Influence of Formal Academic Leadership Programs on Undergraduates' Leadership Mindset: An Assessment of a Corps of Cadets Program

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Abstract

Students enrolled in a Corps of Cadets program at Texas A&M University [N = 336] were surveyed to examine their leadership mindsets and whether their participation in a formal academic leadership program simultaneously influenced their hierarchical and systemic-thinking preferences. No significant differences were found between students involved in the Corps of Cadets program only and those enrolled in a formal academic leadership program. Significant differences did exist for gender and classification of students; women scored higher in systemic-thinking and juniors and seniors not enrolled in a formal academic leadership program scored lower in hierarchical-thinking than freshman and sophomore not enrolled in a formal academic leadership program. Students within the formal academic leadership programs have lower hierarchical scores and higher systemic scores than those who are not in a formal academic leadership program.

Introduction

Preparing college students for leadership roles after graduation is a function of all collegiate leadership programs, regardless if the program is focused on leadership development, leadership training, or formal leadership education (Brungardt, 1997). A Living Learning

Community (LLC) creates a community for shared residential and academic experiences for students attending the same higher educational institution. With a focus on active rather than passive learning, LLCs create a sense of community and support amongst the participants and between the program participants and their instructors (Cross, 1998). As Inkelas et al. (2006) reported, the goal of the LLC is to, "create a smaller community, within an institution to help foster students' learning and development" (p. 116-117).

One of the most unique LLCs is the Reserve Officers' Training Corps (ROTC) program. ROTC programs, grounded in the practices of military academies (Support for Senior Military Colleges, 2016), require members to attend similar classes and participate in training exercises to learn military protocol and leadership development. A specific population of ROTC programs include the six Senior Military Colleges (SMCs): University of North Georgia, Norwich University, Texas A&M University, The Citadel, Virginia Military Institute, and Virginia Polytechnic Institute and State University. The six SMCs establish a Corps of Cadets (Corps) outside the ROTC program that provides a disciplined and regimented lifestyle aligned with the US military culture focused on leadership and character development. Although engaged in military officer preparation, the Corps of Cadets programs also enroll students not considering military careers.

Established when Texas A&M University opened, the Corps of Cadets is the oldest university-sponsored student organization on this campus and a unique leadership-focused LLC. Rather than a one-year program exclusively for first-year college students, like many leadership-themed LLCs, the Corps of Cadets is a four-year comprehensive LLC. Any Texas A&M University student, regardless of major, student classification, or desire to serve in the armed forces after graduation, is welcome to apply. The purpose of the Corps of Cadets is to develop, "leaders of character who [are] prepared for the global leadership challenges of the future" (Corps of Cadets, 2014), and as such, leadership education and developmental opportunities are interwoven into all aspects of the cadets' experience.

Like most Corps of Cadets programs, the Corps at Texas A&M University is built on a four class system (Corps of Cadets, 2014). Freshmen, sophomores, juniors, and seniors all have specific roles and duties within the organization. All freshmen cadets begin with ROTC courses and training with active military personnel; and enroll in a one-hour course in their spring term to prepare to be direct leaders the following year, when, as sophomores, they train the next class of freshmen. Sophomores enroll in a one-hour course in their spring term to prepare to be indirect leaders of the Corps. At the end of their second year, formal leadership development within the Corps diverges, as cadets must select between a military or non-military career.

For the more than 60 percent of students in the Corps of Cadets who choose a non-military career (Hollingsworth Leadership Development Program, 2014), they may choose to remain in the Corps by enrolling in the academic Certificate in Leadership Studies and Development program. Regardless of their future career goals, juniors prepare sophomores for their direct leadership responsibilities of the freshmen. The juniors seeking a commission in the armed forces enroll in the ROTC, branch-specific courses to prepare for military officer duties; while those seeking the leadership certificate complete two personal leadership education workshops, one each fall and spring term. Seniors, the executive leaders, create and implement

policy, and determine the vision of the Corps of Cadets. Seniors seeking a military contract continue their ROTC courses, whereas those seeking the leadership certificate complete two senior seminars: executive leadership and ethical decision making, fall and spring semesters, respectively. In addition to full participation in the Corps of Cadets and the four workshops during the cadet's junior and senior years, leadership certificate cadets must take eight credit hours of leadership courses from other academic departments across campus. Furthermore, cadets must earn a B (3.0 GPA) in this coursework to receive credit for the course within the certificate program (Hollingsworth Leadership Development Program, 2014). Candidates must also be active in leadership roles within the Corps and apply their knowledge gained in the classroom and Corps experience to other activities such as internships, study abroad programs, other student organizations, and other leadership experiences. Once all three requirements are met: academic, experiential, and application, the qualified candidates receive an official notation on their university transcript indicating receipt of the Certificate in Leadership Studies and Development.

