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## Assessing the Influence of 4-H Participation on the Development of Workforce Readiness Skills

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### **Cover Page Footnote**

We acknowledge the contributions of faculty of the University of Georgia and the NAE4-HA Workforce Task Force to this field of study. In the development of this research, the following tools, outputs of their work, were utilized: Problem Solving/Decision Making Scale, a subset of the Life Skills Development Scale for Adolescents (Darden et al., 1996) and the 4-H Workforce Readiness Survey.

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**Abstract.** We examined the impact of 4-H participation on workforce readiness skill development, including personal, work, communication, and problem solving/decision-making. The study examined two levels of 4-H activities: county-level and state-level. The online survey instrument contained questions about demographics, skill development and 4-H participation. Respondents indicated participation in county-level activities was positively related to the development of the four workforce skills; however, participation in state-level activities was significantly related to the development of work skills. Problem solving/decision-making skills was least associated to county or state-level participation. We recommend Extension professionals intentionally incorporate workforce readiness skills into all 4-H activities.

### INTRODUCTION

Extension professionals can teach young people the specific skills needed for the 21st-century workforce. Like other youth organizations, involvement in the 4-H program has been associated with the development of such skills as leadership, communication, and responsibility (Maass et al., 2006). As stated on the National 4-H website, “through hands-on learning, kids build not only confidence, creativity and curiosity, but also life skills such as leadership and resiliency to help them thrive today and tomorrow” (National 4-H Council, 2019, para 1). According to research by Norman and Jordan (2006), youth develop skills through 4-H programming that help prepare them for later life.

Many studies with 4-H audiences have documented outcomes related to skill development within the major activities of 4-H. For example, a study conducted by Ferrari and McNeely (2007) found that teens participating as volunteer camp counselors learned teamwork, improved social skills, and showed greater initiative. The experiences young people have as 4-H camp counselors promote workforce preparation and other positive youth development outcomes (Cochran & Ferrari, 2009). Another study asked 4-H alumni which life skills they gained as a result of 4-H club participation (Fitzpatrick et al., 2005). Five common life skills emerged from

this investigation: self-esteem, teamwork, responsibility, planning and organizing, and cooperation. Furthermore, Radhakrishna and Sinasky (2005) examined the influences of 4-H alumni’s experience on their leadership, personal development, and communication skills. They found that alumni perceived that their 4-H experiences significantly influenced their development of group interaction, leadership, and decision-making skills. The study concluded that 4-H influenced its members to finish high school, make job or career selections, and continue education beyond high school.

Although research presents evidence of workforce and life-skill development among youth participating in 4-H Youth Development programs nationwide, employers are reporting that new employees lack necessary skills. The U.S. Chamber of Commerce Foundation (2017) revealed that many job applicants lack basic skills needed to succeed in the workforce. The National Association of Colleges and Employers (2016, 2018) *Job Outlook Survey* also reported that the skills employers are seeking include leadership, teamwork, problem-solving, written communication, and analysis. Baby boomers, who already possess the desired skills, are working longer than previous generations, so employers have the option of hiring experienced job seekers with workforce readiness skills rather than young people looking for their first jobs (Eyster et al., 2013).

In a competitive job market, it is advisable that applicants bring workforce skills to the interview, even if they have a college degree. Instead, according to the U.S. Chamber of Commerce Foundation (2017), employers are “coping with new hires who are unsure of how to write a professional email, struggle to organize and prioritize tasks, or have a difficult time collaborating with coworkers.” State and national standards for teaching personal skills (Purtrill, 2017) do not currently exist. However, according to the 4-H’s National Strategic Plan, “4-H youth are work-ready, financially literate, and prepared for college, career, and life” (National Institute of Food and Agriculture, 2018, p. 6). A study by Cochran et al. (2010, para 15) concluded that “Extension professionals must intentionally build 21st century skills language into their programs and use tools and opportunities for focused reflection that will facilitate the generalizing process and application to the future.”

Based on the concerns of employers, workforce development is necessary for today’s youth. To further explore the connection between 4-H participation and 21st-century workforce skill development, our research posed these questions: (a) Does participation in 4-H activities have an impact on the development of 21st-century workforce readiness skills? (b) If so, at what level do youth need to be involved in 4-H to develop these skills?

## METHODS

For this study, we focused on 4-H alumni ages 18–25. The sample was created from those who responded to requests on an electronic mailing list of 4-H members, recruitment postings on social media channels, or word-of-mouth invitations from 4-H members or staff.

