

Learning Styles and Leadership Adaptability
of College of Agriculture and Life Sciences Students

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Abstract

Almost every class will be composed of students with various learning styles. This is true of students enrolled in leadership development courses in Colleges of Agriculture across the country. Little empirical evidence exists that addresses the relationship between student learning styles and leadership adaptability scores. Leadership adaptability is important in that it indicates the extent to which an individual is able to vary their leadership style appropriately in different situations. The purpose of this investigation was to describe the learning styles, leadership styles and adaptability, and selected demographics of students in a leadership development course, and to assess the relationship between learning style and leadership adaptability. The majority of participants were female. Approximately half of the participants were field-independent and half were field-dependent. However, 66.7% of males were field-independent, whereas 54.5% of females were field-dependent. Male respondents were evenly distributed between low and moderate adaptability scores, whereas 41.8% of the females possessed low adaptability scores. An additional, 49.1% of the female respondents possessed moderate adaptability scores, and 9.1% scored high on adaptability. A negligible correlation (Davis, 1971) was found ($r=-.008$) between learning style and leadership style adaptability.

Introduction and Theoretical Framework

It is no secret that the characteristics that business and industry employers seek in future employees are the attributes that characterize an effective leader (Welch, 2000). This notion is congruent with the findings of studies conducted by Litzenberg and Schneider and by Bosshamer (as cited in Fritz & Brown, 1998) that found leadership to be one of the important skills needed by College of Agriculture graduates. College of Agriculture students themselves indicate both a need for, and willingness to participate in, formal leadership training (Schumacher & Swan, 1993).

In an effort to meet this need, Agricultural Education departments across the country are offering leadership development courses to College of Agriculture students. The fundamental premise of these leadership development courses, and leadership development in general, is that leadership can be taught and learned. This notion is supported by the works of leadership theorists such as Bass (1990; 1998), Kouzes and Posner (1987), and Hersey, Blanchard and Johnson (2001).

Students enrolled in leadership development courses within colleges of agriculture, as in any other course, can be expected to vary in their preferred styles of learning. The relationship between student learning styles and various measures of achievement has been reported extensively (Cano, 1999; Cano & Garton, 1994; Dyer & Osborne, 1996a; Garton, Spain, Lamberson, & Spiers, 1999). Studies have also been conducted that describe student learning styles and teaching styles (Cano, Garton, & Raven, 1992; Whittington & Raven, 1995). However, little empirical evidence in the field of agricultural education exists that describes the learning styles, self-perceived leadership styles, and leadership adaptability of students enrolled in leadership development courses in Colleges of Agriculture. Because these students are often preparing to assume leadership roles in industry, it is important that we understand both their preferred style of learning and characteristics about them as leaders.

Learning Styles

There are many definitions of learning styles. Garger and Guild (1984) define learning styles as “stable and pervasive characteristics of an individual, expressed through the interaction of one’s behaviors and personality as one approaches a learning task” (p. 11). Gregorc (1979) defines learning styles as consisting of “distinctive behaviors which serve as indicators of how a person learns from and adapts to the environment. It also gives clues as to how a person’s mind operates” (p. 234). Essentially, learning styles are based upon how a person perceives and processes information to facilitate learning.

There are a number of methods of assessing student learning styles (Gregorc, 1982; Kolb, 1985; Witkin, Oltman, Raskin, & Karp, 1971). Cano et al. (1992) identified field-independence and field-dependent as two of the most widely studied learning styles. The Group Embedded Figures Test (GEFT) (Witkin et al., 1971) is the commonly accepted test of field-independence and field-dependence. Although the GEFT primarily addresses the perception component of learning styles, it has been widely used in the field of agricultural education to assess student learning styles (Cano, 1999; Cano & Garton, 1994; Cano et al.,

1992; Dyer & Osborne, 1996a, 1996b; Raven, Cano, Garton, & Shelhamer, 1993; Rudd, Baker, & Hoover, 1998, 2000; Torres & Cano, 1994; Whittington & Raven, 1995).

According to Witkin, Moore, Goodenough, and Cox (1977), field-independence and field-dependence has to do with how a person perceives parts of a field, either as discrete parts or as a whole. Field-independent learners are able to see parts of the field as more or less separate from the field as a whole, whereas the perception of field-dependent individuals is strongly dominated by the prevailing field. However, as noted by Witkin et al. (1977), field-independence and field-dependence are not meant to suggest that there are two types of people, but rather that individuals have a preferred learning style that is relatively stable over time and falls somewhere along a continuum of extreme field-independence at one end, and extreme field-dependence at the other.