Research on multi-year, leadership-focused LLCs as well as undergraduate students' leadership mindset development is limited. The issue is compounded due to the lack of a commonly utilized leadership definition (Northouse, 2016). Consequently, the potential exists for students to engage in a variety of leadership programs and or college courses, where the leadership definitions, perspectives, or models are in conflict. Thus, this study provided an opportunity to expand the literature and explore how participating in a formal academic leadership program while simultaneously participating in a Corps of Cadets program impacted the cadets' leadership mindset development. Moreover, this research answers the call expressed in Priority II of the Association of Leadership Educator's *National Leadership Education Research Agenda* (Andenoro et al., 2013), that leadership educators have an obligation to execute, "programmatic monitoring and evaluation . . . to determine if their practice is achieving the desired outcomes" (p. 10). Assessment information is critical to determine successful leadership development experiences and curricula (Brungardt, 1997) to continue strengthening and modifying existing leadership programs.

Literature Review and Conceptual Framework

To meet the demand for recent college graduates who demonstrate a proficiency in leadership, many colleges and universities provide formal settings for students to study leadership as an academic discipline and continue to invest resources in a variety of high impact teaching practices (Astin & Astin, 2000; Brungardt, Greenleaf, Brungardt, & Arensdorf, 2006; Haber, 2012; Shertzer et al., 2005). One such high impact practice is the leadership-themed LLC, where universities work to create an inclusive space for students to live and learn together as they engage proactively in their own leadership development, in efforts to produce the next generation of society's leaders (Cross, 1998; Rocconi, 2011). Even though learning communities, specifically residential learning communities, vary in structure, years of participation, size, and scope, all are designed to improve the undergraduate education experience through an emphasis on collaborative learning (Cross, 1998). The opportunities for and focus on collaboration intensifies by housing students who enroll in the same classes or who participate in the same co-curricular program in close residential proximity, i.e. the same floor, or the same residence hall.

Therefore, as the residential experience becomes an extension of a common classroom and co-curricular experience, students are able to continue class discussions, provide academic assistance, and actively apply the concepts learned within the security and support of their residential community. According to Cross (1998), "knowledge requires language, and people construct knowledge out of the language available to them in their community" (p.5), making one's living community an important factor in knowledge acquisition. Likewise, Inkelas and Weisman (2003) found that changing one's personal perspective requires more than mere exposure to multiple perspectives during an academic course. Consequently, participating in a common co-curricular experience provides an additional environment in which to engage in conversation and thereby critically examine perspectives different from one's own (Inkelas et al., 2006). However, the self-selection of students who apply to and then choose to participate in a leadership-oriented LLC, particularly one as rigorous and structured as the Corps of Cadets, makes it challenging to know if the participant's observed gains are due solely to the academic leadership course, the LLC experience solely, a combination of the two, or are a result of the kind of student who chooses to participate in the LLC (Inkelas & Weisman, 2003).

As students are challenged consistently to apply the leadership lessons learned in the classroom within their residential community, opportunities increase to expand the students' leadership capacity and competency. Thus, it is important to understand how leadership is portrayed within a student's residential community when pursuing opportunities to improve students' leadership development (Shertzer et al., 2005). Even though it is important to understand the influence of a student's living situation has on their conceptualization of leadership, it is equally important to understand how students individually define leadership as well as the source/experience from which this definition comes (Haber, 2012; Ho & Odom, 2015).

Wielkiewicz (2000) found that one's attitudes about leadership could be scored on two independent scales: hierarchical-thinking and systemic-thinking. Hierarchical-thinking revolves around the beliefs that leadership involves rigid, linear positional ranking within an organization, where control, power, decision-making, and authority are all focused at the top of the organization. Whereas, systemic-thinking is centered around the belief and attitude that leadership is a relational process happening throughout the organization, requires long-term thinking, supports collaborative decision-making, and shared authority (Wielkiewicz, 2000; Wielkiewicz, Prom, & Loos, 2005).

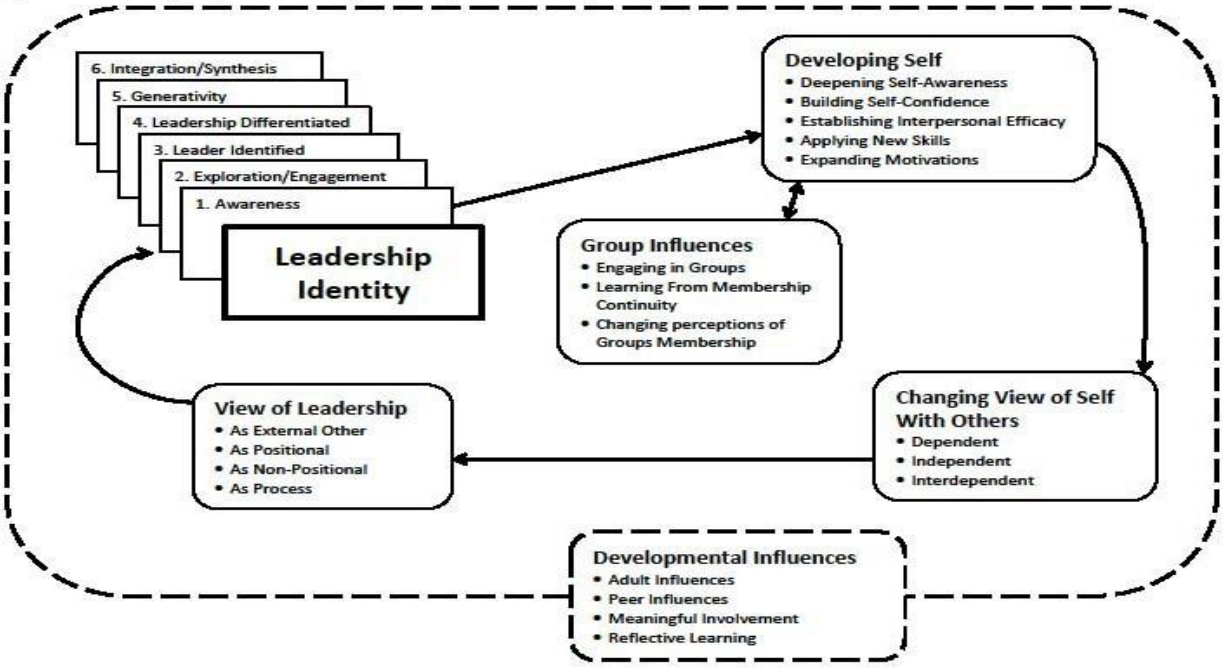
Furthermore, Ho and Odom (2015) found that participating in academic leadership courses influences a student's leadership mindset. As the number of academic leadership courses increases, the more likely a student is to shift their leadership mindset from a hierarchical view to a relational view. This supports work done by Cress, Astin, Zimmerman-Oster, and Burkhardt (2001), as they found students who participate in leadership programs are more relational and cooperative, more systemic, than those who did not participate in a leadership program.

