styles. Witkin, Oltman, Raskin, and Karp (1971) saw it as an experimental instrument that is appropriate for intact groups. It has satisfactory reliability (.89 on test-retest over a three year period) and validity (a correlation of .82 between the two major sub-sections).

The GEFT is a disguised and structured assessment technique. A series of simple figures are embedded in camouflaged backgrounds. Subjects are instructed to locate and outline those figures. Boyd, Westfall, and Stasch (1985) indicate that this is a preferred method because "respondents (won't) know the specific topic" or be "biased in their responses by that knowledge" (p. 335).

The GEFT has three timed sections, one for practice and two others with nine items each. Thus, a total of 18 items are scored. Scores range from 0 to 18. Lower scores (a field-dependent style) reflect difficulty finding simple figures and lower restructuring skill. Higher scores (a field-independent style) show skill at locating simple figures and indicate better restructuring skill.

### *Procedures*

Data were collected with standard procedures. First, each student completed a GEFT and then the demographic information. The NAPM and ICSA/SOCAP professionals provided data during regular association meetings. Procedures for the GEFT were those outlined by Witkin et al. (1971). About 30 minutes were needed for this process.

The GEFT was scored by the investigators and recorded with demographic information on computer scanning forms. Data were then electronically processed and prepared for this report. Statistical methods are those commonly used for GEFT data analysis (Fritz, 1981, 1993, 1994; Witkin et al., 1977). These included ANOVA and a Scheffe test.

### *Limitations*

These are the major limitations of this report:

1. The data was collected from intact groups that represented convenience samples.
2. Due to social context factors and sampling design, the findings should not be generalized beyond the original contexts.

As non-probability samples, these samples may not be representative of a larger population. Additionally, while intact groups were selected because of their common characteristics such as specific professions or students, it is possible that these intact groups have other common attributes, which are beyond the scope of this study. It is possible, however, that those common attributes may limit the generalizability of these findings.

## Results

Table 2 shows that the t-test determined that the purchasing and customer service professionals had a GEFT mean score that was statistically significant in its difference from secondary marketing education students. The professional group  $M = 8.32$  ( $SD = 4.12$ ) while the student group  $M = 7.03$  ( $SD = 7.03$ ). The professional group was relatively more field-independent, and had scores that were more clustered ( $SD +1 = 4.11$  to  $12.44$ ) than students ( $SD +1 = 0$  to  $14.41$ ). This finding is consistent with theories of vocational development (Holland, 1985) and field-dependence cognitive style (Witkin & Goodenough, 1981). Life experiences among the professionals, including job tenure ( $M = 11.4$  years) and age ( $M = 40$  years), may have promoted occupational congruence.

Table 3 profiles the GEFT data. Observation of the data by quartile shows that student scores on the GEFT are generally lower than the scores of professionals. For example the first three quartiles of student scores indicate scores in the range of 0 to just above 9, while the first three quartiles of professional scores include scores closer to 12. This suggests that professionals have more fieldindependent cognitive styles.

Results related to gender are on Table 4. Because findings from an ANOVA were statistically significant, a Scheffe test was used to identify statistically significant group differences in GEFT scores. Both male groups report statistically significant GEFT score differences. The male professionals differed from the remaining three groups, while male marketing education students only differed from female marketing education students. And, while males were generally more field-independent, this was most true for the male professional group. The narrowest SD was for professional males.

The gender difference is consistent with past reports (Fritz, 1993; Witkin & Goodenough, 1981). Witkin and Goodenough (1981) explain it through cultural traditions and developmental ontogeny, with support from others (Holland, 1985; Werner & Kaplan, 1956). Similar to the first analysis, Holland (1985) and Witkin et al. (1977) could support the view that the GEFT score distinction among males may reflect the impact of time, as evidenced by occupational experience and age. Male professionals may have been sorted by life events into occupations that encourage congruence with task demands. Male students have yet to engage in these long-term experiences, though a similar outcome for them should be anticipated.

These findings show evidence of a gender difference with regard to field-dependence cognitive style. Rather than reinforce existing gender stereotypes it is recommended that consideration be given to possible sources of such differences or other factors that may have produced these findings. This is an opportunity for future investigation.

In summary, then, the results of this study were these. Marketing

professionals had GEFT mean scores that were statistically significant in their differences from secondary marketing education students, while the gender analysis found professional males statistically different than the remaining three groups, and male marketing education students differed from their female counterpart. In general, males were more field-independent, yet students did not statistically differ from female professionals. While theoretical explanations can support these findings, their primary value may be as a preliminary congruence estimate for current and anticipated job skill demands within a marketing context.

