

College and Career Ready? A Snapshot of 12th Grade National FFA Members

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Abstract

High school graduates must be College and Career Ready to be successful in their future academic and employment pursuits. Employability skills such as communication, leadership, and critical thinking are in high demand from colleges and employers. High school academic success is an indicator the person has the skills and background necessary for success in further education. We conducted a descriptive study of 2018-2019 high school senior members of the National FFA Organization to provide an updated and focused look into its student membership. The goal was to assess the level of employability skills and academic success retained through high school considering the skills desired by 21st Century employers. Exploring, defining, and understanding the current National FFA student membership's achievements and interests in career pathways is important to ensure the optimal educational experience for today's youth. The study occurred in fall 2018 with 2,087 respondents completing the online survey. Respondents reported self-perceived high employability skill levels and above average academic success. This could imply study respondents are College and Career Ready.

Keywords: employability skills; academic success; college and career readiness; AFNR career pathways; National FFA Organization

Author Note: This work is a selection from Britt A. Copeland's larger thesis work that included additional variables not included presently. This work is also a result of a research collaboration with staff members at the National FFA Organization. Beyond helping set the scope of the research project National FFA Organization Staff did not conduct research procedures.

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Introduction

The National FFA Organization is an intracurricular student leadership organization that strives to make “a positive difference in the lives of students by developing their potential for premier leadership, personal growth, and career success through agricultural education” (National FFA Organization, 2020a). To achieve career success, students first have to become College and Career Ready. Today, nearly one-third of American students require remedial education when they enter college, and current college completion rates are not keeping pace with the U.S. projected workforce needs (USDE, 2018). Goecker et al. (2015) reported average U. S. annual openings of 57,900 between 2015 and 2020 for graduates with bachelor's or higher degrees in food, agriculture, renewable natural

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resources, and the environment. However, the authors stated only an average of 35,400 new U.S. graduates with expertise in food, agriculture, renewable natural resources, or the environment are expected leaving a shortfall. Additionally, the United States was once the global leader in college completion, but now ranks 12th in completion rates for young adults (USDE, 2018).

The release of the Common Core Standards in 2010 began a movement to prepare all students to be College and Career Ready (Saeger, 2017). According to the Career Readiness Partner Council (2017), a College and Career Ready person “effectively navigates pathways that connect education and employment to achieve a fulfilling, financially secure and successful career” (p. 2). Among the skills identified include critical thinking, communication, and working productively in teams.

The field of Agricultural Education has evolved to meet challenges in a 21st economy and reflect the shift in philosophy from Vocational Education to Career and Technical Education (CTE) with the new term formalized by the Carl D. Perkins Career and Technical Education Act of 2006. A key philosophy of CTE is to provide both academic and technical skills, knowledge, and training such that students can be College and Career Ready (Advance CTE, 2018). The Agricultural, Food, and Natural Resources (AFNR) Career Cluster and its subsidiary career pathways are highlighted in both the structure of the National FFA Organization and National AFNR Content Standards (National FFA Organization, 2020b; The National Council for Agricultural Education, 2015). Employability skills, including but not limited to communication, critical thinking, and leadership are expected for college admissions (Crawford et al., 2011; Easterly et al., 2017; Goecker et al., 2015; Morgan, 2010), from business leaders seeking applicants in the Food and Agricultural Sciences (Robinson & Garton, 2008; Seemiller, 2013) and are regularly evaluated in research.

To be employed competitively, applicants not only have to achieve academic success and be proficient in their field of interest but also possess a command over employability skills that are broadly applicable to all aspects of business (Boahin & Hofman, 2013). Creating those well-rounded graduates proficient in technical, scientific topics as well as employability skills such as leadership, communication, and critical thinking is the challenge for today’s educational system. This challenge is reflected in the AAAE National Research Priority 3: Sufficient Scientific and Professional Workforce that Addresses the Challenges of the 21st Century.

Review of the Literature

Employability skills are the transferable skills needed by an individual to make them employable. In 1990, the Secretary’s Commission for Achieving Necessary Skills was formed for the purpose of engaging businesses, schools, unions, and parents in a dialogue about the skills needed for employment in the 21st century workforce (U.S. Department of Labor, 1991). This report highlighted “workplace know-how” necessary to be employed as five competencies (resources, interpersonal, information, systems, and technology) and three foundation skills (basic skills, thinking skills, and personal qualities). Three major conclusions were reached: (1) all U.S. high school students must develop the competencies and foundation skills; (2) the high-performance qualities of the most competitive companies must become the standard for most companies; and (3) the nation’s schools must become high performance organizations (U.S. Department of Labor, 1991). This report focused the discussion for the exploration of competencies (or employability skills as they are more commonly referred to in current literature) needed as the workforce required for tomorrow becomes more globally orientated, technology driven, and challenging.