Several differences have been found between field-independent and field-dependent individuals. Field-dependent individuals tend to be more social than field-independent individuals (Garger & Guild, 1984; Witkin et al., 1977). This translates into the fact that as learners, field-dependent people prefer a social orientation, and that as teachers, they prefer situations that allow interaction and discussion with students in a warm and personal environment (Garger & Guild). This would suggest that as leaders, field-dependent individuals would tend to focus more on relationship behaviors as compared to task behaviors. It also suggests that field-dependent learners would be more adaptable and accommodating when working with others.

The research base also indicates that there are slight gender differences associated with field-independence and field-dependence. Witkin et al. (1977) reported that on the average, females tend to be more field-dependent than males. However, there is overlap within the distribution on the learning style scale for males and females. In agricultural education, this is supported by the findings of Dyer and Osborne (1996a; 1996b) and Torres and Cano (1994). However, the findings of several other studies offer conflicting evidence of gender differences in the field of agricultural education (Cano & Garton, 1994; Garton et al., 1999; Raven et al., 1993; Rudd et al., 1998, 2000; Whittington & Raven, 1995). Many of these studies showed that the majority of females in the field of agricultural education tend to be field-independent rather than field-dependent. However, this difference may be due to the fact that agriculture tends to attract field-independent learners (Witkin et al., 1977), and that only those female students who are strong field-independent learners choose majors within the field of agriculture.

Leadership Styles and Adaptability

There are perhaps as many definitions of leadership as there are of learning styles. As with the various definitions of leadership, the characteristics that define leadership style also vary depending upon the researcher. According to Yukl (2002), leadership theories include three key variables: characteristics of the leader, characteristics of the follower, and characteristics of the situation. Yukl further notes that these can be categorized into five approaches: the trait approach, the behavior approach, the power-influence approach, the situational approach, and the integrative approach.

According to Northouse (2001), Hersey and Blanchard's Situational Leadership Theory is one of the more widely recognized leadership approaches. The situational approach is based on the concept that there is no one best style of leadership and emphasizes the interplay among leader, follower, and situational variables (Hersey et al., 2001). According to the theory, an individual's leadership style is defined as the behavior pattern, as perceived by others, that an individual exhibits as he/she influences the activities of others, and is determined based on the combination of two types of behaviors: task behavior and relationship behavior (Hersey et al., 2001).

The Leadership Effectiveness and Adaptability Description (LEAD) instrument was developed by the Center for Leadership Studies, Inc., to assess the four leadership styles proposed by Hersey and Blanchard: telling/directing (high task, low relationship), selling/coaching (high task, high relationship), participating/supporting (low task, high relationship), and delegating (low task, low relationship). The instrument also assesses the style range and adaptability of an individual. Style range refers to the total number of styles that individuals perceive themselves to use, and provides respondents with an idea of how flexible they are in the use of the behaviors of each style. Style adaptability provides individuals with an indication of the degree to which they are able to vary their leadership style and utilize the appropriate style in various situations. Because the LEAD Self version was designed for use as a training instrument, this study focused more on style adaptability rather than self-perceived leadership style.

Potential gender differences in relation to leadership styles has been an area of much research. Some studies report no differences whereas others report significant differences in the leadership behaviors of males and females in various situations. In terms of the LEAD Self instrument, studies have shown that respondents most often report selling/coaching as their primary leadership style, with participating/supporting being the second most frequently reported primary leadership style, regardless of gender (Davis, 1996; Lohrmeyer, 2000; Penny, 1996; Vail, 1991).

The leadership paradigm in use today is based upon the assumption that leadership can be taught and learned. However, a problem exists in that there is a void in the literature base that identifies the relationship between learning style and leadership adaptability. This may mean that instructors do not possess all of the information they need to foster the development of leadership skills in all of their students. Several questions must be asked in regard to the impact of learning styles on the ability of leadership development students to learn leadership. Is there a relationship between learning styles and the ability of individuals to adapt their leadership style to a given situation? Are students likely to be more or less adaptable based upon their learning style? What are the implications of this possible relationship (or lack thereof) between adaptability and learning style for teaching leadership development? Answering such questions may provide leadership educators in agricultural education with valuable information needed to effectively teach leadership to students within each learning style. This study addresses these questions.