## Discussion

This study compared the field-dependence cognitive styles of 44 professionals in purchasing and customer service to determine (a) if the GEFT scores of 236 secondary marketing education students statistically differed from the professionals, and (b) the existence of gender differences in cognitive style based on membership in professional and student groups. The following discusses the findings and implications for these questions.

Regarding the first problem, an explanation for the finding that the marketing professionals were more field-independent than the students could rest with Holland's (1985) congruence hypothesis. The professional's narrower standard deviation may reflect their extensive in-field work experiences ( $M = 11$  years) and age ( $M = 40$  years). For them, work congruence seems possible. Where it exists, job tasks should allow the use of their developed and stable abilities and interests.

There are at least two other explanations. For example, Witkin and Goodenough (1981) could also use a task-cognitive style match explanation. Like Holland, they too expect tasks to reinforce cognitive styles that are stable, consistent, and largely automatic. Finally, Snow (1989) could also suggest that task-individual match means that abilities, interests, and volitions align with task expectations. In sum, then, these congruence estimates produce the following conclusion.

After a century of job skill evolution, today's purchasing and customer service executive seldom needs an extreme, or fourth quartile, field-independent cognitive style to adapt to the demands in job task. The data suggest that acceptable performance requires moderate field-independence. Witkin and Goodenough's (1981) work could associate this conclusion with specific traits such as restructuring skill and analytic interests. Witkin and Goodenough's (1981) belief that cognitive style matters most when problems are new and ambiguous could be applied here. The frequency and complexity of contemporary purchasing and consumer services job tasks could involve moderate difficulty. However, after initial problem solving experience in a new category, subsequent problem solving becomes what Bloom (1984) called comprehension level, where individuals remember previous methods and use them for current problems. Past experience molds a mental framework to facilitate this process.

With regard to gender, the results substantially align with past research (Fritz, 1994; Witkin & Goodenough, 1981; Witkin et al., 1977). The finding that females were more field-dependent could elevate concern about ontogeny. If Werner and Kaplan (1956) and Witkin and Goodenough (1981) are correct, field-dependence suggests less psychological differentiation, articulation, and hierarchic integration than field-independence, as well as less separateness of identity, fewer independent interests, and less separate functioning. Thus, in new and complex problem solving

situations, field-dependence should yield dependence, while field-independence often yields self-direction. Additional investigation is needed regarding the role of gender. Rather than reinforcement of traditional stereotypes consideration should be given to the roots of gender based differentiation in cognitive styles.

Consequently, if upward job skill evolution means increased complexity, workers will need greater sophistication in their cognitive styles, perhaps similar to the field-independent cognitive style. Thus, the gender finding in this study suggests that the rate of change is important. At some yet-unknown future point, individual-task differences could produce ineffective job performance, or limit the pool of qualified job applicants.

These findings also suggest the importance of teaching methods. Career technical educators can enhance performance on complex and demanding tasks by using applied and situated learning that Cronbach and Snow (1977) include as substantial experience with task structuring. Either small group or independent methods can be effective. It is also important, according to Ginsburg and Opper (1979), that it provoke curiosity, while Bloom (1984) believed that it should include abstract problems. They seem to agree that skill with complex problems requires high learning motivation.

Instead of quick results, though, Cronbach (1963) believed that consistent experiences gradually improve performance over time. And, while regular practice and increased task sophistication are important, as is evaluation against workplace standards, Bloom (1985) also believed that mentoring from effective role models enhances learning. Indeed, where an analytic challenge to enhance analytic skill remains, Snow (1989) may call for instruction with a holistic perspective that nurtures abilities, interests, and volitions.

In sum, the challenge is to bridge cognition and personality the way Bruer (1990) and Messick (1987) associated it with advanced cognitive skill development. Doing this may require insight into each student's unique learning needs to encourage effective independent functioning in a complex and uncertain world. Finally, then, this preliminary effort to establish a benchmark for analytic skill in marketing education produced findings that comply with theoretical expectations and suggest an analytic reference point. From this reference point career and technical educators can give consideration to developing methods to assess the cognitive styles of students and the workforce profiles of professionals in the fields which students anticipate entering and then develop educational strategies to prepare students for success.

