

**THE RELATIONSHIP BETWEEN LEADERSHIP DEVELOPMENT AND CRITICAL THINKING
SKILLS OF SELECTED YOUTH LEADERS IN THE NATIONAL FFA ORGANIZATION.**

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Presentation – Research

The purpose of this correlational study was to explain the relationship between discipline specific critical thinking skills and leadership training and experiences of selected youth leaders. Researcher-developed measures of critical thinking skills and leadership were used to discover low, but positive relationships between critical thinking skills and leadership.

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Introduction

Leadership development is crucial for youth on the verge of becoming productive citizens, but one of the key competencies of leadership development is the ability of those youth to make sound decisions and judgments, which incorporate critical thinking (Ricketts & Rudd, 2003). How valid is this claim? Is critical thinking related to leadership development, leadership education, or leadership status? These are the questions this study attempts to address.

Literature Review

Youth Leadership Development

Studies that address leadership and youth specifically, while incorporating some measure of critical thinking in their conceptualization of leadership development were limited. DesMaria, Yang, and Farzenhkia (2000) indicated certain elements that were necessary in the development of youth leadership. They listed the critical elements as

- Youth/adult partnerships
- Granting young people decision making power and responsibility for consequences
- A broad context for learning and service, and
- Recognition of young people's experience, knowledge and skills (p. 3).

VanLinden and Fertman (1998) believed, "Leaders are people who think for themselves, communicate their thoughts and feelings, and help others understand and act on their own beliefs; they influence others in an ethical and socially responsible way."

Ricketts and Rudd (2003) developed the *Model of Youth Leadership Development*. Based on the research of Fertman and Long (1990); Fertman and Chubb (1993); Wald and Pringle (1995); and Long, Wald, and Graff (1996); their model demonstrated a way of fostering leadership in youth in career and technical education programs, such as agricultural education, general secondary education curricula, agricultural extension programs, and even post secondary undergraduate study of leadership. Five constructs are detailed in the Ricketts and Rudd (2003) model, but the construct pertaining to decision-making, reasoning, and critical thinking skills is germane to this study.

Decision-making, reasoning, and critical thinking skills as principal components of leadership development (Ricketts & Rudd, 2003) were evaluated in this study. Research linking critical thinking and leadership development was limited in the youth leadership education literature. Findings of this study will provide immediate and direct benefits to the leadership education discipline if critical thinking is a factor of leadership development.

Critical Thinking

Richard Paul (1995) defined critical thinking as "A unique and purposeful thinking in which the thinker systematically and habitually imposes criteria and intellectual standards upon the thinking, taking charge of the construction of thinking, guiding the construction of the thinking

according to [critical thinking] standards, and assessing the effectiveness of the thinking according to the purpose, criteria, and the standards [of thinking] (p. 21). Rudd, Baker, and Hoover (2000) provide the description of critical thinking guiding this study. They determined that "Critical thinking is a reasoned, purposive, and introspective approach to solving problems or addressing questions with incomplete evidence and information and for which an incontrovertible solution is unlikely" (p. 5).

Peter Facione (1990), who conducted a national Delphi study of experts to define critical thinking, came up with the following definition: "We understand critical thinking to be purposeful, self-regulatory judgment, which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based" (p.2).

Following the lead of Facione (2000), three critical thinking skills, Analysis, Evaluation, and Inference were the skills measured in this study. These skills were selected to represent critical thinking skill because of their orientation to objective measurement; their indicativeness of all critical thinking skills; and because subsequent studies have been conducted to validate their usage (Facione, 1990; Jones, et al., 1994).

For example, a student competent in the critical thinking skill of Analysis can effectively identify the relationship between statements, questions, concepts or descriptions to express beliefs, judgments or reasons. Students excelling at Inference consistently demonstrate the ability to draw reasonable conclusions and/or hypotheses based on facts, judgments, beliefs, principles, concepts or other forms of representation. Finally, students competent in the skill of Evaluation can effectively assess the credibility of statements and representations of others, and are proficient at assessing the logical strength of statements, descriptions or questions (Facione, 1998).