Purpose and Objectives

The primary purpose of this study was to assess the relationship between learning style and leadership adaptability in students enrolled in an agricultural leadership course in the College of Agriculture at a land-grant university. This study addressed the following specific objectives:

1. To describe the learning styles, leadership styles, leadership adaptability, and gender of students enrolled in an agricultural leadership development course.
2. To assess the relationship between learning style and leadership adaptability of students enrolled in an agricultural leadership development course.

Procedures

Population and Sample

This study used an ex post facto correlational design. The target population for the study was all students enrolled in an agricultural leadership development course at a land-grant university during the 2001 fall semester. The introductory leadership development course was open to all College of Agriculture students and was easily accessible. A total of 73 students completed the study.

Instrumentation

The GEFT instrument developed by Witkin et al. (1971) was used to assess the preferred learning style of students. Reliability and validity of the GEFT instrument were established by the authors. Witkin et al. reported a Spearman-Brown reliability coefficient of .82 for the instrument.

The GEFT instrument contains 18 complex figures from which participants are asked to identify simple forms. The instrument places students along a continuum from field-dependent to field-independent. In their study, Witkin et al. (1971) reported a mean GEFT score of 12.0 for males ($n=155$) and a mean of 10.8 for females ($n=242$). The grand mean of participants in their study was 11.3. For the purposes of this study, students were dichotomized as either field-dependent, scoring from 0-11 on the instrument, or field-independent, scoring from 12-18 on the instrument.

The LEAD Self instrument developed at the Center for Leadership Studies ("Leadership Effectiveness and Adaptability Description - Self Version," 1979) was used to identify the leadership styles and adaptability scores of participants. The LEAD instrument was formerly known as the Leader Adaptability and Style Inventory (LASI). Validity of the LEAD Self instrument was established through content and face validity, and the instrument was standardized on the responses of 264 managers from North America (Greene, 1980).

The LEAD Self instrument is a pen and paper instrument in which respondents are presented with 12 situations, each with four alternative answers. Of the four alternative answers to each situation, there is one answer for each of the four leadership styles:

telling/directing style (high task/low relationship), selling/coaching (high task/high relationship), participating/supporting (low task/high relationship), and delegating (low task/low relationship).

Primary leadership styles were calculated by creating a composite score for each of the four leadership styles by adding the number of responses in each category. The style with the most responses was considered to be the participant's primary leadership style. From the responses to each situation, a composite style adaptability score can also be calculated. According to the LEAD Self instrument, the style adaptability scores range from 0-36. Based on benchmarks presented in the instrument, generalizations about an individual's adaptability were made. Participants with an adaptability score between 0-23 are considered to possess low adaptability, 24-29 represents moderate adaptability, and 30-36 represents a high degree of adaptability.

Data Collection and Analysis

The LEAD Self and GEFT instruments were as administered by the researchers and hand scored following the administration and scoring guidelines set forth by each instrument. Data were analyzed using SPSS for Windows, version 10. Descriptive statistics were used to summarize the data for objective one. Pearson correlations were used to assess the relationship between learning styles and leadership style adaptability in objective two.

Results

The first objective was to describe the learning styles, leadership styles, leadership adaptability, and gender of students enrolled in an agricultural leadership development course. Of the 73 participants, the majority were female (75.3%, $n=55$). Almost half of the participants were field-dependent learners (49.3%, $n=36$). The majority of the male respondents were field-independent learners (66.7%, $n=12$), whereas a slight majority of the female respondents were considered field-dependent learners (54.5%, $n=30$). GEFT scores ranged from 1 to 18. Raw GEFT scores by gender are presented in Table 1.

Leadership styles of study participants were determined as outlined in the LEAD Self instrument (see Table 2). Of the 73 participants, 2 (2.7%) perceived their primary style to be telling/directing, 48 (65.8%) perceived selling/coaching to be their primary style, 20 (27.4%) perceived their primary style to be participating/supporting, and 3 (4.1%) perceived delegating to be their primary style. In comparing leadership styles by gender, the majority of both males and females perceived themselves to possess selling/coaching leadership styles. Fourteen of the 18 male students were categorized as this style. By contrast, females were predominantly categorized into selling/coaching and participating/supporting leadership styles.