**Table 1**

*Demographics*

Variable	Professionals			Totals
	ME students	NAPM	ICSA/SOCAP	
N	239	21	23	283
Females	150	12	18	180

Males	89	9	5	103
Age in M Years	17.5	42.6	37.3	-
Industry Work Experience in M Years	-	10.2	12.5	-

**Table 2**

*GEFT by Group*

Group	n	M	SD	F	t	df	p
ME Students	239	7.030	7.379	1.30	3.0	278	.003*
Professionals	44	8.320	4.123				
* p < .05							

**Table 3**

*GEFT Distribution*

GEFT Score	Professionals										
	ME Students			NAPM			ICSA			Totals	
	f	%	Cum p	f	%	Cum p	f	%	Cum p	f	%
0	16	6.7	6.7	1	4.8	4.8	1	4.3	4.3	18	6.8
1	24	10.0	16.8	0	0.0	4.8	1	4.3	8.6	25	15.2
2	19	7.9	24.8	2	9.6	14.4	0	0.0	8.6	21	22.7
3	17	7.1	31.9	1	4.8	19.2	4	17.2	25.8	22	30.5
4	20	8.4	40.3	1	4.8	24.0	0	0.0	25.8	21	37.0
5	18	7.5	47.9	0	0.0	24.0	3	12.9	38.7	21	44.5
6	17	7.1	55.0	3	14.4	38.4	1	4.3	43.0	21	52.0
7	14	5.9	60.9	1	4.8	43.2	1	4.3	47.3	16	57.7
8	11	4.6	65.5	2	9.6	52.8	3	12.9	60.2	16	63.4
9	12	5.0	70.6	1	4.8	57.6	1	4.3	64.5	14	68.4
10	13	5.4	76.1	1	4.8	62.4	1	4.3	68.8	16	71.4
11	11	4.6	80.7	0	0.0	62.4	1	4.3	73.1	12	75.7
12	9	3.8	84.5	0	0.0	62.4	1	4.3	77.4	10	79.3
13	7	2.9	87.4	3	14.4	76.8	2	8.6	86.0	12	83.6
14	8	3.3	90.8	2	9.6	86.4	0	0.0	86.0	10	87.1

15	10	4.2	95.0	3	14.4	100.0	1	4.3	90.3	14	92.1
16	2	0.8	95.8	0	0.0	100.0	1	4.3	94.6	3	93.2
17	5	2.1	97.9	0	0.0	100.0	1	4.3	100.0	6	95.3
18	4	1.7	99.6	0	0.0	100.0	0	0.0	100.0	4	100.0
n	239		21		23		283				
M	7.025		8.743		7.870						
SD	7.380		4.290		3.958						
Mdn	6.000		8.000		8.000						
Mode	1.000		6.000		3.000						
		13.000									
		15.000									

**Table 4**

*GEFT by Gender Group*

<b>Group</b>	<b>n</b>	<b>M</b>	<b>SD</b>	<b>+1 SD</b>
<b>Females</b>				
#1 Marketing Education	150	5.946	4.567	1.380 to 10.514
#2 Professionals	30	6.500	4.476	2.024 to 10.976
<b>Males</b>				
#3 Marketing Education	87	7.906	5.200*	2.706 to 13.106
#4 Professionals	14	12.070	3.105**	8.965 to 15.175
*p < .05 from Group 1				
**p < .05 from Groups 1, 2, and 3				

## References

- Barner, R. (2000). Talent wars in the executive suite: six trends shaping recruitment. *The Futurist*, 34(3), 35-41.
- Beck, R. H. (1991). *General education: Vocational and academic collaboration* (MDS-057). Berkeley, CA: National Center for Research in Vocational Education.
- Bertini, M., Pizzamiglio, L. & Wapner, S. (1986). Epilogue: Relation of Witkin's work to future trends in psychology. In M. Bertini, L. Pizzamiglio, S. Wapner (Eds). *Field dependence in psychological*