Previous research also shows that a student's gender and age/year in college influences their leadership mindset. Male students tend to maintain a more hierarchical thinking approach to leadership while female students tend to maintain a more systemic thinking approach (Haber, 2012; Ho & Odom, 2015; Wielkiewicz, Fischer, Stelzner, Overland, & Sinner, 2012). Also,

college seniors (those with more than 90 completed credit hours) tend to be both higher in systemic-thinking and lower in hierarchical-thinking than first-year students (Ho & Odom, 2015), which indicates changes in how students' view leadership and their own leadership identity during their time in college.

When studying the process of how students develop their leadership identity, Komives, Owen, Longerbeam, Mainella, and Osteen (2005) used a grounded theory approach to document the path one follows. The result was the Leadership Identity Development (LID) model; a model incorporating six stages or leadership constructs: awareness, exploration/engagement, leadership identified, leadership differentiated, generativity, and integration/synthesis (see Figure 1). Beginning with *awareness,* one typically views leadership as external and separate from themselves. During the *exploration/engagement* stage, one begins to intentionally involve themselves in new group experiences and explore new responsibilities within these groups. At stage three, *leadership identified*, individuals view leadership as a position; an activity positional leaders "do." Those in the *leadership differentiated* stage view leadership as a relational process, where leadership can come from any part of the organization. The *generativity* stage includes those who accept the responsibility to develop others within the organization as a means towards sustaining the organization. By the sixth and final stage, *integration/synthesis,* leadership is seen as a life-long development process where the leader is striving for congruence. Thus, the LID model enables researches to classify a student's leadership identity development at any specific point in time.

Figure 1. Developing a leadership identity: Illustrating the cycle



Komives, S. R., Owen, J. E., Longerbeam S. D., Mainella, F. C., & Osteen, L. (2005). Developing a leadership identity: A grounded theory. *Journal of College Student Development, 46*(6), 593-611. doi: *10.1353/csd.2005.0061*

Even though movement through these stages is linear and sequential, there is also a cyclical component to it (Komives et al., 2009). Full development does not happen merely by briefly pausing in each stage before advancing to the next. Rather, each individual's context and life experiences influence the depth of development within the stage. Ideally, the individual needs to be experienced with all aspects of the stage before transitioning to the next. Komives, Longerbeam, Owen, Mainella, and Osteen (2006) identified five organizational categories which influence this developmental process: developmental influences, developing self, group influences, changing view of self with others, and broadening view of leadership. The collaborative learning focus of a LLC provides multiple opportunities for all of these influences to take hold.

While the six stages of the LID model are important when classifying a student's leadership identity development, this model is also beneficial when studying changes in a student's conceptualization of leadership, namely at the times of transition between stages (Komives et al., 2006). Stage transitions, are important as they show a broadening view of leadership, as well as a changing view of self in relation to others. Komives et al. (2009) found the most prominent shift occurs as an individual transitions between stages three and four. The transition at this point in the model is significant because leadership in stages one through three is seen as positional and is more focused on the actions of the positioned leader, or in other words more hierarchical in nature; whereas stages four through six categorize leadership as a process engaged in by any member of the organization, regardless of formal title or position, or more systemic in nature (Komives et al., 2006). Consequently, researchers can utilize the LID model to understand how individuals make meaning of their leadership experiences within the context of their current situations (Komives et al., 2009).