Since then educational research has explored, measured, and defined employability skills. Robinson and Garton (2008) found graduates perceived the following skills necessary when seeking employment; problem solving, working independently, dealing with stressful situations, staying positive, and listening. Crawford et al. (2011) organized employability skills into seven clusters; communication, decision making, self-management, teamwork skills, professionalism, prior

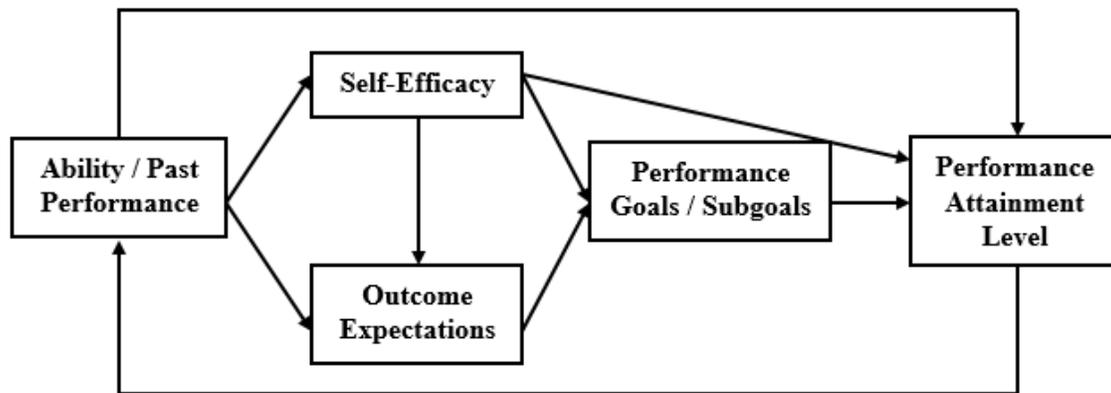
experiences, and leadership. Seemiller (2013) developed a composite list of 60 skills that have been used by 97 agencies to measure skills in students, job applicants, and professionals. Easterly et al. (2017) divided their list of workforce competencies into 3 categories; personal, leadership, and communication. Problem solving/critical thinking was identified in both personal and leadership categories.

Leadership, personal growth, and career success are components of the FFA Mission in developing student potential (National FFA Organization, 2020b). Each of these components has been defined using 16 precepts (Croom, 2004). Through aligning the literature on college and career readiness, and employability skills with the FFA mission/precepts this research study was focused on leadership, critical thinking, and communication.

Post high school plans of students can be sorted into categories of military, vocational/trade school, two-year college, four-year college, and work/job. According to the National Center for Education Statistics, 23% of high school completers immediately enroll in two-year colleges and 44% in four-year colleges (McFarland et al., 2019). The remaining one-third of high school completers enter or plan to enter the military, a trade school, or the workforce upon graduation. LaRose (2018) found one-fourth of graduates from Connecticut School-Based Agricultural Education programs majored in a four-year degree related to agriculture and 40% of graduates were employed in agriculture. The Agriculture, Food, and Natural Resources Career Cluster places agriculture-related careers into seven Systems Career Pathways: Agribusiness; Animal; Environmental Service; Food Products and Processing; Natural Resources; Plant; and Power, Structural, and Technical (Advance CTE, 2018).

Theoretical Framework

Lent et al. (2002) used Albert Bandura's Social Cognitive Theory to develop the Social Cognitive Career Theory (SCCT) defined as a theory "aimed at explaining three interrelated aspects of career development: (1) how basic academic and career interests develop, (2) how educational and career choices are made, and (3) how academic and career success is obtained" (p. 751). The three main components of the theory are self-efficacy, outcome expectations, and goals. Of particular interest to this study is the Social Cognitive Career Theory (SCCT) Performance Model depicted in Figure 1. In SCCT's performance model, performance attainment level, such as in work or academics, is a function of cognitive and behavioral variables including general cognitive abilities, past performance, outcome expectations, self-efficacy beliefs, and goal mechanisms (Brown et al., 2008). Thus, exploring employability and academic success fits well into the SCCT Performance Model. Ability/Past Performance includes performance in high school courses (GPA) and standardized tests (ACT, SAT). Self-efficacy, confidence in accomplishing tasks, is related to exploratory behaviors and decisions in careers involving those tasks. Outcome expectations, thinking about what will happen as a result of something, can influence moving toward a specific career depending on the positive/negative nature of the expectation. Goals, intentions to do something or perform at a certain level, can lead to possible choice of a specific career.

Figure 1*Social Cognitive Career Theory Performance Model*

Note. From Brown et al. (2008).

SCCT hypothesized general cognitive ability and past performances both directly and indirectly influence student performance through mediating paths to student's self-efficacy beliefs and outcome expectations (Brown et al., 2008). Thus, SCCT posited students who perform well in college and careers do so in part because they have developed, through their prior education and social learning experiences, the skills necessary for college and career success. They also do well because they have developed strong self-efficacy and outcome expectations through past performance indicators (such as high school GPA and standardized tests), cognitive aptitudes (thinking dispositions), and other forms of social encouragement (such as achievements and modeling). SCCT also hypothesized students with higher self-efficacy and outcome expectations set greater goals, which in turn affects performance.

This study sought to explore the roles of self-efficacy and outcome expectations through self-perceived measurements of selected employability skills (leadership, critical thinking, communication) and academic success. Self-efficacy is not a substitute for ability but a complement. Because of the scope and feasibility of self-reported measures, this study is limited to data collection on self-efficacy and not ability. SCCT suggested at the same level of ability, performance will be determined by self-efficacy beliefs (Lent et al., 2002).