- theory, research, and application.* (pp. 5-13). Hillsdale, NJ: Erlbaum.
- Biehler, R. F. (1978). *Psychology applied to teaching* (3rd ed.). Boston: Houghton Mifflin.
- Bloom, B. S. (Ed.) (1984). *Taxonomy of educational objectives, handbook I: Cognitive domain*. New York: McKay.
- Boyd, H. W., Westfall, R., & Stasch, S. F. (1985). *Marketing research: Text and cases* (6th ed.). Homewood, IL: Irwin.
- Bruer, J. T. (1997). Education and the brain: A bridge too far. *Educational Researcher*, 26 (8), 4-16.
- Cronbach, L. J. (1963). *Educational psychology* (2nd ed.). New York: Harcourt.
- Cronbach, L. J. & Snow, R. E. (1977). *Aptitudes and instructional methods*. New York: Irvington.
- DeHart, M. (1998). Personal communication. Houston, TX, October 15, 1998.
- Duffy, R. J. (1999, July). The steps you take, the moves you make. *Purchasing Today*, 10(7), 38-48.
- Durr, M. (1998). Personal communication. Houston, TX, February 9, 1998.
- Fritz, R. L. (1981). The role of field-dependence and field-independence in secondary school students' re-enrollments in vocational education and their attitudes toward teachers and programs. (Doctoral dissertation, Auburn University, April) (University Microfilms, Number 81-19, 563).
- Fritz, R. L. (1993). A synthesis of empirical and theoretical research on student congruence needs in marketing education. *Marketing education research proceedings: Volume III, 1993* (pp. 1-29). Columbus, OH: Marketing Education Association.
- Fritz, R. L. (1994). Gender differences in field-dependence and educational style. *The Journal of Vocational Education Research*, 19(1) 1-21.
- Fritz, R. (1998). Workplace implications of the cognitive styles and problem solving interests of secondary marketing education students. *Marketing Education Research Proceedings*, 7, 76-97.
- Ginsburg, H. & Opper, S. (1979). *Piaget's theory of intellectual development* (2nd Ed.). Englewood Cliffs: Prentice-Hall.
- Gitman, L.J. & McDaniel, C. (2000). *The future of business*. Cincinnati: South-Western.
- Hansen, J. W. (1997). Cognitive styles and technology-based education. *Journal of Technology Studies*, 23(1), 14-23.
- Holland, J. (1985). *Making vocational choices: A theory of careers*. Englewood Cliffs, NJ: Prentice-Hall.

- Hunt, E. (1995). *Will we be smart enough?* New York: Russell Sage.
- Lambert, D. M., Stock, J. R., & Ellram, L. M. (1998). *Fundamentals of logistics management*. Boston: McGraw-Hill.
- Marshall, R. & Tucker, M. (1992). *Thinking for a living*. New York: Basic Books.
- McCaslin, M. & Good, T. L. (1992). Compliant cognition: The misalliance of management and instructional goals in current school reform. *Educational Researcher*, 21(3), 4-17.
- Messick, S. (1987). Structural relationships across cognition, personality, and style. In R. E. Snow & M. J. Farr (Eds.) *Aptitude, learning, and instruction volume 3: Conative and affective process analyses*. (pp. 35-75) Hillsdale, NJ: Erlbaum.
- Martin, A. (2000). The family and consumer science profession: A viable career for the new millennium. *Journal of Family and Consumer Sciences*, 92(2), 51-55.
- Miller, G. (1997). Are distance education programs more acceptable to field-independent learners? *Proceedings of the 1997 National Educational Communications and Technology Association Convention*. Albuquerque, NM.
- Payne, L. (1998). Personal communication. Houston, TX, May 20, 1998.
- Schmidt, B. J. (1992). Vocational education research: Past, present, and future. *The Journal of Vocational Education Research*, 17(1), 1-9.
- Sigel, I. E. & Coop, R.H. (1974). Conitive style and classroom practices. In R.H. Coop & K. White (Eds.), *Psychological concepts in the classroom*. New York: Harper & Row.
- Snow, R. E. (1989). Toward assessment of cognitive and conative structures in learning. *Educational Researcher*, 18(9), 8-14.
- Tanner, D. & Tanner, L. (1992). *Curriculum development: Theory to practice* (2nd ed.). New York: Macmillan.
- U.S. Department of Education (2000). *Mini-digest of education statistics, 1999*. Washington, DC: Author.
- Werner, H. & Kaplan, J. (1956). *Personality development*. Englewood Cliffs, NJ: Prentice-Hall.
- Witkin, H. A. (1978). Field dependence-independence in cultural adaptation. *Heinz Werner lecture series*. Worcester, MA: Clarke University Press.
- Witkin, H. A., & Goodenough, D. R. (1981). *Field dependence and field independence cognitive styles: Essence and origins*. New York: International Press.
- Witkin, H. A., Moore, C. A., Oltman, P. K., Goodenough, D. R., Friedman,

R., Owen, D. R., & Raskin, E. (1977). Field-dependence and field-independence cognitive styles and their educational implications. *Review of Educational Research*, 47(1), 1-64.

Witkin, H. A., Oltman, P. K., Raskin, E. & Karp, S. A. (1971). *A manual for the group embedded figures test*. Palo Alto: Consulting Psychologists Press.

---

[DLA Ejournal Home](#) | [JCTE Home](#) | [Table of Contents for this issue](#) | [Search JCTE and other ejournals](#)

---

[Virginia Tech](#) | [University Libraries](#) | [DLA](#) | [Contact Us](#) | [Get Adobe Reader](#)



This work is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License](#).

URL: <http://scholar.lib.vt.edu/ejournals/JCTE/v18n2/fritz.html>

Last modified: 06/21/11 14:34:32 by Tracy Gilmore