Relationship Between Leadership and Critical Thinking

Rollins (1990) conducted a study to determine the critical thinking of high school students in Iowa, and found that leadership positions held accounted a percentage of the variance. Another study that may have indicated the value of leadership for explaining critical thinking skills was done by Duchesne (1996). He studied (n=119) organizational leaders. The only significant predictor of critical thinking in the leaders was the years of education and developmental leadership learning experiences.

Leadership training is the variable representing the amount of formal leadership training participants received. Empirical research making the connection between critical thinking skills and leadership training did not exist. Sources dealing with the contextual nature of critical thinking may give credence to formal leadership instruction (Ennis 1989; Kintsch 1994; Anderson, Howe et al., 2001), but Garcia and Pintrich (1992) conducted the only known study to identify correlations between critical thinking and leadership. They specifically looked at the relationship to motivation, learning strategies, and classroom experiences. College students (n=758) in 12 different classrooms in three different universities were studied. Intrinsic goals and critical thinking were positively related.

Methods

Purpose and Objectives

The primary purpose of this correlational study was to explain the relationship between discipline specific critical thinking skills and leadership training and experiences of selected youth leaders in the National FFA Organization. To accomplish these purposes the following research objectives were used to guide this study:

- Determine the relationship between level of leadership training and critical thinking skills in selected youth leaders in the National FFA Organization.
- Determine the relationship between leadership experiences and critical thinking skills in selected youth leaders in the National FFA Organization.
- Determine the relationship between total leadership score and critical thinking skills in selected youth leaders in the National FFA Organization.

Procedures

Since the purpose of this study was to explain the relationship between critical thinking skills and leadership training and experiences, the research design was correlational. The target population for the study consisted of the 2002 National FFA Convention delegates specifically selected because of their leadership record in the FFA organization. A pilot test of the researcher-developed critical thinking skills test was administered to 33 subjects at the Florida State FFA Convention. The pilot samples were purposively selected because of their similarity to the target population.

The researcher-developed critical thinking skills test measured the discipline-specific skills of Analysis, Inference, and Evaluation (Facione, 1990). Prior to pilot testing, a panel of experts in critical thinking and leadership education checked the multiple-choice skills test for content and face validity. After pilot testing and item analysis, Cronbach's alpha for each critical thinking sub-skill was 0.83 for Analysis, 0.66 for Inference, and 0.63 for Evaluation. These reliability ratings were deemed appropriate since Norris and Ennis (1989) recommended reliability ratings of 0.65 and 0.75 for any instrument testing a variety of critical thinking aspects.

To collect data for the leadership variables, a researcher-developed instrument was used to determine leadership training score, leadership experience score, and total leadership score. To measure leadership, participants were asked to write the number of times they had participated in a given list of leadership activities that are available in the FFA.

The list of items and the responses were classified as either formal leadership training (i.e., leadership workshops, leadership conferences, or formal leadership courses) or as leadership experiences (i.e., public speaking, livestock judging, state FFA convention). The responses were also weighted. Local activities were given a value of one point, District or Area activities were given a value of two, Regional activities were given a value of three, State activities were given a

value of four, and National and International activities were given a value of five. A formal leadership development course was also given a value of 5. The self-reported activities were added together to create leadership training and experience scores.

Survey implementation followed Dillman's (2000) system of five compatible contacts. The instrument was initially available online. A paper copy of the instrumentation was sent to non-respondents. There were 229 responses from a population frame of 462 possible participants for a response rate of 50%. Twenty-seven of those respondents were removed from the database because of missing or erroneous data, which left ($N = 202$) usable responses. To account for non-response, early respondents were compared to late respondents (Miller & Smith, 1983), and no significant differences were found.

Data were analyzed using the SPSS[®] for Windows[™] statistical package. Pearson's product moment (r) statistics were conducted to identify the magnitude of relationship of critical thinking skills to the other variables in the study. The Coefficient of Determination (R^2) was used as an index of the proportion of variance in critical thinking skills explained by the independent variables.