Table 1

GEFT Scores of Students by Gender

GEFT Raw Score	Male		Female	
	<i>n</i>	% of total	<i>n</i>	% of total
1	0	0.0	2	2.7
4	1	1.4	1	1.4
5	0	0.0	2	2.7
6	0	0.0	2	2.7
7	0	0.0	3	4.1
8	1	1.4	4	5.5
9	1	1.4	8	11.0
10	1	1.4	2	2.7
11	2	2.7	6	8.2
Subtotal (FD)	6	33.3	30	54.5
12	1	1.4	5	6.8
13	2	2.7	5	6.8
14	1	1.4	2	2.7
15	3	4.1	4	5.5
16	0	0.0	4	5.5
17	3	4.1	4	5.5
18	2	2.7	1	1.4
Subtotal (FI)	12	66.7	25	45.5
Total	18	24.7	55	75.3

Note: FD = Field-Dependent; FI = Field-Independent

Table 2

Self-perceived Primary Leadership Styles of Agricultural Leadership Development Students by Gender (n=73)

	Male	Female	Totals	
	<i>n</i>	<i>n</i>	<i>n</i>	%
Telling/Directing	1	1	2	2.7
Selling/Coaching	14	34	48	65.8
Participating/Supporting	1	19	20	27.4
Delegating	2	1	3	4.1
Totals	18	55	73	100.0

Leadership adaptability scores placed study participants into the three categories as outlined in the LEAD Self instrument (see Table 3). Of the 73 participants, 32 (43.8%) were classified as having low leadership style adaptability, 36 (49.3%) were classified as having moderate adaptability, and 5 (6.9%) were classified as having a high degree of leadership adaptability. The overall mean adaptability score of study participants was 23.9. When comparing leadership adaptability scores by gender, males had a mean adaptability score of 23.1, and were evenly split between the low and moderate adaptability categories with nine subjects in each category. No males in this study had adaptability scores in the high adaptability category. Females had a mean adaptability score of 24.2. Of the 55 female participants, 41.8% ($n=23$) were classified as having low adaptability, 49.1% ($n=27$) had moderate adaptability, and 9.1% ($n=5$) had high leadership adaptability scores.

Table 3

Leadership Style Adaptability of Agricultural Leadership Development Students by Gender (n=73)

	Male		Female		Totals	
	<i>n</i>		<i>n</i>		<i>n</i>	%
Low	9		23		32	43.8
Moderate	9		27		36	49.3
High	0		5		5	6.9
Totals	18		55		73	100.0

The second objective was to assess the relationship between the learning style and leadership adaptability of students enrolled in the agricultural leadership development course. The majority of males with low adaptability scores (77.8%, $n=7$) and moderate adaptability scores (55.6%, $n=5$) were field-independent (see Table 4). There were no males with high adaptability scores. By contrast, the majority of females with low adaptability scores (56.5%, $n=13$), moderate adaptability scores (51.9%, $n=14$), and high adaptability scores (60.0%, $n=3$) were field-dependent (see Table 4). A negligible negative correlation ($r=-.008$) (Davis, 1971) was found between GEFT score and leadership adaptability.

Table 4

Leadership Style Adaptability and Learning Styles by Gender (n=73)

Adaptability	Male		Female	
	Field-Dependent	Field-Independent	Field-Dependent	Field-Independent
	<i>n</i>	<i>n</i>	<i>n</i>	<i>n</i>
Low	2	7	13	10
Moderate	4	5	14	13
High	0	0	3	2
Totals	6	12	30	25

Conclusions and Implications

Males in this clinical study tended to prefer field-independent learning styles whereas females tended to prefer field-dependent learning styles. These findings are consistent with the work of Witkin et al. (1971) and others (Dyer & Osborne, 1996a, 1996b; Torres & Cano, 1994), but contradict the findings of Garton et al. (1999) and Whittington and Raven (Whittington & Raven, 1995) who found that the majority of both males and females in agriculture were field-independent learners.

Overall, the majority of respondents perceived their primary leadership style to be selling/coaching. Female students also had a strong presence in the participating/supporting leadership style. Whereas females reported participating/supporting as second most frequently reported style, males reported delegating as the second most frequently reported style. However, the sample contained a small number of males and the difference between the second and third most frequently reported style for the males was due to a difference of only one individual, and thus may not be of practical significance.