The analysis of college students' attitudes and/or beliefs about leadership, their leadership mindset, is one research application of the LID model. The Leadership Attitudes and Beliefs Scale (LABS-III) classifies leadership on two independent scales measuring hierarchical-thinking, the more traditional view of leadership as position, and systemic-thinking, a more progressive view of leadership as a relational process. The LABS-III has been used in multiple studies to examine how students without formal leadership positions conceptualize leadership (Fischer, Wielkiewicz, Stelzner, Overland, & Meuwissen, 2015; Ho & Odom, 2015; Wielkiewicz, 2000; Wielkiewicz, 2002; Wielkiewicz, Fisher, Stelzner, Overland, & Sinner, 2012). Typically, individuals who express hierarchical-thinking perceive leadership solely as the actions of the positional leader of the organization; whereas, those who express systemic-thinking perceive leadership as more of a collaborative process displayed by any member of the organization (Wielkiewicz, 2000). Therefore, the transition from stage 3 to stage 4 can be classified as the shift between hierarchical and systemic-thinking of leadership (Komives et al., 2005). Understanding students' perceptions of leadership is pertinent as it provides insights for leadership curriculum design, and improving leadership curriculum is desirable as researchers have found that academic leadership courses significantly impact students' growth as leaders (Haber-Curran & Tillapaugh, 2013; Lindsay, Foster, Jackson, & Hassan, 2009; Thompson, 2013).

Purpose and Objectives

This descriptive, slice in time, study sought to explore the leadership mindsets of undergraduate students who were actively participating in the Corps of Cadets and participating in a formal, academic leadership program (major or certificate) at Texas A&M University. Specifically, this study focused on the following research objectives:

1. Describe students' leadership mindsets in terms of hierarchical and systemic-thinking.
2. Determine relationships between hierarchical and systemic leadership mindsets based on student characteristics of gender, academic classification, participation in academic leadership program, and previous leadership experience.

Methodology

Population and Sample

The approach of this study was survey research, as this study sought to describe the characteristics of a large group of people on the issue of leadership mindsets (Fraenkel, Wallen, & Huyn, 2012). The population was undergraduate students who were taking military sciences courses and were active members of the Corps at Texas A&M University during the spring 2013 semester. Academic sections of the four military sciences courses were selected to participate in the study yielding a sample of 336 students (N = 336) who completed the survey. The survey was administered by researchers rather than the military sciences course instructors to account and control for social desirability bias. Participation in the survey was voluntary.

Measures and Variables

The instrument used was a paper version of the LABS-III (Wielkiewicz, 2002), with eight additional demographic questions. The LABS-III is a 28-item instrument used to examine leadership mindset along two scales: Hierarchical and Systemic-Thinking. Each scale consisted of 14 items, which were measured on a five-point summated scale: *1(Strongly Disagree), 2(Disagree), 3(Neither Disagree nor Agree), 4(Agree), and 5(Strongly Disagree).* The hierarchical scale measures beliefs about leadership being more positional, while the systemic scale measures beliefs about leadership being more relational (Wielkiewicz, 2000; Wielkiewicz, 2002; Wielkiewicz, Prom, & Loos, 2005). Convergent and discriminative validity have been established for both scales (Wielkiewicz, 2002).

Research has shown the usefulness of the LABS-III instrument to measure college students' understanding and assessment of leadership (Fischer, Overland, & Adams, 2010; Ho & Odom, 2015; Thompson, 2006; Wielkiewicz, 2000; Wielkiewicz, 2002; Wielkiewicz, Prom, & Loos, 2005). The eight demographic questions were incorporated for data analysis purposes. Included in the demographic questions were those asking gender, academic classification, previous leadership experience, and academic leadership program affiliation, i.e. a leadership major and/or an academic leadership certificate student within the Corps of Cadets.

Data Analysis

To address objective 1, the leadership mindsets of cadets within the Corps were illustrated using descriptive statistics along both the hierarchical and systemic-thinking scales.

Descriptive statistics reveal attitudes toward distinctive factors of groups who may be dissimilar (Agresti & Finlay, 2009). The descriptive data included frequencies, percentages, mean scores, and standard deviations. Table 1 details descriptive statistics for each of the 14 questions tied to the hierarchical-thinking scale, ordered from highest to lowest question mean score for those currently enrolled in an academic leadership program. For ease in interpretation, cadets enrolled in a leadership program were coded "Lead" while the remaining cadets were coded as "Non." Seventy percent or more of cadets responded in support, either agree or strongly agree, to the same five questions, regardless of participation in a formal leadership program. Only one question had a majority of cadets respond less than neutral, either disagree or strongly disagree, for both non-participants and participants in a formal leadership program. The mean question score for the same 8 questions ranged from slightly above 3.0 to just under 4.0, out of a 5-point scale, irrespective of participation in a formal leadership program. Overall, the cadets who were not participating in a leadership program had slightly less neutral opinions regarding hierarchical-thinking, when compared to the cadets who were participating in a leadership program, as the grand means were 3.46 to 3.38, respectively.

