

8-23-2023

Long-Term Outcomes of Early Adult 4-H Alumni

Nicole Marshall-Wheeler

University of California, Agriculture and Natural Resources, nmarshall@ucanr.edu

Roshan Nayak

University of California Agriculture and Natural Resources, rknayak@ucanr.edu

Anne Iaccopucci

amiaccopucci@ucanr.edu

Steven M. Worker

University of California, Agriculture and Natural Resources, smworker@ucanr.edu



This work is licensed under a [Creative Commons Attribution-Noncommercial-Share Alike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

Recommended Citation

Marshall-Wheeler, N., Nayak, R., Iaccopucci, A., & Worker, S. M. (2023). Long-Term Outcomes of Early Adult 4-H Alumni. *The Journal of Extension*, 61(2), Article 2. <https://doi.org/10.34068/joe.61.02.02>

This Research in Brief is brought to you for free and open access by the Conferences at TigerPrints. It has been accepted for inclusion in The Journal of Extension by an authorized editor of TigerPrints. For more information, please contact kokeefe@clemson.edu.

Long-Term Outcomes of Early Adult 4-H Alumni

Cover Page Footnote

We acknowledge Andy Ferrin, the National 4-H Council, and Edge Research, Inc. for their contributions to this research. We thank JoLynn Miller for comments on an earlier draft.

Long-Term Outcomes of Early Adult 4-H Alumni

NICOLE MARSHALL-WHEELER¹, ROSHAN NAYAK¹, ANNE IACOPUCCI¹, AND STEVEN M. WORKER¹

AUTHORS: ¹University of California, Agriculture and Natural Resources.

Abstract. Very little has been published reporting on long-term outcomes experienced by young adults (aged 19 to 34 years old) who participated in 4-H youth development programs. We adopted Gambone et al.'s (2002) framework advancing three long-term outcomes for early adulthood: economic stability, health and well-being, and community involvement. With cross-sectional survey methods, we compared long-term impacts between 693 California 4-H young adult alumni and 373 young adults in a U.S. general population sample who had not participated in 4-H. The results demonstrated that 4-H alumni report more positive long-term outcomes than the U.S. general population sample. The study contributes to the dearth of research around long-term outcomes, may be useful for marketing and funding, and will help better understanding the public value of Extension.

INTRODUCTION

One shared goal of all youth development programming is to provide opportunities to strengthen young people's positive development in order to help prepare them for adulthood (Roth & Brooks-Gunn, 2016). In the past 20 years, experts have identified specific outcomes hypothesized to contribute to positive youth development, including the 5 Cs (Lerner et al., 2009), personal and social assets (NRCIM, 2002), developmental assets (Benson et al., 2006), or—more recently—developmental outcomes (Arnold, 2018). Additionally, these experts propose that specific program elements—those that define the context of the 4-H involvement—nurture these outcomes. The Big Three focuses on adult–youth relationships, skill building, and youth leadership (Lerner, 2007; Roth & Brooks-Gunn, 2003); SAFE refers to programming that is sequenced, active, focused, and explicit (Durlak et al., 2010); the idea of developmental context focuses on the concept of “sparks, quality, relationships, engagement” (Arnold, 2018). The published literature that focuses on exploring relationships between program elements (context) and outcomes has increased in quantity (Arnold & Gagnon, 2019; Hirsch et al., 2010; Smischney et al., 2018; Tracy et al., 2016). In contrast, there is little published research that reports long-term outcomes (i.e., outcomes experienced by emerging adults). Based on existing 4-H positive youth development frameworks (e.g., Arnold, 2018; Dogan et al., 2012), young people who participate in 4-H youth development

programming should experience a more successful transition to early adulthood between the ages of 19 and 34, one marked by economic stability, good health and well-being, and community involvement (Gambone et al., 2002; Scales et al., 2016; Temescal Associates, 2018). To date, researchers have published little empirical data to support the idea that participation in youth development programming as a youth helps participants in this transition to adulthood.

INDICATORS OF EMERGING ADULT OUTCOMES

Gambone, et al. (2002) published one of the earliest and most influential sets of indicators of success in emerging adulthood. This framework measured three early adult outcomes: (a) economic self-sufficiency (i.e., the ability able to support themselves and their family, whether they graduated from a four-year college, if they are employed full-time with the ability or education to change jobs), (b) healthy families and social relationships (i.e., adults are in good mental and physical health, are good caregivers, and have positive relationships with family and friends), and (c) community involvement (i.e., being active contributors to their community, showing low levels of illegal activity, and seeking out opportunities to volunteer in community service positions). These three theorized long-term outcomes have remained prevalent in scholarship over the past 20 years.