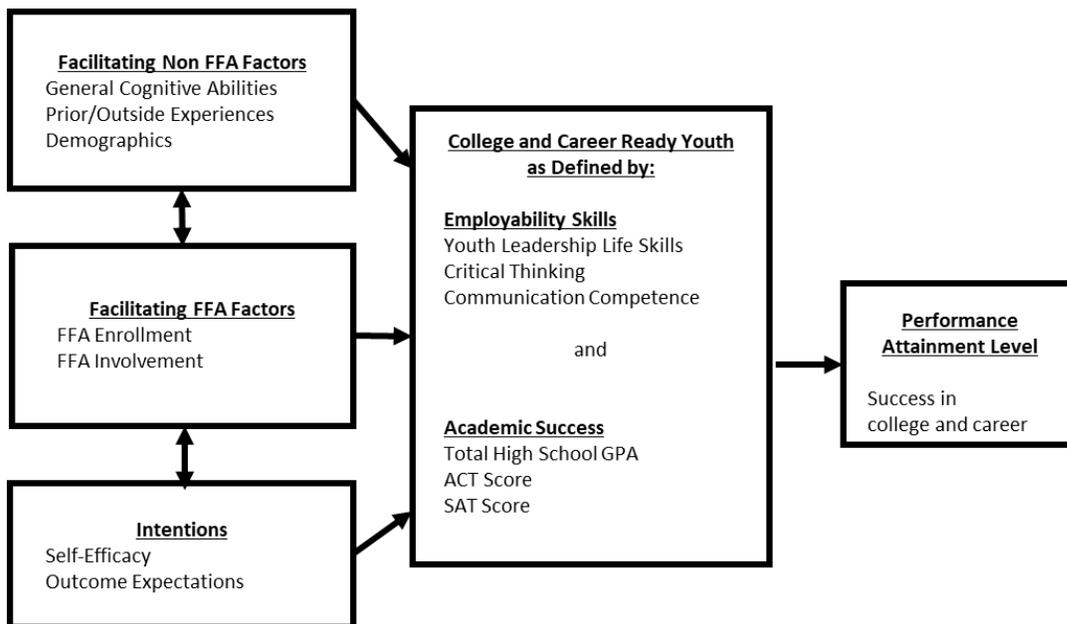
Conceptual Framework

Essential to this study is that critical thinking, leadership development, and communication skills are similarly related as employability skills and that total high school GPA, ACT scores, and SAT scores are also similarly related as commonly used academic success measures (Cole & Gonyea, 2008; Geiser & Santelices, 2007; Gonyea, 2005; Ricketts & Rudd, 2005; Shaw & Mattern, 2009). Also essential to this study, is that these measures of employability skills and academic success are a summation of a youth that is College and Career Ready. According to the Career Readiness Partner Council (2017), a College and Career-Ready person "effectively navigates pathways that connect education and employment to achieve a fulfilling, financially secure and successful career" (p. 2). And thus, upon completion of a pathway, youths must strive to achieve not only academic success and proficiency in their field of interest but also possess a command over employability skills that are broadly applicable to all aspects of employment within a 21st century workforce (Boahin & Hofman, 2013).

This study organized cognitive and behavioral variables from the SCCT as Intentions, Facilitating Non-FFA factors, and Facilitating FFA factors to bring emphasis to the unique past experiences and achievements this study’s population has had while involved in the National FFA Organization. Self-efficacy and outcome expectations constitute Intentions. General Cognitive Ability, Demographics, and Prior/Non-FFA Experiences constitutes Facilitating Non-FFA Factors. FFA Involvement and FFA Enrollment constitutes Facilitating FFA Factors. The conceptual framework for this study was derived from the Social Cognitive Career Theory Performance model. The framework reads as: A College and Career Ready Youth is predicted by the summation of relationships within Intentions, Facilitating FFA Factors, and Facilitating Non-FFA Factors. In this framework, employability skill and academic success constitute a College and Career Ready Youth leading to performance attainment level of success in college and career. See Figure 2 for a visual representation of the conceptual framework.

Figure 2

Conceptual Framework



Purpose and Research Questions

This study was a response to the absence of an updated and focused look into the National FFA student population given the evolution of employability skills required by the 21st century U.S. economy. The purpose of this study was to discover current levels of employability skill and academic success, which serve as evidence that 2018-2019 high school senior members of the National FFA Organization are College and Career Ready. The following research questions were answered through an online quantitative study of 12th Grade National FFA members:

1. What levels of employability skills of leadership, critical thinking and communication are present within the population?
2. What levels of academic success are present within the population?
3. What post high school plans and interest levels in the AFNR Career Pathways are present within the population?

Methodology

An online Qualtrics® survey was developed using a descriptive research design. The survey was divided into three sections: (1) Employability Skills, (2) Academic Success, and (3) Demographic Questions. The employability section was the YLLSDS Scale (Seevers et al., 1995), EMI Scale (Ricketts & Rudd, 2005), and SPCC Scale (McCroskey & McCroskey, 1998, 2013). The Academic Success section was developed by the researchers with input from National FFA Staff members and measured self-reported GPA, SAT scores, ACT scores, post high school plans and interest in post-secondary agricultural-related education. The demographic section was developed by the researchers with input from National FFA Staff members and included race, age, sex, urban or rural classification, and the receipt of free and reduced lunch as a measure of social economic status. Purdue University Institutional Review Board gave approval to conduct the study.

The Youth Leadership Life Skill Development Scale (YLLSDS) was developed by Seevers et al. (1995) to provide a valid, reliable scale to measure youth leadership life skill development. Seevers et al. reported they established face, content, and construct validity. Reliability was assessed using Cronbach's coefficient alpha with the final summated scale of 30 indicators obtaining an alpha of .98. The scale for each indicator is four points with 0 = no gain, 1 = slight gain, 2 = moderate gain, and 3 = a lot of gain. One limitation of this scale is its development 25 years ago, which introduces potential for outdated indicators. This scale has been used as a measurement of leadership life skill development in agricultural education and other youth-serving organizations (Boleman et al., 2005; Gibbons et al., 2017; Moran et al., 2019; Real & Harlin, 2006; Rutherford et al., 2002; Seamon, 2010; Walker et al., 2011).