The 14 questions tied to the systemic-thinking scale are detailed in Table 2; and the table is ordered similarly to Table 1. Over 70 percent of cadets, regardless of participation in a leadership program, responded in support of, either agree or strongly agree, the same 13 questions on this scale. Four of these 13 questions had "strongly agree" as the majority response for both leadership program participation classifications. However, two of these 13 questions had "strongly agree" as the majority response only for the cadets participating in the leadership program and not for the non-participants. The one question on the systemic-thinking scale that did not have a majority of responses in support had more than a third of responses as "neutral;" with more than 35 percent for those participating in a leadership program and more than 41 percent for those not participating in a leadership program. The alignment of responses continued in that the same 12 questions had mean scores above 4.0 and the same one question had a mean score above 3.0, regardless of leadership program participation classification. Overall, the cadets had a more supportive opinion of systemic-thinking than hierarchical-thinking, as the grand mean scores were higher for the systemic than the hierarchical-thinking scale. Moreover, those who were participating in a leadership program had slightly more supportive opinions regarding systemic-thinking, when compared to the cadets who were not participating in a leadership program, as the grand means were 4.20 to 4.16, respectively.

Table 1

Descriptive Statistics for Hierarchical-Thinking of Leadership Program Participants (N =226) and Non-leadership Program Participants (N= 110)

Item		Responses % (*f*) Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	*M*	*SD*
A leader should take charge of the group.	Lead	27.0 (61)	60.2 (136)	11.5 (26)	1.3 (3)	0.0 (0)	4.13	0.65
	Non	32.7 (36)	60.0 (66)	6.4 (7)	0.9 (1)	0.0 (0)	4.25	0.61
Leaders are responsible for the security of org members.	Lead	27.4 (62)	58.8 (133)	11.1 (25)	2.2 (5)	0.4 (1)	4.11	0.71
	Non	27.3 (30)	51.8 (57)	19.1 (21)	1.8 (2)	0.0 (0)	4.05	0.73
An organization should try to remain as stable as possible.	Lead	29.6 (67)	50.4 (114)	14.2 (32)	5.3 (12)	0.4 (1)	4.04	0.83
	Non	31.8 (35)	52.7 (58)	10.0 (11)	3.6 (4)	1.8 (2)	4.09	0.85
The main tasks of a leader are to make and then communicate decisions.	Lead	25.2 (57)	52.7 (119)	12.4 (29)	8.4 (19)	1.3 (3)	3.92	0.91
	Non	26.4 (29)	51.8 (57)	10.9 (12)	8.2 (9)	2.7 (3)	3.91	0.97
The responsibility for taking risks lies with the leaders of an organization.	Lead	20.4 (46)	51.8 (117)	21.2 (48)	6.2 (14)	0.4 (1)	3.85	0.83
	Non	19.1 (21)	56.4 (62)	14.5 (16)	9.1 (10)	0.9 (1)	3.84	0.87
The main task of a leader is to make important decisions for an organization.	Lead	18.6 (42)	42.5 (96)	22.1 (50)	15.9 (36)	0.9 (2)	3.62	0.99
	Non	23.6 (26)	41.8 (46)	17.3 (19)	16.4 (18)	0.9 (1)	3.71	1.03
A leader must control the group or organization.	Lead	9.3 (21)	43.8 (99)	27.4 (62)	18.1 (41)	1.3 (3)	3.42	0.94
	Non	17.3 (19)	38.2 (42)	22.7 (25)	20.9 (23)	0.9 (1)	3.50	1.03
A leader must maintain tight control of the organization.	Lead	7.5 (17)	38.1 (86)	32.3 (73)	19.0 (43)	3.1 (7)	3.28	0.96
	Non	12.7 (14)	40.9 (45)	24.5 (27)	20.9 (23)	0.9 (1)	3.44	0.99
Members should be completely loyal to the designated leaders of an organization.	Lead	11.9 (27)	28.3 (64)	35.4 (80)	20.4 (46)	4.0 (9)	3.24	1.04
	Non	8.2 (9)	37.3 (41)	35.5 (39)	15.5 (17)	3.6 (4)	3.31	0.96
When an org. is in danger of failure, new leaders are needed to fix its problems.	Lead	11.9 (27)	22.6 (51)	35.0 (79)	26.1 (59)	4.4 (10)	3.12	1.06
	Non	16.4 (18)	20.9 (23)	39.1 (43)	23.6 (26)	0..0 (0)	3.30	1.01
Positional leaders deserve credit for the success of an org.	Lead	7.1 (16)	29.2 (66)	29.6 (67)	28.8 (65)	5.3 (12)	3.04	1.04
	Non	7.3 (8)	26.4 (29)	42.7 (47)	19.1 (21)	4.5 (5)	3.13	0.96
A leader should maintain complete authority.	Lead	4.9 (11)	25.2 (57)	30.1 (68)	32.7 (74)	7.1 (16)	2.88	1.02
	Non	8.2 (9)	25.5 (28)	26.4 (29)	31.8 (35)	8.2 (9)	2.94	1.11
It is important that a single leader emerges in a group.	Lead	4.4 (10)	16.8 (38)	29.6 (67)	37.6 (85)	11.5 (26)	2.65	1.03
	Non	4.5 (5)	11.8 (13)	30.0 (33)	44.5 (49)	9.1 (10)	2.58	0.97
The most important members of an organization are its leaders.	Lead	3.1 (7)	7.1 (16)	11.9 (27)	47.3 (107)	30.5 (69)	2.05	0.99
	Non	5.5 (6)	10.9 (12)	23.6 (26)	38.2 (42)	21.8 (24)	2.40	1.11