The instrument used in this study consisted of three major components: demographic questions (see Table 1), questions about 4-H participation (see Table 2), and questions about workforce readiness skills (see Table 3). Questions related to 4-H participation were written by our research team and based on our own experiences of working in 4-H. Items related to decision-making, one type of workforce readiness skill, were taken verbatim from the Problem Solving/Decision Making Scale, a subset of the Life Skills Development Scale for Adolescents (Darden et al., 1996). For the other workforce readiness skills (personal, work, and communication), we consulted the *4-H Workforce Readiness Survey* developed by the National Association of Extension 4-H Agents (NAE4-HA, now NAE4-HYDP) Workforce Task Force and then wrote our own questions. All workforce readiness questions used a 4-point response (1 = completely disagree; 2 = mostly disagree; 3 = mostly agree; 4 = completely agree).

An initial survey instrument was tested for face validity by using a series of cognitive interviews with a group of

4-H alumni ages 18–25 whom we identified as typical of the sample audience. Based on the feedback from those interviews, the survey was revised and distributed online through the Qualtrics online survey system. The survey was active for 3 months. There were originally 413 respondents to the survey, but some respondents did not fit within the definition of traditional college age (18–25) and were eliminated from the data set. After we cleaned the data, 270 respondents remained. Table 1 illustrates the relevant characteristics of the respondents.

Six new variables were created by combining responses to participation questions. Because the responses were limited to “yes” and “no,” statistical tests were not used to determine the level of participation. The decision to group questions was made based on the meaning of the questions. Two independent variables were created from the answers to the 4-H participation questions: county-level participation and state-level participation. National and international 4-H participation items were dropped from the analysis because less than 20% of respondents said that they had participated in those activities (see Table 2).

Four dependent variables related to 21st-century workforce skills were created by using factor loadings and communalities from a Varimax with Kaiser Normalization Rotated analysis. Although six components emerged, we reduced the number of variables to four by combining Components 2 and 3. Component 2 and 3 variables seemed alike in meaning, and Component 3 variables had fairly high loadings in the Component 2 column. The same was true of Components 4 and 5. As a result, we labeled the four new components/variables as personal skills; problem-solving/decision-making skills; work skills; and communication skills.

The new variables were created by giving each subject a new combined score for each variable and then dividing that number by the number of questions making up the variable. As seen in Table 4, the lowest new score for the personal skill variable was 1.00, and the highest was 4.00.

## DATA ANALYSIS AND RESULTS

Using the combined variables for county and state as the independent variables (see Table 2) and the combined variables for workforce skills (personal, communication, work, problem-solving/decision-making) as dependent variables (see Table 3), simple linear regression analyses were calculated to predict whether county and/or state participation in 4-H activities predicted subject agreement (“mostly disagree” to “mostly agree”) with statements related to perceived gains in work skills (personal, communication, work, problem-solving/decision-making). The results in Table 5 show that participation in county-level activities predicted higher levels of perceived skill attainment for all four workforce

## 4-H Participation and Development of Workforce Readiness Skills

**Table 1.** Characteristics of the Sample

Characteristic	Subscales	Percentage in study
Age	18	19.1
	19	18.4
	20	15.0
	21	14.7
	22	11.0
	23	7.2
	24	7.3
	25	7.3
Sex	Female Male	81.2
	Nonbinary (not asked)	18.8
		.0
Race		97.7
	White/Caucasian Multiracial	1.3
	Black or African American American Indian	.7
	Asian Other	.0
		.3
		.0
Ethnicity	Non-Hispanic or Latino Hispanic or Latino	99.3
		0.7
Primary residence	Farm	26.8
	Rural (nonfarm) Town	43.8
	Suburb <50,000	25.5
	City >50,000	1.6
		2.3
Years in 4-H	5 years or less	5.2
	6–10 years	33.7
	More than 10 years	61.1
Overall participation in 4-H	Once in a while Most of the time	1.3
	Every chance I get	34.7
		64.0
Types of participation in 4-H activities		98.8
	4-H club County camps State 4-H camps	95.7
	4-H state events other than camp County livestock event	73.4
		69.8
		39.3
	State fair event	21.4
	National events (Citizenship Washington Focus, National 4-H Conference, or 4-H Congress) State livestock event	10.0
International exchange	7.9	
	5.2	