The University of California 4-H Program advanced four long-term outcomes: workforce preparedness, economic

self-sufficiency, contributions to community, and healthy lifestyles (Dogan et al., 2012). These long-term outcomes were adapted from Gambone et al. (2002), with a delineation between workforce preparedness and economic self-sufficiency. Unfortunately, they present no metrics or assessment strategies.

More recently, Arnold (2018) and Arnold & Gagnon (2019) recognized and included indicators from Gambone et al.'s (2002) framework in developing the 4-H Thriving Model. In published manuscripts, Arnold (2018) and Arnold & Gagnon (2019) refer to health and well-being, economic stability, and civic engagement. The 4-H Thriving Model of PYD (n.d.) flower figure refers to academic or vocational success, civic engagement, employability and economic stability, and happiness and wellbeing. Still, there are no definitions for these outcomes or proposed metrics for assessment.

Diverging from Gambone et al. (2002), three other frameworks advance long-term impacts on early adult outcomes possibly attributed to positive youth development programming. Lerner et al. (2009) propose a thriving pathway leading to "idealized personhood" with a different set of long-term outcomes, including contribution to self, family, community, and civil society, concurrent with reduced risk behavior (p. 548). Hawkins et al. (2009) and O'Connor et al. (2011) propose five domains: social competence, life satisfaction, trust and tolerance of others, trust in authorities and organizations, and civic action and engagement. Scales et al. (2016) advance eight early adult outcomes: physical health, emotional well-being, life skills, ethical behavior, healthy relationships, educational attainment, educational and occupational engagement, and civic engagement.

OUTCOMES FOR 4-H ALUMNI

The 4-H youth development program provides opportunities which lead to positive youth development outcomes (e.g., Lerner et al., 2013). For example, youth report developing positive attitudes and skills related to civic engagement, academic achievement, and healthy living (Lerner et al., 2013). The bulk of research on 4-H outcomes focuses on child or adolescent program participants (i.e., current participants of youth development programming); however, there are a handful of studies that report how 4-H experiences translate to adult life. Radhakrishna & Doamekpor (2009) found that half of former 4-H members rated 4-H as more helpful in teaching them about personal responsibility, communication, and leadership skills than other organizations in which they participated. Mass et al. (2006) explored to what degree Oklahoma 4-H alumni attributed the development of life skills, such as critical thinking, goal setting, communication, decision-making, and community service to 4-H or other youth organizations. Participants were 223 "high-achieving" former 4-H members (i.e., who had participated in state or

national 4-H leadership activities) who had concurrently participated in other youth organizations. While the findings indicate that 4-H influenced the former members in their development of many life skills, other youth organizations also played a role. Other studies describe the influence the 4-H program had on 4-H alumni and how 4-H alumni report the program had positive impacts on them as adults (Radhakrishna & Sinasky, 2005; Fox et al., 2003; Ladewig & Thomas, 1987). Some have explored 4-H's role in alumni's community involvement as adults (Merten et al., 2014; Pennington & Edwards, 2006) and how 4-H impacted success in college and careers (Ratkos & Knollenberg, 2015; Anderson et al., 2010). Despite these studies with 4-H alumni samples, there remains a lack of published research assessing long-term outcomes from 4-H alumni based on established 4-H youth development frameworks such as the Thriving Model and the California 4-H Youth Development Framework.

METHODS

We undertook the present research to contribute to filling a gap in reported or recorded long-term outcomes from previous 4-H participants. Based on Gambone et al. (2002), and because the study was conducted with California 4-H alumni based on a framework that adapted Gambone et al.'s work (Dogan et al., 2012), we adopted three long-term outcomes to explore with an empirical cross-sectional survey study: economic stability, health and well-being, and community involvement. We had three research objectives:

1. Measure the impacts of 4-H experience reported by adult 4-H alumni aged 19 to 34,
2. Compare long-term outcomes between 4-H alumni who were very involved with 4-H to those who were not very involved with 4-H, and
3. Compare differences between 4-H alumni and the general U.S. population's long-term outcomes in early adulthood (aged 19 to 34).

We utilized cross-sectional online survey methodology (Rea & Parker, 2005) with a California 4-H alumni sample ($n=693$) and a comparable U.S. adult sample ($n=373$). The study was approved by the Institutional Review Board of the University of California in Davis.

MEASURES, RELIABILITY, AND ANALYSES

The survey instrument was designed by the National 4-H Council and an external firm, Edge Research, Inc., to learn more about 4-H alumni, measure the impact of 4-H on alumni, and compare 4-H alumni to the general U.S. population. Edge Research, Inc. adapted the survey items from other 4-H alumni studies based on hypotheses about how a

Long-Term Outcomes of Early Adult 4-H Alumni

4-H youth development experience may contribute to long-term outcomes.