Note: **Grand Mean** = 3.38 (Lead) and 3.46 (Non), **Overall SD** = 0.61 (Lead) and 0.56 (Non)

Table 2

Descriptive Statistics for Systemic-Thinking of Leadership Program Participants (N =226) and Non-leadership Program Participants (N= 110)

Item		Responses % (*f*)					*M*	*SD*
		Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree		
An organization needs flexibility in order to adapt to a rapidly changing world	Lead	54.9 (124)	42.9 (97)	0.9 (2)	1.3 (3)	0.0 (0)	4.51	0.59
	Non	55.5 (61)	37.3 (41)	6.4 (7)	0.9 (1)	0.0 (0)	4.47	0.66
Leadership should encourage innovation.	Lead	56.2 (127)	39.4 (89)	3.1 (7)	0.0 (0)	1.3 (3)	4.49	0.69
	Non	47.3 (52)	48.2 (53)	3.6 (4)	0.0 (0)	0.9 (1)	4.41	0.65
Organizations must be ready to adapt to changes that occur outside the org.	Lead	50.0 (113)	47.8 (108)	1.8 (4)	0.4 (1)	0.0 (0)	4.47	0.56
	Non	50.9 (56)	47.3 (52)	1.8 (2)	0.0 (0)	0.0 (0)	4.49	0.54
Individuals need to take initiative to help their org. accomplish its goals.	Lead	53.5 (121)	43.4 (98)	0.9 (2)	0.4 (1)	1.8 (4)	4.46	0.71
	Non	54.5 (60)	43.6 (48)	0.9 (1)	0.0 (0)	0.9 (1)	4.51	0.62
Effective leadership seeks out resources needed to adapt to a changing world.	Lead	51.8 (117)	44.2 (100)	2.7 (6)	1.3 (3)	0.0 (0)	4.46	0.62
	Non	50.0 (55)	43.6 (48)	53.5 (6)	0.9 (1)	0.0 (0)	4.43	0.64
Organizational action should improve life for future generations.	Lead	43.8 (99)	46.5 (105)	7.5 (17)	1.8 (4)	0.0 (0)	4.33	0.69
	Non	40.0 (44)	45.5 (50)	11.8 (13)	1.8 (2)	0.9 (1)	4.22	0.79
Everyone in an organization is responsible for accomplishing org goals.	Lead	45.6 (103)	46.5 (105)	3.1 (7)	4.4 (10)	0.4 (1)	4.32	0.78
	Non	40.0 (44)	50.9 (56)	5.5 (6)	2.7 (3)	0.9 (1)	4.26	0.76
An effective org develops its human resources.	Lead	41.6 (94)	50.0 (113)	7.1 (16)	1.3 (3)	0.0 (0)	4.32	0.66
	Non	35.5 (39)	59.1 (65)	5.5 (6)	0.0 (0)	0.0 (0)	4.30	0.57
Leadership activities should foster discussions about the future.	Lead	29.8 (67)	60.6 (137)	9.3 (21)	0.4 (1)	0.0 (0)	4.19	0.61
	Non	25.5 (28)	61.8 (68)	11.8 (13)	0.9 (1)	0.0 (0)	4.12	0.63
Successful organizations make continuous learning their highest priority.	Lead	31.9 (72)	52.2 (118)	13.7 (31)	2.2 (5)	0.0 (0)	4.14	0.73
	Non	26.4 (29)	50.9 (56)	19.1 (21)	3.6 (4)	0.0 (0)	4.00	0.78
Leadership processes involve the participation of all organization members.	Lead	42.0 (95)	38.1 (86)	12.4 (28)	6.2 (14)	1.3 (3)	4.13	0.95
	Non	37.3 (41)	41.8 (46)	15.5 (17)	5.5 (6)	0.0 (0)	4.11	0.86
Good leadership requires that ethical issues have high priority.	Lead	33.2 (75)	50.0 (113)	14.2 (32)	2.2 95)	0.4 (1)	4.13	0.77
	Non	32.7 (36)	49.1 (54)	13.6 (15)	3.6 (4)	0.9 (1)	4.09	0.83
Anticipating the future is one of the most important roles of leadership processes.	Lead	19.0 (43)	58.8 (133)	15.0 (34)	6.6 (15)	0.4 (1)	3.89	0.80
	Non	20.9 (23)	56.4 (62)	12.7 (14)	9.1 (10)	0.9 (1)	3.87	0.88
Environmental preservation should be a core value of every organization.	Lead	8.4 (19)	24.3 (55)	35.8 (81)	21.2 (48)	10.2 (23)	3.00	1.10
	Non	6.4 (7)	20.0 (22)	41.8 (46)	22.7 (25)	9.1 (10)	2.92	1.02

Note: **Grand Mean** = 4.20 (Lead) and 4.16 (Non), **Overall SD** = 0.39 (Lead) and 0.41 (Non)

Table 3 details descriptive statistics for both the hierarchical and systemic scales based on the personal characteristics of gender, classification in school, and previous leadership experience. The range for the hierarchical-thinking scale was 31 to 67, with an overall average of 46.04, which is only slightly higher than neutral (42) and well below the supportive threshold of 56. The range for the systemic-thinking scale was greater, 25 to 70, with an overall average of 58.63, which is only slightly above the supportive threshold of 56.