**Table 2.** 4-H Participation Questions Used in Analysis

Activity level	Questions	#	%	#	%
		No	No	Yes	Yes
County level	I have been a member of a 4-H club.	3	01.2	252	98.8
	I attended county camp.	11	04.3	244	95.7
	I have participated in 4-H service projects.	10	04.0	243	96.0
	I have been a 4-H club officer.	19	07.5	234	92.5
	I have completed a 4-H project.	15	05.9	238	94.1
	I have made presentations at 4-H clubs, camp, or county events.	25	09.9	228	90.1
	I have been a member of a 4-H club or county committee.	32	12.3	222	87.7
	I have led 4-H service projects.	85	33.7	167	66.3
State level	I have shown my animals at a county livestock event.	143	57.4	106	42.6
	I have participated in state 4-H camps.	68	26.6	188	73.4
	I have participated in a 4-H state event other than a week-long camp.	77	30.2	178	69.8
	I have held a leadership position in a state 4-H camp or other state events.	192	75.9	61	24.1
National level	I have done a presentation/demonstration at the state fair.	198	78.6	54	21.4
	I participated in Citizen Washington Focus.	225	88.9	28	11.1
	I participated in the National 4-H Conference.	229	90.9	23	09.1
	I participated in 4-H Congress.	230	90.9	23	09.1
	I have participated in a 4-H International Exchange Exchange.	236	94.8	13	05.2

skills; however, state-level participation alone did not predict a higher level of any of the skills.

All four skills taken together are 21st-century workforce skills. In a regression model (Table 6) where county- and state-level participation variables were used to predict perceived skill level for 21st-century workforce skills, county-level participation predicted significantly higher perceived workforce skill attainment, while state involvement did not.

## CONCLUSIONS AND RECOMMENDATIONS

Cochran and Ferrari (2009, p. 12) noted that “by their very nature, youth programs organized around positive youth development contribute to workforce readiness, whether or not they offer opportunities specifically geared toward workforce preparation.”

Likewise, most 4-H programs include workforce-readiness skill training; however, it was unknown which of its major activities had a greater impact on developing youth for the 21st-century workforce. Through this exploratory research, we have answered our two research questions: (a) Does participation in 4-H activities have an impact on the development of 21st-century workforce readiness skills? (b) If so, at what level do youth need to be involved in 4-H to develop these skills? We have shown that participation in

4-H county-level activities (clubs, after-school, camps) alone have a positive impact on developing all workforce-readiness skill categories (personal, work, communication, and problem-solving/decision-making), while state-level activities do not seem to have the same impact. The data indicate that county activity has the greatest impact on the development of communication skills. A reasonable conclusion would be that youth need to participate only in local 4-H activities to gain 21st-century workforce skills. This result is important because not all 4-H members can participate in state-level or national activities because of lack of financial resources, transportation, parental support, or opportunities offered by individual clubs. This study supports and expands on the findings of two alumni studies: a 4-H alumni study by Fitzpatrick et al. (2005) that found that subjects attributed gains in self-esteem, teamwork, cooperation, responsibility, planning, and organizing; and a study by Radhakrishna and Sinasky (2005) that found that youth developed group interaction and leadership skills from 4-H participation. However, neither of these 2005 studies differentiated between county, state, or national activity.

Although it is encouraging to know that 4-H county-level programming has a positive impact on developing workforce-readiness skills in participants, Extension educators should not rest on their laurels. They need to take

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**Table 3.** Factor Loadings and Communalities for Varimax With Kaiser Normalization Rotated for 21st-Century Workforce Skill Questions