The first component (4-H Impact) consisted of 18 items referencing areas in which 4-H participation as a youth might impact their young adult life. These items were only available to 4-H alumni and not the general population sample. Items were selected from previous 4-H alumni studies and included life skills, college and career readiness, and community involvement (see Table 2). Respondents selected one of four response options: “No impact,” “Impacted a little,” “Impacted a lot,” and “Not sure/not applicable.” We calculated frequencies for individual items.

The second component (Long-Term Outcomes) consisted of three scales in which questions were asked of both the 4-H alumni and general population samples: (a) economic stability (11 items; e.g., “I make a difference with my work,” “I feel financially stable”), (b) health and well-being (5 items; e.g., “I make it a priority to eat healthy,” “I am able to keep my stress at manageable levels”), and (c) community involvement (6 items; “I volunteer in the community regularly,” “I like to make connections and introduce people”). Each item had a five-point response option ranging from “Does not describe me well at all” to “Describes me per-

fectly.” We reverse-coded those items worded in the negative. The internal consistency reliability for the three scales for the California 4-H sample was adequate when calculated with Cronbach alpha: economic stability ($\alpha=0.78$), health and well-being ($\alpha=0.72$), and community involvement ($\alpha=0.73$). We created composite variables for the three scales using the mean scores (and dropping any missing items and calculating means for remaining items). We then compared samples using independent sample *t*-tests and calculated effect size using Cohen’s *d*.

The survey also included demographic questions about gender, race/ethnicity, current age, and years in 4-H (as youth) (see Table 1). Furthermore, we added a 4-H alumnus-specific item: “How involved were you in 4-H?”. We grouped the responses in two groups: those who responded “minimally” to “moderately” ($n=178$, 25.7%) and those who responded “very” to “extremely” ($n=515$, 74.3%).

SAMPLES

We administered the survey from August 5, 2021, to January 2, 2022, to 37,003 California 4-H alumni who were members between 2008 and 2020; 693(*n*) 4-H alumni who were 19 to 34 years old at the time of data collection responded to the

Table 1. Demographics for Participants Aged 19–34 Years Old (Two Samples)

Demographic Variable	California 4-H Alumni N=693		U.S. General Population ^a N=373	
	n	%	n	%
<i>Gender</i>				
Female	505	72.9	201	53.9
Male	187	27.0	171	45.8
Non-Binary, Other	1	0.1	1	0.2
<i>Ethnicity</i>				
Non-Hispanic or Latino	626	90.3	307	82.3
Hispanic or Latino	67	9.7	66	17.7
<i>Race^b</i>				
White	586	84.6	286	76.7
Black or African-American	8	1.2	47	12.6
American Indian or Alaska Native	8	1.2	4	1.1
Asian, Native Hawaiian or Other Pacific Islander	38	5.5	19	5.1
Multiple Races, Undetermined, Other, Preferred Not to Say	53	7.6	17	4.6
	Mean (SD)		Mean (SD)	
<i>Age (at time of survey)</i>	23.6 (3.3)		N/A ^c	
<i>Years in 4-H</i>	6.74 (3.3)		N/A	

^aSource: National 4-H Council and Edge Research, Inc., 2019. ^bCalifornia Sample demographics based on data from the 4-H enrollment system entered when respondents were 4-H youth members and matched to their present study survey response. ^cGeneral population survey asked age with categories (ordinal scale).

survey, with a response rate of 1.9%. The low response rate was expected given that young people tend to change email addresses frequently, and others had used a parent/guardian email to which they no longer had access.

The National 4-H Council, through Edge Research, Inc., administered the survey to the comparable U.S. adult population from May 15 to June 4, 2019 ($n=1,124$ total; filtered to 19- to 34-year-old participants resulted in $n=373$) using industry-standard panel services (Callegaro et al., 2014). We obtained the U.S. general population sample raw data under a data sharing agreement (National 4-H Council and Edge Research, Inc., 2019).

FINDINGS

We report the following findings for each of the three research objectives.

MEASURE THE IMPACTS OF 4-H EXPERIENCE REPORTED BY ADULT 4-H ALUMNI (AGED 19 TO 34)

More than two-thirds of California 4-H alumni responded that 4-H impacted them a lot in fostering a sense of responsibility, developing leadership skills, and cultivating confidence in public speaking (see Table 2). More than half responded

with other life skills, character, and being a good citizen. Few 4-H alumni reported 4-H helping them achieve financial stability, choose a college, select a college major or career, or live a healthy lifestyle.