The Self-Perceived Communication Competence Scale (SPCC) was developed by McCroskey and McCroskey (1998, 2013) to measure how competent respondents feel they are communicating in a variety of contexts. Those contexts included a dyad, a group, a meeting, and public speaking. The scale is comprised of 12 close-ended items that evaluate how respondents feel in each communication context with the added descriptors of strangers, acquaintances, and friends. Respondents answer each item using whole numbers from 0 completely incompetent to 100 completely competent. The scale has a Cronbach's alpha of .85. According to Croucher et al. (2020), the SPCC has been used in 50+ published studies since 2000. Croucher et al. stated the instrument is highly reliable in measuring self-perceived communication competence, especially in U.S. settings. However, the authors found the instrument had validity issues when used in an international setting.

Ricketts and Rudd (2002) constructed a conceptual model for youth leadership, which included critical thinking as one of the five identified dimensions. Subsequently in 2005, Ricketts and Rudd developed the EMI: Critical Thinking Disposition Assessment, a 33-question instrument designed to assess critical thinking skill level and dispositions. Each question uses a five-point Likert-type scale of 1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, 5 = strongly agree. The EMI: Critical Thinking Disposition Assessment contains three dispositions: Engagement (Cronbach's alpha .89), Cognitive Maturity (Cronbach's alpha .75), and Innovativeness (Cronbach's alpha .79). The EMI has been used in agricultural education youth studies (Rhoades et al., 2009; Rincker, 2014; Seamon, 2010).

Shaw and Mattern (2009) examined the relationship between self-reported high school GPA and GPA provided by the respondent's college or university and found a strong correlation of $r = .74$ and that respondents are more likely to underreport their high school GPA than overreport it. Previous studies found similar strong correlations of $r = .81$ to $.86$ (Kuncel et al., 2005; Maxey & Ormsby, 1971; Sawyer et al., 1988). The correlations in these studies provide evidence that self-reported GPA has a basis in educational research as strong representation of actual GPA (Shaw & Mattern, 2009). A significant point made by Shaw and Mattern was the closer the reporting date to having received the grade the higher the correlation between actual GPA and self-reported GPA.

Concerning Standardized Test Scores, Cole and Gonyea (2008) examined self-reported test scores from the 2007 Beginning College Survey of Student Engagement from 126 colleges and universities. Cole and Gonyea found high validities for self-reported scores; however, correlations between SAT scores were found to be significantly lower than ACT scores. The researchers suggested this finding was due to the ACT score consisting of one number instead of three in the SAT. Additionally, asking for a self-reported total SAT score reduced measurement error rather than asking for the individual section scores. Cole and Gonyea also found lower achievers were more likely to overreport SAT and ACT scores. Issues such as complexity, forgetting scores, reporting bias, and confusion with question wording were all prevalent in research related to SAT and ACT data collection (Cole & Gonyea, 2008; Geiser & Santelices, 2007; Gonyea, 2005).

Prior to implementation, the survey was pilot tested with eight college freshmen who were past FFA members enrolled in Agricultural Education or Agricultural Communication majors at Purdue University. The subjects for pilot testing were generally only one year older than the target audience and used because of their similarity to the target population and the convenience of the researchers. Changes to the survey based on the pilot test included minor wording clarifications and adding “other” as an option to the career pathways question.

Participants

The inclusion criteria for the study were student membership within the National FFA Organization and enrollment in the 11th grade during the 2017-2018 school year so the student theoretically had the opportunity of experiencing at least three years of participation within the organization regardless of demographics. Students with less than three years of participation in the National FFA Organization were not excluded from the study. Since the study took place during the 2018-2019 school year it was possible students who joined FFA for the first time in the fall of 2018 were not included in the study. Ages in this target population ranged from 16-20 years of age. The researchers obtained electronic consent forms that were automatically emailed to parents/guardians if a subject aged less than 18 years assented to participate and provided their parent’s/guardian’s email address. Participants over the age of 18 provided their consent on the cover page of the web-based survey. A census ($n=71,712$) of student member email addresses was obtained from the National FFA Organization that met these criteria. After deleting duplicate, failed, or bounced email addresses, the final census was 61,241. Consent to use the email addresses was given by National FFA Organization CEO Mark Poeschl to recruit survey respondents from the FFA’s membership pool.

Data Collection

Data collection followed Dillman et al. (2014) Tailored Design Method of four compatible contacts. Procedures for distributing instruments and collecting data were completed by the researchers via Purdue University Licensed Qualtrics software. Since the population consisted of FFA members in two age groups that required different consent forms a second survey was distributed to collect electronic parental consent from students under the age of 18 years old. In total, four compatible contacts were sent to FFA members, four compatible contacts were sent to parents of underage FFA members, and two contacts were sent to Chapter advisors of FFA student members within the population.

Before data collection began, a pre-notice letter in the form of an email was sent to survey respondent’s chapter advisors. This pre-notice letter informed chapter advisors that a survey was being conducted with senior student members in their chapter. The 6,189 advisors were contacted through a Qualtrics email function; no survey was attached to this correspondence. The list and permission to contact the list was obtained through the National FFA Organization. Careful consideration was made to both increase awareness of the survey and adhere to Institutional Review Board guidelines to protect the anonymity and voluntary nature of the study.