	Factor loading						Communality
	1	2	3	4	5	6	
<i>Component 1: Personal skills</i>							
Make good ethical decisions.	<b>0.786</b>	0.127	0.090	0.016	0.201	0.079	.688
Maintain a positive view of self.	<b>0.767</b>	0.158	0.112	0.099	0.124	0.101	.662
Recognize and solve problems.	<b>0.752</b>	0.245	-0.028	0.167	0.268	0.082	.733
Work toward goals despite obstacles.	<b>0.737</b>	0.212	0.123	0.124	0.244	0.130	.695
Make good decisions for maintaining personal health.	<b>0.730</b>	0.157	0.007	0.331	-0.001	-0.003	.667
Understand the importance of meeting my obligations/ commitments.	<b>0.73</b>	0.16	0.03	0.04	0.16	0.19	.62
Develop goals/objectives.	<b>0.73</b>	0.21	0.11	0.14	0.16	0.15	.65
Maintain self-control (i.e., know when it's time to work or play).	<b>0.72</b>	0.14	0.26	0.06	0.07	0.25	.68
Consider alternatives and risks before making decisions.	<b>0.71</b>	0.19	0.08	0.25	0.25	0.01	.68
Gather resources for the completion of a task.	<b>0.68</b>	0.25	0.12	0.13	0.12	0.15	.60
Exhibit appropriate etiquette or manners.	<b>0.66</b>	0.01	0.21	0.21	0.15	0.25	.61
Work under the direction of others.	<b>0.58</b>	0.18	0.16	0.18	0.47	0.10	.65
Develop time-management skills.	<b>0.50</b>	0.22	0.23	0.29	0.38	0.23	.63
Contact experts and gather as much information as possible before making decisions about my education.	<b>0.48</b>	0.41	0.27	0.38	0.14	0.28	.53
Work independently.	<b>0.44</b>	0.09	0.29	0.33	0.42	0.07	.58
Develop money-management skills.	<b>0.43</b>	0.21	0.10	0.51	-0.11	0.23	.57
Demonstrate punctuality.	<b>0.43</b>	0.31	0.12	0.33	0.40	0.04	.56
<i>Components 2 and 3: Problem-solving/decision-making skills</i>							
I can compare and look carefully at the various ideas I develop.	0.27	<b>0.73</b>	0.09	0.11	0.10	0.16	.62
When solving a problem, I think everything through in my own head.	0.26	<b>0.62</b>	0.10	0.15	-0.20	0.15	.54
I consider all the things that are part of the problem before deciding what to do to solve it.	0.24	<b>0.70</b>	0.23	0.16	0.11	0.10	.64
I am able to develop an appropriate plan of action when it is time to make an important educational or occupational decision.	0.18	<b>0.53</b>	0.51	0.11	0.12	0.22	.66
I use information I gather to help me develop several different ways to solve a problem.	0.16	<b>0.80</b>	0.13	0.17	0.19	0.09	.74
I can tell the difference between talk that is backed up by facts and talk that is not backed up by anything.	0.08	<b>0.70</b>	0.05	0.20	0.15	0.06	.56
I know how my actions and decisions will affect my occupational choice.	0.15	<b>0.51</b>	0.41	0.00	0.38	0.02	.60
I am able to solve problems through the use of logic.	0.13	<b>0.72</b>	0.14	0.26	0.20	0.20	.67
Once I have decided what kind of work I want to do, I know how to go about getting it.	0.20	0.43	<b>0.58</b>	0.06	0.11	0.14	.60
When exploring the work I might do, I get information about it, talk to people who work at it, and get a part-time job like the work I am considering.	0.13	0.30	<b>0.66</b>	0.30	0.17	0.01	.66
I know where to go to find dependable information about jobs.	0.10	0.40	<b>0.67</b>	0.26	0.11	0.12	.70



Table 3. (continued)

	Factor loading						Communality
	1	2	3	4	5	6	
<i>Components 4 and 5: Work skills</i>							
I can dress appropriately for various (social/professional) settings.	0.28	0.05	0.40	<b>0.60</b>	0.20	0.06	.65
I like to make plans and take action steps before making a final decision about a job.	0.25	0.53	0.33	<b>0.83</b>	0.15	0.20	.53
I understand the appropriate use of technology (i.e., Internet, social media, email, mobile devices) at work.	0.20	0.27	0.20	<b>0.75</b>	0.12	0.11	.74
I can utilize computer software to create letters, reports, and presentations (i.e., Microsoft PowerPoint, Word, Excel).	0.14	0.15	0.12	<b>0.84</b>	0.06	0.15	.78
I can research information (via Internet or library).	0.10	0.21	0.01	<b>0.81</b>	0.09	0.15	.74
I can recognize and respond to the needs of others.	0.53	0.20	0.03	0.15	<b>0.56</b>	0.23	.70
I work with people who are different than me.	0.52	0.13	0.19	0.06	<b>0.53</b>	0.19	.64
I teach others new skills.	0.51	0.24	0.16	0.20	<b>0.54</b>	0.19	.71
I can apply new knowledge and skills.	0.45	0.15	0.01	0.31	<b>0.51</b>	0.19	.62
I participate as member of a team.	0.42	0.18	0.01	-0.04	<b>0.65</b>	0.17	.66
<i>Component 6: Communication skills</i>							
I communicate ideas effectively when working with others (give your input on a project).	0.40	0.29	0.25	0.07	0.42	<b>0.44</b>	.68
I use appropriate nonverbal communication (eye contact, appropriate facial expressions, appropriate gestures).	0.38	0.17	0.25	0.29	0.29	<b>0.48</b>	.64
I can communicate in a one-on-one/face-to-face setting.	0.31	0.16	0.27	0.11	0.23	<b>0.63</b>	.66
I can communicate thoughts, ideas, information, and messages in writing.	0.25	0.38	-0.01	0.34	0.03	<b>0.58</b>	.67
I can communicate to a group through visual presentations and public speaking.	0.23	0.24	0.00	0.33	0.25	<b>0.64</b>	.69