Table 3

Descriptive Statistics for Summative Thinking Scales by Characteristic (N=336)

		Hierarchical Thinking		Systemic Thinking	
Characteristic	*n*	M	SD	M	SD
Gender					
Male	288	47.57	6.01	58.25	5.36
Female	48	48.40	6.51	60.92	3.96
Classification					
Freshman	81	48.38	6.09	59.70	5.05
Sophomore	116	48.56	6.63	57.91	6.05
Junior	89	46.88	5.42	58.33	4.90
Senior	50	46.00	5.44	59.14	4.77
Leadership Experience					
None	14	46.57	5.15	56.07	5.48
Corps of Cadets only	42	47.40	6.06	58.33	4.57
Combination	185	47.92	6.22	59.15	4.91
Non-Corps of Cadets	95	47.53	5.99	58.14	6.35

An increasing body of research has shown that gender influences how students conceptualize leadership. Female students tend to have higher systemic-thinking scores when compared to male students (Fischer, Overland, & Adams, 2010; Haber, 2012; Ho & Odom, 2015; Wielkiewicz, Fischer, Stelzner, Overland, & Sinner, 2012). In this study, an overwhelming majority of the cadets in the sample were male (n = 288, 85.7%), while 48 cadets in the sample were female (14.3%). The mean scores for male cadets were lower than for female cadets on both the hierarchical and systemic-thinking scales, 47.57 to 48.25 (hierarchical) and 58.25 to 60.92 (systemic).

A majority of the cadets in this study (n = 197 or 58.6%) were underclassmen, (freshman and sophomores), and 139 cadets (41.4%) were upperclassmen, (juniors and seniors). The mean scores for the hierarchical-thinking scale remained fairly constant between the freshmen and sophomores (48.38 and 48.56, respectively), as well as between the juniors and seniors (46.88 and 46.00, respectively). However, the upperclassmen reported lower hierarchical-thinking scores than the underclassmen, with the lowest mean score being reported by the senior cadets. As to the systemic-thinking scale, the freshmen and seniors had similar mean scores (59.70 and 59.14, respectively) while the sophomores and juniors reported lower mean scores (57.91 and 58.33, respectively). The lowest mean score for the systemic-thinking scale was reported by the sophomore cadets (57.91), who also happened to be the largest class in the sample population.

For purposes of this study, previous leadership experience was subdivided into four categories: none, Corps of Cadets only, non-Corps of Cadets only, or a combination of the two. Previous leadership experience was reported for 95.8% (n = 322) of the sample population. Out of these cadets, 185 (55.1%) reported they experienced leadership in combination between the Corps of Cadets and other outside organizations. Only 42 cadets (12.5%) reported their leadership experiences solely came from the campus Corps of Cadets program.

To capture which cadets were involved in formal academic leadership programs, three options were included on the survey: the Corps of Cadets-sponsored Certificate in Leadership Studies and Development, the University Studies – Leadership major, or the Agricultural Leadership and Development major. All three academic leadership programs were combined for ease in reporting.

Table 4

Independent t-tests with Thinking Scales and Gender (N =336)

Thinking Scale	Gender	*N*	*M*	*SD*	*t*	*P*
Hierarchical	Male	288	47.57	6.01	-0.868	0.386
	Female	48	48.40	6.51		
Systemic	Male	288	58.25	5.48	-3.227	0.001*
	Female	48	60.92	3.96		

Note: *$p<0.05$

To address objective 2, and determine if significant differences existed between hierarchical and systemic-thinking, mean scores were examined across all cadets. The researchers used independent sample t-tests (Field, 2009) to determine if significant differences existed. Differences in hierarchical and systemic-thinking for the characteristics of gender, classification, and leadership program enrollment were detailed in Tables 4-6, correspondingly. Classification was grouped by underclassmen and upperclassmen to simplify data analysis and because cadets must choose their leadership path at the end of their sophomore year: the military or the Leadership Certificate and Development program.

Table 5

Independent t-tests with Thinking Scales and Classification (N=336)

Thinking Scale	Classification	*N*	*M*	*SD*	*t*	*P*
Hierarchical	Underclassmen	197	48.49	6.40	2.89	0.004*
	Upperclassmen	139	46.56	5.42		
Systemic	Underclassmen	197	58.65	5.71	0.044	0.965
	Upperclassmen	139	58.62	4.85		

Note: *$p<0.05$

Table 6
Independent t-tests with Thinking Scales and Leadership Program Enrollment (N =336)

Thinking Scale	Leadership Program	*N*	*M*	*SD*	*t*	*P*
Hierarchical	Enrolled	226	47.33	6.07	-1.553	0.121
	Not Enrolled	110	48.43	6.06		
Systemic	Enrolled	226	58.85	5.38	1.034	0.302
	Not Enrolled	110	58.20	5.33		

Tables 7 and 8 detailed differences between hierarchical and systemic-thinking and academic classification for cadets *enrolled* in any of the three formal academic leadership program options and cadets *not enrolled* in any of the three formal academic leadership program options, respectfully.