Limitations

The population for this study was all active members of the National FFA Organization in the 11th grade for the 2017-2018 school year. Member experiences differed based upon factors such as geographic locations and level of participation. The researchers recognized FFA is a partial source of overall impact due to the exposure to multiple youth organizations, institutions, and pre-existing dispositions. Because of FFA being a partial source and the low response rate (5.3%), the conclusions and implications drawn from this study are limited to individuals who responded from the census of National FFA student members in the 12th grade during the 2018-2019 school year.

Another limitation to this study is the online nature of the survey instrument. Those without internet access or email addresses associated with their FFA accounts were excluded from the study. A further limitation is the reliance on self-perception in the instrument, opening the results to the risk of social desirability bias. Since the population for this study were seniors in high school and were being measured on similar gains/developments, considerations were made to combat this bias. Those considerations including separating the National FFA Organization's presence from survey contacts and instruments, including clear and direct statements in survey contacts that stated response to the survey would not affect a student's relationship with the organization and using tested research-developed scales that have provided valid results in this population. Because of the low response rate (5.3%), these findings only apply to the population represented by the respondents. Although the low response rate limits generalizability, this study drew from the largest possible population of the National FFA Organization found in the literature to date.

Findings

Of the 61,241 FFA members contacted, 9,011 surveys were started. The software recorded 3,224 responses as completed by respondents; however not every respondent answered all items. Of the 3,224 complete responses, informed consent as required by Purdue University Institutional Review Board was obtained for 2,087 responses. The 2,087 useable responses were analyzed and results reported in the following section. The overall response rate to the student survey was 5.3% with a useable response rate of 3.4%. Early versus late responses were compared (Lindner et al., 2001) to assess nonresponse error. Significant differences were found between five of the seven key variables. Because of these differences, results of the study are not generalizable beyond the population of respondents.

Table 1 depicts the demographic profile of the respondents. The respondents enrolled in grade 11 and the National FFA Organization when the list of email addresses was compiled and in grade 12 when the survey was administered. Females (67.4%) were a majority. When asked to report ethnicity/race 1.9% responded with American Indian or Alaskan Native, 0.7% responded with Asian, 1.4% responded with Black or African American, 6.1% responded with Hispanic or Latino, 0.2% responded with Native Hawaiian or Pacific Islander, 88.3% (n = 1,657) responded with White and 1.4% preferred not to answer. To measure socioeconomic status as noninvasively as possible the survey asked respondents if they received free or reduced lunch at their schools. Concerning Free Lunch, 25.7% indicated they received free or reduced lunch, 71.0% indicated they did not, and 3.3% preferred not to answer. Table 2 describes the settlement classification of the respondents. This variable was measured by self-reported student residence ZIP codes in an open-ended question. Classifications were determined using the United States Department of Agriculture, Economic Research Service (ERS) Rural-Urban Commuting Areas (2014, 2016, 2018). Responses were classified as: 45.4% Metropolitan Areas with populations of 50,000 people or more, 18.9% Micropolitan Areas with populations of at least 10,000 to 49,999 people, 17.8% Small Towns with populations of at least 2,500 to 9,999 people and 18% Rural Settlement, defined as outside of all other classification boundaries.

Table 1

Demographic Profile of Survey Population

		<i>f</i>	%
Sex	Male	607	32.3
	Female	1,265	67.4
	Prefer not to answer	5	.3
	Total	1,877	100.0
Ethnicity/ Race	American Indian or Alaskan Native	35	1.9
	Asian	13	.7
	Black or African American	27	1.4
	Hispanic or Latino	114	6.1
	Native Hawaiian or Pacific Islander	4	.2
	White	1,657	88.3
	Prefer not to answer	26	1.4
	Total	1,876	100.0
Received Free Lunch	Yes	480	25.7
	No	1,329	71.0
	Prefer not to answer	61	3.3
	Total	1,870	100.0

Table 2

Demographic Profile of Survey Population: Settlement Classification

	<i>f</i>	%
Metropolitan Area ^a	819	45.4
Micropolitan Area ^b	341	18.9
Small Town ^c	321	17.8
Rural	324	18.0
Total	1805	100.0

Note. Classifications derived from United States Department of Agriculture, Economic Research Service (2014, 2016, 2018).

^a 50,000 or more people. United States Census Bureau (2010).

^b 10,000 to 50,000 people. United States Census Bureau (2010).

^c 2,500 to 9,999 people. United States Census Bureau (2010).

RQ1: What levels of employability skills of leadership, critical thinking and communication are present within the population?

The composite mean Youth Leadership and Life Skills Development Scale was $M = 73.1$, $SD = 13.90$ (See Table 3). Youth Leadership Life Skill Development Scale scores ranged from a low score of 2 to maximum score of 90. The developers of the YLLSDS note scale values from 0 to 30 might be considered no to slight leadership life skills development, 31 to 60 moderate development and 61 to 90 high development (Seevers et al., 1995). The present study had a Cronbach’s Alpha of .96 indicating a high level of internal consistency within the 30-item scale.

Table 3

Youth Leadership Life Skills Development Scale (n=1,998)

	Minimum	Maximum	<i>M</i>	<i>SD</i>
Youth Leadership Life Skill Development Scale 2 (YLLSDS) Score	2	90	73.1	13.90

Note. Description of scale values from Dormody et al. (1993). 0-30 = no to slight leadership development. 31-60 = moderate leadership development. 61-90 = high leadership development.

The overall SPCC score for this study was moderate (McCroskey & McCroskey, 2013) at *M* = 85.20, *SD* = 15.45 (See Table 4). All sub scores were also in the moderate range. The present study had a Cronbach’s Alpha of .94 indicating a high level of internal consistency within the 12-item scale.