These findings are consistent with some literature in the knowledge base (Davis, 1996; Lohrmeyer, 2000; Penny, 1996; Vail, 1991), but conflict with other literature. According to Eagly and Karau (1991), "men are expected to possess high levels of agent qualities, including being independent, masterful, assertive, and competent. Women are expected to possess high levels of communal attributes, including being friendly, unselfish, concerned with others, and emotionally expressive" (p. 686). Similarly, Eagly and Johnson (1990) found that women tend to use a more participative and inclusive style whereas men tend to use a more directive and controlling style. If this were true, women would have been expected to be predominantly in the selling/coaching and participating/supporting styles whereas males would be predominantly in the telling/directing and delegating style categories. While findings of this study supported the assumption that females would be predominantly selling/coaching and participating/supporting in their leadership style, findings indicated that males were also predominantly selling/coaching rather than telling/directing and delegating.

Overall, study participants possessed a leadership adaptability score of 23.9 indicating adaptability on the low end of the moderately adaptable category. Males were split evenly between the low and moderately adaptable categories, whereas females were represented in each of the low, moderate, and highly adaptable categories.

There was only a negligible correlation between learning styles and leadership style adaptability. Based upon a review of the literature, it was expected that field-independent learners would be less flexible, and therefore, be significantly less adaptable. However, findings of this study did not support this assumption. Instead, it was found that when compared to field-dependent learners, field-independent participants were equally adaptable, although neither exhibited a high level of leadership style adaptability.

Previous research has demonstrated that students vary in learning style and suggest the importance of structuring learning activities to such that all learners, regardless of learning

style, can learn the material. This study confirms the existing knowledge base in that overall, students varied in learning style. However, findings of this study also indicate that all learners, regardless of learning style, possessed low to moderate adaptability. Leadership styles were not tied to learning styles, thus suggesting that all students, regardless of learning style can learn leadership. This finding would suggest that learning style differences among students in leadership education programs are not as important a consideration for leadership educators as in other content areas. Based on these findings, it is recommended that all students be made aware of their leadership adaptability and that leadership educators provide opportunities not only for students to assess their adaptability, but also for self-development activities to enable them to increase their leadership adaptability.

Learning styles have been shown in the literature to be important pedagogical considerations, and studies such as this one can show the importance of them in relation to domain specific content. Prior to this study, no studies could be found in agricultural education to describe the relationship between learning style and leadership adaptability. According to Gall, Borg, and Gall (1996), "the generalization of knowledge claims beyond the defined population are considered speculative until supported by evidence from new studies involving other populations" (p. 37). Therefore, it is recommended that this study be replicated to increase the generalizability of these findings.

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Learning Styles and Leadership Adaptability of College of Agriculture and Life Sciences Students

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The authors did a tremendous job on the review of the literature and citations. Anyone interested in learning styles and leadership adaptability can gain valuable insight from this research. The findings of this study contribute to the body of knowledge in this field. The purpose and objectives were clearly stated.

The working hypothesis based upon the literature suggested that field-dependent learners would be more social and would tend to focus more on relationships behaviors, thus being more adaptable. If females tend to be more field-dependent than males, it would seem that females would also be more adaptable. The theoretical framework did provide gaps to establish the problem and need for this line of inquiry.

The procedures used in this study were appropriate. Seventy-three students were sampled using the GEFT and LEAD Self-instruments. Descriptive statistics and Pearson correlations were analyzed using SPSS.

One obvious factor that could have impacted the results of this study was that the majority of the respondents were female (75%). When reviewing the leadership adaptability means, males (23.1) compared with females (24.2) were not statistically different. As was suggested in the recommendations, this study should be replicated to see if results would be similar with a more balanced distribution of male to female respondents.

The majority of respondents reported their primary leadership style to be *selling/coaching*, with females choosing *participating/supporting* and males *delegating* as their second choice. I would like to see this study replicated with a general population to see if students who major in Agricultural Education are different than others. Moreover, most of the research using the LEAD instrument has been done with CEOs in organizations (adult males). Do males change their leadership style with age, experience, maturity, etc.? For example, the males in your study may have had role models in secondary schools who were coaches and teachers, which might explain why the males reported *selling/coaching* rather than *telling/directing* as their primary choice.

Although there was only negligible correlation between learning style and leadership style adaptability, this study disproves some assumptions often made about the relationship between learning and leadership styles. I would have liked the authors to elaborate in the recommendations that regardless of learning style, all students can learn leadership. Although I agree with the statement, I couldn't quite make this leap based upon the results and conclusions given in the paper. How do the results of this study affect curriculum development in leadership? I also think there may be other instruments or types of data collection (such as interview, focus group research, etc.) that could help us delve into the issue with more depth of understanding.

Thanks for sharing this research and the fine reference list with the field.