Table 7
Independent t-tests with Thinking Scales and Classification for Cadets Enrolled in a Leadership Program (N =226)

Thinking Scale	Classification	*N*	*M*	*SD*	*t*	*P*
Hierarchical	Underclassmen	112	47.97	6.47	1.58	0.115
	Upperclassmen	114	46.70	5.60		
Systemic	Underclassmen	112	58.80	5.92	-0.139	0.889
	Upperclassmen	114	58.90	4.83		

Table 8
Independent t-tests with Thinking Scales and Classification for Cadets Not Enrolled in a Leadership Program (N =110)

Thinking Scale	Classification	*N*	*M*	*SD*	*t*	*P*
Hierarchical	Underclassmen	85	49.17	6.27	2.40	0.018*
	Upperclassmen	25	45.92	4.58		
Systemic	Underclassmen	85	58.45	5.47	0.895	0.373
	Upperclassmen	25	57.36	4.86		

Note: *$p<0.05$

Conclusions and Implications

As could be expected from participating in a degree program which promotes systemic-thinking, cadets within a formal academic leadership program have lower hierarchical-thinking scores and higher systemic-thinking scores than those who are not academically affiliated with a leadership program. With the exception of the sophomores, as the cadet's classification in college increased, i.e. moved from freshman to senior, their hierarchical-thinking scores

decreased, which aligns with previous research that as students spend more time in college their hierarchical-thinking tends to decline (Ho & Odom, 2015).

It is also interesting to note that the kind of leadership experience, Corps of Cadets or non-Corps of Cadets did not significantly change either the hierarchical or systemic-thinking scores. Thus, it could be inferred that the opportunity to practice and develop one's leadership abilities is more important than the venue or context in which one practices. Additionally, as typically Corps of Cadets programs take a more traditional, top-down, hierarchical approach to leadership, it is interesting to note that the average systemic-thinking score for those with leadership experience within the Corps was higher than the average systemic-thinking score of those with leadership experience outside the Corps. However, it is not surprising that the highest average systemic-thinking scores are associated with those cadets who have a combination of leadership experience (both Corps of Cadets and non-Corps of Cadets) as these cadets would have been exposed to a more varied assortment of leadership styles and perspectives.

Contrary to previous research, women had a higher average hierarchical-thinking score than men, yet the women reported a higher average systemic-thinking score than men, which does align with previous research (Haber, 2012; Ho & Odom, 2015; Wielkiewicz, Fischer, Stelzner, Overland, & Sinner, 2012). Furthermore, the difference between the systemic-thinking scales was statistically significant when examined against gender, which also supports previous research. See Table 4.

Even though the results are not statistically significant, the reduction in hierarchical-thinking mean scores as cadets advance through college supports research by Komives et al. (2006). As students transition between stages in their leadership identity, they leave behind previous "old" perceptions in favor of the new. Thus, the shift from higher to lower hierarchical-thinking mean scores between underclassmen and upperclassmen shows a shift between Stage 3, leader as a position, and Stage 4, leader as more relational, of the LID model (Komives, et al., 2006). Research has shown that the shift from Stage 3 to Stage 4 is common for college students as they transition from reliance on the leadership perceptions of adults or older peers to reliance on their own, individual understanding and perception of leadership (Komives et al., 2009; Wielkiewicz, 2000).

The limitations of this study are that the respondents reflect cadets at a single university who were enrolled in the military sciences courses over one semester. Furthermore, the respondents may not be a true representative sample of the members of the Corps of Cadets program in any of the categories of gender, classification, or leadership mindset. The disproportionately high number of male cadets to female cadets in the study also limits the findings. Additionally, the researchers did not control for the influence of the respondent's previous leadership experiences. Therefore, it is difficult to determine if the respondents' collegiate leadership experiences or the leadership experiences they had prior to college were more influential in their leadership mindset development.

Recommendations

This study was an attempt to evaluate the leadership thinking of collegiate students in a four-year, military LLC at Texas A&M University. Hierarchical-thinking scores decreased from inception into the Corps of Cadets to graduation with participation in a formal leadership education program. However, the systemic-thinking scores were less linear. The researchers recommend the program leaders modify their curricula to provide a more deliberate approach in differentiating hierarchical and systemic-thinking. Despite the military being a traditional, top-down hierarchy, systemic-thinking is necessary to make decisions that make lasting effect on a global scale and would help the program fulfill its mission to prepare future global leaders.

It is also recommended that this study be replicated at other Senior Military Colleges to draw comparisons between leadership experiences and leadership curricula in similar environments. Comparing students' leadership thinking at all six SMCs may provide substantial data to evaluate this unique subset of Corps of Cadets programs and provide useful information for non-military, leadership LLCs.

Likewise, the researchers recommend initiating a longitudinal study following one cohort/specific class of cadets through their four class system within the Corps of Cadets. The study should include assessments at the end of each year to record changes in leadership thinking from year to year. Following one specific sample through their four-year living-learning community may provide additional insight and a holistic evaluation of experience factors as they occur during the course of a cadet's collegiate leadership experience in the Corps of Cadets.

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