Findings

Critical thinking skill scores ranged from a low score of 67.86 to a maximum score of 300. The mean total critical thinking skill score was $M = 227.86$, $SD = 37.91$. The scores for Analysis ranged from a low of 25 to the highest possible score of 100. Inference scores ranged from 0 to 100, and Evaluation scores ranged from 14.29 to 100. The highest scores were recorded for the Analysis ($M = 82.17$, $SD = 15.12$) construct. All of the skill scores were above 70 for the possible range of 0 to 100. Students also scored in the upper range of scores for the Inference ($M = 73.40$, $SD = 20.74$) and Evaluation ($M = 71.50$, $SD = 17.70$) skills.

Objective 1 - Relationship between level of leadership training and critical thinking skills

Leadership training scores ranged from zero to 64, with an average score of $M = 17.11$, $SD = 9.84$. Table 1 displays critical thinking skill scores at six different levels of leadership training.

Table 1.
Mean critical thinking skill score by leadership training (N = 210)

Leadership Training Score	n	Analysis M	Analysis SD
0-9	42	81.25	13.87
10-19	98	82.36	15.10
20-29	49	84.18	17.45
30-39	15	83.33	12.20
40-49	3	91.67	14.43
50+	3	95.83	7.22
Leadership Training Score	n	Inference M	Inference SD
0-9	42	76.19	20.36
10-19	98	72.65	20.98
20-29	49	71.02	21.63
30-39	15	70.67	19.81
40-49	3	80.00	.00
50+	3	93.33	11.55
Leadership Training Score	n	Evaluation M	Evaluation SD
0-9	42	72.45	15.18
10-19	98	68.66	18.75
20-29	49	73.47	16.50
30-39	15	76.19	18.44
40-49	3	90.48	16.50
50+	3	76.19	8.25
Leadership Training Score	n	Total CT Skill M	Total CT Skill SD
0-9	42	229.89	34.40
10-19	98	223.67	38.12
20-29	49	228.67	41.39
30-39	15	230.19	34.58
40-49	3	262.15	30.93
50+	3	265.36	6.26

Note: Leadership training scores ranged from zero to 64.

According to Miller (1998), a Pearson product moment correlation coefficient of 0.01 - 0.09 represents a negligible relationship; 0.10 - 0.29 represents a low relationship; and 0.30 to 0.49 represents a moderate relationship. Using Miller's terminology for magnitude of the relationship, there was a low relationship between leadership training score and each subskill and the total critical thinking skill score. However, the relationship was positive. Table 1 depicted a trend of higher critical thinking scores for higher levels of leadership training. Table 2 indicates that this low and positive relationship with leadership training is significant for Evaluation, $r(209) = 0.14$, $p < 0.05$, $R^2 = 0.02$ and total critical thinking skill score, $r(209) = .15$, $p < 0.05$, $R^2 = 0.02$, explaining only two percent of the variance for each respective variable. The positive relationship was approaching significance with Analysis, $r(209) = 0.14$, $p > 0.05$, and not significantly related to Inference, $r(209) = 0.06$, $p > 0.05$. R^2 was reported for the statistically significant relationships because Miller (1998) claimed it was necessary for determining practical significance.

Table 2.

Pearson product moment correlation between critical thinking skills and leadership training score (N = 210)

Skill	r	df	Sig.(2-tailed)
Analysis	0.14	209	0.06
Inference	0.06	209	0.41
Evaluation	0.14	209	0.04
Total critical thinking	0.15	209	0.03

Objective 2 - Relationship between leadership experiences and critical thinking skills

Leadership experience scores ranged from four to 87, with an average score of $M = 31.25$, $SD = 12.81$. According to Table 3, the total critical thinking skill scores improved from $M = 206.28$, $SD = 29.56$ at the lowest level of leadership experience to $M = 241.01$, $SD = 42.98$ at the highest level of leadership experience.

There was also a low relationship between leadership experience score and critical thinking skills. However, the relationship was positive. Table 3 depicted a trend of higher critical thinking scores for higher levels of leadership experience. Table 4 shows that this relationship is significant for Analysis, $r(209) = 0.14$, $p > 0.05$, $R^2 = 0.02$ and total critical thinking skill score $r(209) = 0.16$, $p < 0.05$, $R^2 = 0.03$, explaining two percent and three percent of the respective variance in each critical thinking variable. The relationship was positive, but insignificant for Inference, $r(209) = 0.11$, $p > 0.05$, and Evaluation, $r(209) = 0.08$, $p > 0.05$, when alpha was set at 0.05.