COMPARE LONG-TERM OUTCOMES BETWEEN 4-H ALUMNI WHO WERE VERY INVOLVED WITH 4-H TO THOSE WHO WERE NOT

We compared the means with independent samples *t*-tests for each of the three dependent variables (economic stability, health and well-being, and community involvement) between those who indicated they were very or extremely involved in 4-H to those who were minimally or moderately involved (independent variable). The *t*-tests showed statistical significance for all three long-term outcomes (see Table 3). The means for all three long-term outcomes were higher for the very/extremely involved 4-H alumni group, indicating that those who were very/extremely involved as 4-H members now report more positive long-term outcomes as early adults. The effect size measured using Cohen's *d* was medium for economic stability (0.30) and community involvement (0.38) and small for health and well-being (0.25) (Lakens, 2013).

Table 2. California 4-H Alumni Responses to the Question: “Here are some ways that a 4-H experience during your youth might have impacted your life and who you are today. For each, please indicate if 4-H impacted that aspect of your life in any way.”

	N	No impact n (%)	Impacted a little n (%)	Impacted a lot n (%)
Fostering a sense of responsibility	657	19 (2.9)	141 (21.5)	497 (75.6)
Developing leadership skills	659	43 (6.5)	140 (21.2)	476 (72.2)
Confidence in public speaking	660	73 (11.1)	149 (22.6)	438 (66.4)
Creating confidence	657	36 (5.5)	191 (29.1)	430 (65.4)
Developing practical life skills	656	32 (4.9)	196 (29.9)	428 (65.2)
Trying new things	664	25 (3.8)	211 (31.8)	428 (64.5)
Developing character and values	658	36 (5.5)	196 (29.8)	426 (64.7)
Being independent	659	37 (5.6)	200 (30.3)	422 (64.0)
Being a good citizen	650	42 (6.5)	215 (33.1)	393 (60.5)
Succeeding in work and career	632	75 (11.9)	220 (34.8)	337 (53.3)
Becoming civically engaged	646	95 (14.7)	274 (42.4)	277 (42.9)
Being more tolerant	633	124 (19.6)	256 (40.4)	253 (40.0)
Interest in science	643	179 (27.8)	281 (43.7)	183 (28.5)
Achieving financial stability	621	240 (38.6)	208 (33.5)	173 (27.9)
Choosing your career	629	241 (38.3)	223 (35.5)	165 (26.2)
Living a healthier lifestyle	648	205 (31.6)	278 (42.9)	165 (25.5)
Selecting a college major	615	281 (45.7)	181 (29.4)	153 (24.9)
Selecting a college	617	352 (57.1)	150 (24.3)	115 (18.6)

Note. N is calculated after removing respondents who selected “Not sure/not applicable.”

Long-Term Outcomes of Early Adult 4-H Alumni

Table 3. How Involved Were You in 4-H? (California 4-H Alumni Sample; N=695)

4-H Involvement	Very to Extremely		Minimally to Moderately		Mean Difference	t	p	Cohen's d
	N	Mean (SD)	N	Mean (SD)				
Economic Stability	473	3.69 (.67)	147	3.46 (.87)	.23	3.53	.001	0.30
Health and Well-Being	475	3.52 (.82)	146	3.31 (.84)	.21	2.67	.008	0.25
Community Involvement	476	3.14 (.77)	146	2.81 (.94)	.33	4.42	.001	0.38

Note. Participants responded on a Likert scale from 1 to 5 scale where 5 corresponded to a more positive long-term outcome.

Table 4. Comparison Between California 4-H Alumni and U.S. General Population Early Adult (Aged 19 to 34 Years Old) Samples on Three Long-Term Outcomes

Long-Term Outcomes	California 4-H Alumni		U.S. General Population		Mean Difference	t	p	Cohen's d
	N	Mean (SD)	N	Mean (SD)				
Economic Stability	620	3.64 (.70)	369	2.98 (.87)	.65	13.0	.001	0.84
Health and Well-Being	621	3.47 (.82)	369	3.07 (.84)	.40	7.28	.001	0.48
Community Involvement	622	3.06 (.81)	360	2.62 (.94)	.44	7.70	.001	0.50

Note. Participants responded to questions on a 1 to 5 scale with 5 corresponded to a more positive long-term outcome.