Table 4. Descriptive Statistics for Workforce Readiness Skills

Skill	N	Minimum	Maximum	Mean	Std. Dev.
Personal	256	1.00	4.00	3.63	.44
Problem-Solving/Decision-Making	259	1.00	4.00	3.48	.44
Work	260	1.00	4.00	3.48	.47
Communication	267	1.00	4.00	3.70	.43

this new understanding and build future workforce-readiness initiatives. They must look at what 4-H already offers and add value to it by incorporating specific workforce-skill development activities into the curricula. Taking a different approach to existing programs, such as incorporating experiential learning and guided inquiry-based activities/programs into 4-H curricula, would be another way to improve workforce-skill development (Neuhoff & Searle, 2008).

4-H educators might explore additional research and evaluation questions to enhance their understanding of the findings of this study. For example, they might conduct qualitative studies that include focus groups and interviews to understand what about the 4-H experience in various delivery modes leads to perceived workforce-skill development. Secondly, a larger study might examine the importance of national 4-H experience to workforce-readiness outcomes.



## 4-H Participation and Development of Workforce Readiness Skills

**Table 5.** Analysis of Variance for County and State 4-H Participation Independent Variables (Table 2) and Skill-Attainment Dependent Variables (Table 3)

Communication skills	df	SS	MS	F	Sig F
Regression	2	5.641	2.820	17.178	<.001
Residual	237	38.913	.164		
Total	239	44.554			
Coefficients	B	SE	b	t	Sig F
Constant	1.922	.304		6.326	<.001
County	.935	.173	.348	5.418	<.001
State	.032	.093	.002	.340	.734

R = .260; R<sup>2</sup> = .068; Adj R<sup>2</sup> = .060; SE = .431

Work skills	df	SS	MS	F	Sig F
Regression	2	5.088	2.544	12.237	<.001
Residual	232	48,228	.208	.289	
Total	234	53.316			
Coefficients	B	SE	b	t	Sig F
Constant	1.787	.344		5.197	<.001
County	.853	.195	.289	4.364	<.001
State	.081	.106	.051	.764	.445

R = .309; R<sup>2</sup> = .095; Adj R<sup>2</sup> = .088; SE = .4559

Problem-solving skills	df	SS	MS	F	Sig F
Regression	2	2.196	1.099	5.591	.004
Residual	230	45.172	.196		
Total	232	47.369			
Coefficients	B	SE	b	t	Sig F
Constant	2.370	.335		7.081	<.001
County	.612	.191	.219	3.200	.002
State	.020	.104	-.013	-.187	.852

R = .215; R<sup>2</sup> = .046; Adj R<sup>2</sup> = .038; SE = .44317

Communication skills	df	SS	MS	F	Sig F
Regression	2	5.641	2.820	17.178	<.001
Residual	237	38.913	.164		
Total	239	44.554			
Coefficients	B	SE	b	t	Sig F
Constant	1.922	.304		6.326	<.001
County	.935	.173	.348	5.418	<.001
State	.032	.093	.002	.340	.734

R = .356; R<sup>2</sup> = .127; Adj R<sup>2</sup> = .119; SE = .40520

**Table 6.** Analysis of Variance with 21st-Century Workforce Skills (All Skills Combined) as the Dependent Variable and County and State Participation as Independent Variables

21st-century workforce skills	SS	df	MS	F	Sig F
Regression	1	1.607	.804	5.135	<.007
Residual	228	35.682	.156		
Total	230	37.289			
Coefficients	B	SE	b	t	Sig F
Constant	2.444	.299		8.161	<.001
County	.501	.171	.202	2.926	<.004
State	.021	.094	.015	.224	<.823

R = .208; R<sup>2</sup> = .043; Adj R<sup>2</sup> = .035; SE = .396

Finally, researchers might use the 4-H Thriving Model, and in particular the long-term outcome of employability and economic stability, to answer the question “Do 4-H alumni attribute job satisfaction and economic stability to their experience in 4-H, and why?”

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