Objective 3 - Relationship between total leadership score and critical thinking skills

Total leadership scores ranged from four to 111 with an average score of $M = 48.36$, $SD = 18.03$. Table 5 also shows an increase in critical thinking skill scores with increases in total leadership score. The lowest total critical thinking skill scores ($M = 220.19$, $SD = 34.80$) were at the 25-34 leadership score level. The highest critical thinking skill scores ($M = 240.15$, $SD = 34.60$) were at the 75+ leadership score level.

Table 3.

Mean critical thinking skill score by leadership experience (N = 210)

Leadership Experience Score	n	Analysis M	Analysis SD
0-9	4	84.38	6.25
10-19	23	76.55	11.43
20-29	81	81.92	17.67
30-39	62	84.07	13.42
40-49	24	86.98	13.02
50+	16	86.72	15.46
Leadership Experience Score	n	Inference M	Inference SD
0-9	4	60.00	23.09
10-19	23	71.30	22.42
20-29	81	70.37	23.90
30-39	62	76.77	17.06
40-49	24	75.00	16.94
50+	16	77.50	17.70
Leadership Experience Score	n	Evaluation M	Evaluation SD
0-9	4	61.91	12.90
10-19	23	67.50	13.05
20-29	81	71.96	18.52
30-39	62	71.66	17.45
40-49	24	71.43	15.19
50+	16	76.79	22.66
Leadership Experience Score	n	Total CT Skill M	Total CT Skill SD
0-9	4	206.28	29.56
10-19	23	215.35	36.24
20-29	81	224.25	42.06
30-39	62	232.51	33.10
40-49	24	233.41	30.40
50+	16	241.00	42.98

Note: Leadership experience scores ranged from four to 87.

Table 4.

Pearson product moment correlation between critical thinking skills and leadership experience score (N = 210)

Skill	r	df	Sig.(2-tailed)
Analysis	0.14	209	0.05
Inference	0.11	209	0.10
Evaluation	0.08	209	0.23
Total critical thinking	0.16	209	0.03

There was a low relationship between total leadership score and critical thinking skills. However, the relationship was again positive. According to Table 6, this relationship was significant for Analysis, $r(209) = 0.17$, $p < 0.05$, $R^2 = .03$ explaining three percent of the variance; for Evaluation, $r(209) = 0.14$, $p < 0.05$, $R^2 = .02$, explaining two percent of the variance; and for total

critical thinking skill score $r(209) = 0.19$, $p < 0.05$, $R^2 = 0.04$, explaining four percent of the variance. This positive relationship was not statistically significant for Inference, $r(209) = 0.11$, $p > 0.05$ when alpha was set at 0.05.

Table 5.
Mean critical thinking skill score by total leadership score (N = 210)

Total Leadership Score	n	Analysis M	Analysis SD
0-24	18	80.46	13.66
25-34	21	83.93	11.28
35-49	86	79.49	17.87
50-74	70	86.61	12.65
75+	14	87.50	12.01
Total Leadership Score	n	Inference M	Inference SD
0-24	18	72.22	25.80
25-34	21	68.71	22.43
35-49	86	71.86	21.56
50-74	70	76.00	18.84
75+	14	77.14	15.41
Total Leadership Score	n	Evaluation M	Evaluation SD
0-24	18	70.24	12.71
25-34	21	67.69	13.85
35-49	86	70.10	19.18
50-74	70	73.67	16.43
75+	14	75.51	22.71
Total Leadership Score	n	Total CT Skill M	Total CT Skill SD
0-24	18	222.92	38.32
25-34	21	220.19	34.80
35-49	86	221.45	40.47
50-74	70	236.28	34.87
75+	14	240.15	34.60

Note: Total Leadership scores ranged from four to 110.