Table 4

Self-Perceived Communication Competence Scale (n=1,693)

	Min.	Max.	<i>M</i>	<i>SD</i>
SPCC Total Score	1.92	100.00	85.20	15.45
Public Sub Score	2.00	100.00	83.77	17.64
Meeting Sub Score	2.00	100.00	80.40	19.84
Group Sub Score	1.67	100.00	86.70	16.36
Dyad Sub Score	1.33	100.00	87.83	15.19
Stranger Sub Score	1.75	100.00	76.94	21.01
Acquaintance Sub Score	2.00	100.00	85.12	17.86
Friend Sub Score	2.00	100.00	92.24	14.06

Note. Higher SPCC Scores indicate higher self-perceived communication competence (McCroskey & McCroskey, 2013).

The total EMI score was *M* = 109.8, *SD* = 11.76 out of a scale of 130 (See Table 5). The subscales were *M* = 46.6, *SD* = 5.51 for Engagement, *M* = 33.1, *SD* = 4.03 for Cognitive Maturity and *M* = 30.0, *SD* = 3.49 for Innovativeness. These scores are at the upper end of the typical ranges (Irani et al., 2007). The present study had a Cronbach’s Alpha of .92 indicating a high level of internal consistency within the 26-item scale.

Table 1

EMI: Critical Thinking Disposition Assessment (n=1,863)

	Min.	Max.	<i>M</i>	<i>SD</i>
EMI Total Score	26	130	109.8	11.76
Engagement Score	11	55	46.6	5.51
Cognitive Maturity Score	8	40	33.1	4.03
Innovativeness Score	7	35	30.0	3.49

Note. Possible ranges from Irani et al. (2007). Total 26-130, Engagement 11-55, Maturity 8-40, Innovativeness 7-35. Typical ranges: Total 59-130, Engagement 28-55, Maturity 16-40, Innovativeness 15-35.

RQ2: What levels of academic success are present within the population?

Academic success was measured using GPA, ACT scores, and SAT scores described in Table 6. GPA was recorded as weighted or unweighted on a 4-point scale. The survey question was opened-ended allowing respondents to specify their GPA and scale. GPAs reported as other than a weighted or unweighted 4.0 scale were converted to a 4.0 scale using an online GPA converter. The mean unweighted GPA was found to be $M = 3.69$, $SD = .37$ ($n=240$) and slightly higher than the weighted GPA with a mean of $M = 3.59$, $SD = .50$ ($n=1,617$). Table 6 describes the ranges of weighted GPA and its frequencies. ACT total composite score was measured by one open-ended question with no suggested ranges. Responses outside of the ACT’s reported range of 1-36 were thrown out. The mean score was found to be $M = 23.5$, $SD = 4.56$ ($n=1,009$). The SAT scores were recorded as three open-ended questions with no suggested ranges and responses outside of the acceptable SAT ranges were thrown out. The total SAT score was found to be $M = 1152.1$, $SD = 156.30$ ($n=449$). The sub scores were reported as $M = 583.7$, $SD = 79.31$ ($n = 333$) for the Evidence-Based Reading and Writing Section Score and $M = 574.6$, $SD = 91.62$ ($n= 332$) for the Math Section Score. A difference of 117 responses were found between respondents who chose to report all three of their SAT scores ($n = 332$) or only total SAT score ($n= 449$).

Table 6

Academic Success

		<i>n</i>	Min.	Max.	<i>M</i>	<i>SD</i>
GPA	Weighted 4.0 Scale	1,617	1.00	5.00	3.59	0.50
	Unweighted 4.0 Scale	240	2.00	4.00	3.69	0.37
ACT	Total Score	1,009	13	36	23.5	4.56
SAT	Total Score	449	628	1590	1152.1	156.30
	Evidence-Based Reading and Writing Section Score	333	390	790	583.7	79.31
	Math Section Score	332	340	800	574.6	91.62

RQ3: What post high school plans and interest levels in the AFNR Career Pathways are present within the population?

Table 7 describes the frequency of responses to questions regarding the academic interests of respondents. Respondents indicated their post high school plans by selecting from the following choices: 3.0% ($n = 56$) indicated they would obtain a full-time job, 3.7% ($n = 69$) indicated they planned to join the military, 4.1% ($n = 77$) indicated they would attend a training or vocational school, 17.9% ($n = 334$) indicated they would attend a two-year college, and 71.4% ($n = 1,335$) indicated they would attend a four-year college. After respondents described their post high school plans respondents who indicated training or vocational school, two-year college, or four-year college were directed through skip methodology to indicate if that further education would be agriculture related. Those respondents who indicated they would not pursue further education were directed to the demographic questionnaire. Of the respondents who indicated they were continuing their education, 67.1% ($n = 1,174$) signified it would be agriculture related and 32.9% ($n = 575$) signified it would not be agriculture related. Those who marked “Yes” were then asked to express their interest in the AFNR Career pathways.