Table 6.
Pearson product moment correlation between critical thinking skills and leadership training score (N = 210)

Skill	r	df	Sig.(2-tailed)
Analysis	0.17	209	0.02
Inference	0.11	209	0.11
Evaluation	0.14	209	0.05
Total critical thinking	0.19	209	0.01

Conclusions/Implications

Though the positive relationship was only statistically significant for total critical thinking skill score and Evaluation, each subskill seemed to increase with increases in each level of leadership training. This relationship could be attributed to the content of the leadership training workshops,

seminars, and courses, which participants listed as contributory to their leadership development. For example, topics such as conflict resolution, problem-solving, and inter-personal communication are usually laced with scenario-based educational activities that develop a leader's ability to evaluate circumstances and make critical decisions.

The relationship between leadership training and critical thinking is a new finding in leadership and critical thinking studies as only one other piece of research, conducted at the University of Connecticut (Duchesne, 1996) made the connection between leadership training and critical thinking. This connection between leadership and critical thinking is natural, and one that is necessary. It is necessary because leaders who do not use critical thinking as they make decisions that affect and influence others are dangerous (Facione, Facione, and Giancarlo, 1998). Facione, Facione, and Giancarlo list several ways that we can protect ourselves from leaders who lack the willingness or the ability to make good judgment, but the most important way cited was simply, educating persons to think.

Activities classified as leadership experience involved competitive events, experiences as an officer, experiences with committee membership, or other activities in the FFA or some other organization that was not a formal leadership training experience. Although gains in critical thinking are not as pronounced for the leadership experience variable, an examination of the total critical thinking scores clearly demonstrates a slight rise in critical thinking skill scores at each increase in leadership experience. This low, but positive relationship was significant for Analysis and total critical thinking skill score.

It is possible that the more leadership experiences students are exposed to, the more their mind, and the skill it has for critical thought improves. Participation in contests seemed to be a determining factor of the leadership experience variable. The competition could be the reason for improved critical thinking. The Analysis and quick thinking those contests require could also foster critical thinking. Additionally, the leadership experience of being an FFA officer may have contributed to the leadership experience variable. One could reason that the officer experience contributes to the relationship between total critical thinking and Analysis. One reason for the significant relationship between Analysis and critical thinking could be the nature of the Analysis critical thinking construct. According to Facione (1990), Analysis involves examining ideas; identifying arguments; and analyzing arguments. Presumably, FFA officers and contest participants are engaging in analysis types of activities as part of their responsibilities to the FFA members or competitive team.

Lastly, the high level of motivation this group of students exhibited, may be the reason that leadership and critical thinking are related (Garcia & Pintrich, 1992). Recall that Garcia and Pintrich conducted a study to identify correlations between critical thinking and motivation, learning strategies, and classroom experiences. Their study supported the positive relationship between critical thinking and motivation. The students in this study should be highly motivated and therefore, according to Garcia and Pintrich (1992) competent at critical thinking as well.

Recommendations

The finding that critical thinking is related to leadership training may be important for teacher educators and leaders responsible for curriculum development. Youth need to be exposed to formal teaching and training in leadership development that directly and indirectly affect their ability to make fair, informed, judicious, and critically thought out decisions.

If the National FFA Organization believes effective leaders in their organization should “think critically, think creatively, practice sound decision-making, be problem solvers, commit to life long learning, articulate opinions to persuade others, practice sound study skills, and maximize mental assets and compensate for mental limitations,” as a report by the National FFA Task Force on Leadership and Personal Success (2002) suggests, then a greater effort should be put forth to substantiate the relationship between leadership education and critical thinking. A concerted effort to teach critical thinking in leadership training could yield greater impacts on critical thinking skills.

Because of the relationship between leadership experience and critical thinking, leadership educators should begin to foster critical thinking by encouraging students to be more active and to participate in more activities that have been proven to develop leadership (Ricketts, 1982; Townsend & Carter, 1983; Wingenbach & Kahler, 1997). These activities could include competitive events and participation as a leader within student organizations.

Educators should continue to foster, reward, and expect students to be highly motivated individuals. This motivation may translate into a competent critical thinker who can make sound decisions for the benefit of leading in any setting.

Lastly, additional research should be conducted to gain a better understanding of the relationship between leadership and critical thinking. This future research should include more quantitative, empirical, and reliable measures of leadership than the methods used in this study, and should investigate the impact of training leaders in critical thinking.

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