Table 7*Outcome Expectations: Academic and Career Interests*

		<i>f</i>	%
Post high school plans	Join the military	69	3.7
	Training or vocational school	77	4.1
	Two-year college	334	17.9
	Four-year college	1,335	71.4
	Obtain a full or part-time job	56	3.0
	Total	1,871	100.0
Will post high school education involve agriculture?	Yes	1,174	67.1
	No	575	32.9
	Total	1,749	100.0
Interest in ANR Career Pathways (Select all that apply)	Agribusiness Systems	431	20.2
	Animal Systems	589	27.6
	Biotechnology Systems	108	5.1
	Environmental Service Systems	152	7.1
	Food Products and Processing Systems	86	4.0
	Natural Resource Systems	152	7.1
	Plant Systems	172	8.1
	Power, Structural and Technical Systems	130	6.1
	Other	150	7.1
	Other: Agricultural Educator/Education	162	7.6
Total	2,132	100.0	

In pilot testing, respondents expressed unfamiliarity with the location of certain occupations within the pathways so the researchers added an “Other” option with an open-ended blank so respondents could write in their choice. This option was popular among respondents. The researchers coded the “Other” responses into pathways if they belonged according to the ANR Pathway descriptions. For example, if a respondent answered “Other, equine vet” their response was added to the Animal Systems Pathway. In the Other category 7.1% (n = 150) could not be coded into a pathway or more often did not contain a written response to be coded. A significant theme in the Other category was Agricultural Education/Educator with 7.6% (n = 162) which, was the third most frequent response. The traditional pathways were most responses to fewest as Animal Systems, Agribusiness Systems, Plant Systems, Environmental Service Systems, Natural Resource Systems, Power, Structural and Technical Systems, Biotechnology Systems, and Food Products and Processing Systems (See Table 7).

Conclusions and Implications

The composite mean of 73.1 for the Youth Leadership and Life Skills Development Scale led the researchers to conclude respondents perceived they had a high level of youth leadership life skill development. The composite mean found in this study is similar to other studies conducted with participants in youth-serving organizations (Dormody & Seevers, 1994; Seamon, 2010; Walker et al., 2011; Wingenbach & Kahler, 1997).

The moderate scores for overall SPCC score and sub-scale scores led the researchers to conclude respondents perceived they were competent in communicating within the contexts of a dyad, group, meeting, and public speaking and within the descriptors of strangers, acquaintances, and friends. McCroskey and McCroskey (1998, 2013) stated higher scores indicate higher self-perceived

communication competence. Croucher et al. (2020) also found U.S. students ($M = 76.71$) were in the moderate range for overall SPCC scores.

The high scores for total EMI score and sub-scale scores led the researchers to conclude respondents perceived they had a high level of critical thinking skill and dispositions. Ricketts and Rudd (2005) recommended agriculture teachers encourage good grades in courses, participate in leadership activities, and challenge students to remain inquisitive learners. Although this study did not explore the relationship between EMI and GPA, these respondents did self-report high EMI scores and high GPAs leading the researchers to conclude respondents are developing critical thinking skills and dispositions.

Academic Success was measured through self-reported GPA, ACT composite scores, and SAT scores. This section was not forced completion so respondents could choose to answer which variables they wished. GPA had the highest response rate, $n = 1,617$, followed by ACT, $n = 1,009$, and lastly SAT, $n = 449$. Literature on how to ask these variables was explored in constructing the survey. In such literature, strong correlations were found between actual scores and self-reported scores for standardized tests (Cole & Gonyea, 2008; Geiser & Santelices, 2007) and GPA (Kuncel et al., 2005; Maxey & Ormsby, 1971; Sawyer et al., 1988; Shaw & Mattern, 2009). Additionally, self-reported ACT scores correlated more strongly with actual scores than SAT scores because of the complexity of having three different scores to remember when reporting SAT (Geiser & Santelices, 2007; Gonyea, 2005). Having meaningfully less responses to SAT in this study was predicted by these studies, therefore respondents were not forced to report scores. To this point, 117 respondents chose to self-report only their total SAT scores and not all three scores. An interesting finding in this study was 233 respondents indicated they had not taken either standardized test. Yet only 125 respondents indicated they would be pursuing employment or military service instead of postsecondary education that would presumably require these standardized tests.

Weighted GPA and Unweighted GPA means were very similar. One respondent reported a Weighted GPA of 1 interpreted as an F. GPA ranges were investigated further to provide context to this finding. Only 0.4% ($n = 6$) of self-reported Weighted GPAs fell into a D+ thru F designation and 3.7% ($n = 60$) of responses fell into a C+ thru C- designation. These ranges meant the vast majority of responses were A+ thru A- (51.2%) and B+ thru B- (44.7%) and it could be assumed the low scores reported translate as low social desirability bias.

In 2009, the National Center for Educational Statistics published *The Nations Report Card* which “informs the public about the academic achievement of elementary and secondary students in the United States” (NCES, 2009). This report indicated the overall High school GPA for the nation was 3.0, up from 2.88 in 2005. The mean GPAs of this study were 3.59 for Weighted GPA, and 3.69 for Unweighted GPA. According to ACT the national average composite score for the 2018 graduating class was 20.8 which is slightly lower than the mean score found in this study, $M = 23.5$ (ACT, 2018). According to the College Board, the national average total SAT score for the 2018 graduating class was 1068 which is also slightly lower than the mean score found in this study, $M = 1152.1$ (The College Board, 2018). Therefore, the researchers concluded these respondents have higher standardized test scores and overall high school GPAs than the national average. This could translate into college readiness for academic success. It should be noted the demographics of respondents (majority were female, White, and did not receive free lunch) does not match the demographics of the National Center for Educational Statistics or the national demographics for ACT and SAT test takers which may have been a larger contributor to the level of success reported in the present study.

Also reported in the academic success portion of this study were post-secondary plans, interest in further agricultural education, and interest in Agriculture, Food, and Natural Resource Career Pathways. Respondents were asked to indicate their post high school plans. The majority of respondents (71.4%) indicated they would pursue education at a four-year college. In a descriptive study, random

sampling techniques were employed to access the then 450,000 members of the National FFA Organization by Talbert and Balschweid (2006). The purpose of that study was to describe career aspirations of FFA members related to USDE Career Clusters, Supervised Agricultural Experiences, Career Development Event participation and career related demographic indicators compared to a similar study conducted in 1999. Post high school plans were explored in both Talbert and Balschweid studies and the present study. Differences over time in the career aspirations of the FFA membership can be observed by comparing these three studies. Pursuing a four-year degree or four-year college was the majority in all three studies but that majority changed over time; in 1999, 61.9% chose four-year college; in 2003, 59.7% chose four-year college; and in the present study conducted in 2018, 71.4% chose four-year college. In steady decline was the amount of respondents who chose to obtain a job immediately after high school; 8.8% in 1999, 6.5% in 2003 and 3.0% in 2018. Joining the military remained under 6% in all of the studies, spiking in 2003 presumably because of the terrorist attacks in 2001. Joining the military was slightly down in the present study with 3.7% of respondents making that indication. The remaining choices for post high school plans were similar and relatively consistent over time.

After respondents in the current study indicated their post high school plans, they were asked if those plans would be agriculture related. As expected within an agriculturally minded student organization 67.1% indicated yes. This is consistent with the consensus in agricultural education research that more opportunities students have to experience agriculture, the more likely they are to exhibit interest in the AFNR Career Pathways. The Social Cognitive Career Theory supports that experiences influence goal setting, or in this case, interest in AFNR Career Pathways. In the aforementioned study by Talbert and Balschweid (2006) participants were asked to indicate their interest in each of the U.S. Department of Education's Career Cluster with the majority (33.7%) choosing Agriculture, Food and Natural Resources out of the 16 clusters. The present study explored Career Pathways within the AFNR Career Cluster. Only the respondents who indicated they were pursuing agriculture-related further education were asked for their preferences. Of those respondents, the majority chose Animal Systems (27.6%) and Agribusiness Systems (20.2%). Although these selections were the most popular choice, a significant amount of interest was shown in every pathway whether the respondent chose it or the response was recoded from the "Other, please specify" option. This is an especially significant finding in the light of the renaissance in trade careers happening in both the 21st century economy and Career and Technical Education.

The researchers concluded students are still not familiar with Career Pathways nomenclature as the "other, please specify" answer choice received numerous responses. From this choice, a theme of Agricultural Educator/Education arose as the fourth most popular answer selection (7.6%). This finding was significant because it was an answer selection without a clear place within the Agriculture, Food, and Natural Resource Career Pathways. There were also 150 responses marked "other" but accompanied by no further specification for recoding into the other pathways. This could have been caused by confusion as to what each career pathway entails or because the respondent had not decided upon a future career.

Overall, the majority of respondents indicated above average academic success on all three of the indicators and interest in AFNR Career Pathways. The researchers concluded these respondents have significant academic success that when combined with employability skill levels can be interpreted as College and Career Readiness.

Recommendations

Based on the high YLLSDS, moderate SPCC, and high EMI scores the researchers recommend students similar to the respondents of this study consider the National FFA Organization as an option for development of their employability skills of leadership, communication, and critical thinking. The researchers recommend replicating this study using sampling methodology that can obtain a

representation of all FFA members and a sufficiently high response rate to be able to generalize to the entire FFA membership. Additionally, a qualitative study could provide fuller insight into aspects of FFA contributing to members' development of their employability skills and academic success.

GPA was collected in a fillable blank for the score and one blank for the scale it was out of (weighted or unweighted). The vast majority of respondents decided to report a weighted GPA ($n = 1,617$), which created complications in using the values for analysis. To avoid this complication, we recommend using a standardized 10-point scale multiple-choice question as used by the College Board in their surveys for the GPA variable instead of fillable blanks.

We recommend educators place emphasis on all career pathways, such as Power, Structural, and Technical Systems, even if they are not available as course selections on the local level because exposure to the availability to all career options could spark interest in a student. This spark could cause them to develop an interest in that career pathway, thus influencing their post high school plans. In the Social Cognitive Career Theory, exposure influences outcome expectations, so a student not knowing a career pathway exists may cause them to expect they would not be able to obtain a career in that field. Gauging from the amount of "other, please specify" selections recoded into pathways such as Animal Systems and Power, Structural and Technical Systems the researchers recommend more emphasis be placed in defining career pathways nomenclature within educational settings.

Further research should employ new, updated research methodologies to capture a larger, more diverse sample, and to assess more National FFA Life Knowledge precepts to build upon what was explored through the employability skills section of this thesis. Future research should consider authentic assessments of employability skills rather than relying solely on perceived scores. Further research should consider the strength of these findings and the differences between early responders and late responders which was captured after nonresponse error was confirmed.

This study used three existing scales to measure the employability skills of leadership, communication, and critical thinking. YLLSDS was created in 1995, EMI in 2005, and SPCC last updated in 2013. Review of these instruments should be conducted to insure relevance to youth studies of the next decade.

With these limitations in mind, this group of 2,087 FFA members exhibited impressive self-reported academic success and high self-perceived employability skill level. For members represented by respondents of this study, involvement in FFA can lead to College and Career Readiness. However, barriers to involvement can include socioeconomic status, racial/ethnic minority status, and course scheduling conflicts that cause gaps in FFA enrollment. The researchers recommend agricultural educators and future researchers use the limited snapshot provided by this study to inform themselves as they continue strategizing programmatic and demographically conscious ways to better the field of agricultural education.

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