COMPARE DIFFERENCES BETWEEN 4-H ALUMNI AND THE GENERAL U.S. POPULATION'S LONG-TERM OUTCOMES IN EARLY ADULTHOOD (AGED 19 TO 34)

We compared the means with independent samples *t*-tests on the three dependent variables (economic stability, health and well-being, and community involvement) between the California 4-H alumni sample and the U.S. general population sample (independent variable). The *t*-tests were statistically significant for all three long-term outcomes (see Table 4). The means for the 4-H alumni sample were higher for all three long-term outcomes, indicating that 4-H alumni reported more positive long-term outcomes as early adults than comparable adults who did not participate in 4-H (see Figure 1). The effect size was large for economic stability (0.84) and medium for community involvement (0.50) and health and well-being (0.48).

DISCUSSION AND IMPLICATIONS

Overall, our findings affirm previous empirical work reporting the positive impacts of 4-H on knowledge related to a variety of life skills, although the specific rank order differs from previous samples (e.g., Fox et al., 2003). We extended previous understanding in two ways. First, we differentiated participants' level of program involvement by asking participants to report their level of engagement as a 4-H member; engagement is one of four factors in the developmental context in the 4-H Thriving Model (Arnold, 2018). This finding contrasted with previous methodologies that focused on former 4-H members who were high achieving or who participated in significant 4-H experiences (e.g., Anderson,

et al., 2010; Mass, et al., 2006). Additionally, we utilized a much larger sample size, which helped minimize some sources of potential bias; our study had more than 650 respondents compared with 264 alumni from Southeast Nebraska (Fox et al., 2003), 114 alumni from Montana (Flynn et al., 2010), 168 from Pennsylvania (Radhakrishna & Sinasky, 2005), 435 alumni from Texas (Merten et al., 2014), or 65 alumni from Georgia (Powell et al., 2021).

The most significant contribution of our work, albeit with limitations (discussed below), was to begin to fill the dearth of empirical evidence on long-term outcomes hypothesized by positive youth development frameworks (e.g., Arnold, 2018; Dogan et al., 2012; Gambone et al., 2002). Our results demonstrate that 4-H alumni show better long-term outcomes on three factors (economic stability, health and well-being, and community involvement) than a comparable U.S. general population sample. The large difference in economic stability between the 4-H alumni sample and U.S. general population sample was surprising, particularly as 4-H alumni generally rated the impact of 4-H lower on achieving financial stability than other life skills (Table 2). We also found medium effect sizes between samples on health and well-being and community involvement. This finding may indicate that participating in 4-H youth development programming as a young person may be associated with more positive early adult long-term outcomes; however, an alternative explanation may be selection bias, that is, 4-H program participants may have had more positive trajectories to begin with and/or more opportunities or available resources than their peers.

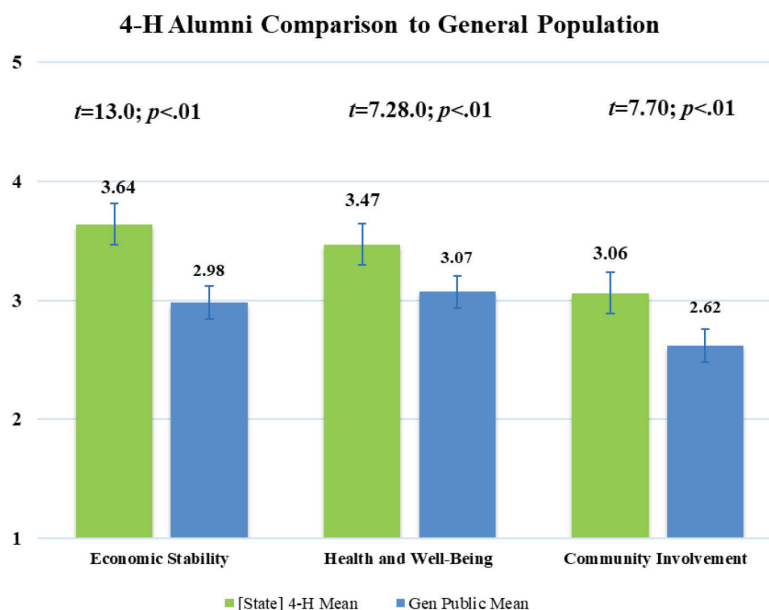


Figure 1. Comparison of 4-H alumni to U.S. general population samples on three long-term outcomes.

We hope our work begins to pave the way for additional empirical efforts to advance understanding of the long-term outcomes experienced by youth who participate in 4-H or other youth development programs. Ultimately, these long-term outcomes demonstrate the value and positive impacts 4-H youth development programming can have on individuals.

On a more practical level, these results will be useful in pursuing funding opportunities and recruitment efforts. They may also help the public better understand the value of Extension 4-H programming and how it may help improve economic, health, and community conditions.

There were several limitations to our work. First, there was selection bias in who responded to the survey, with those who had been extremely or very involved responding at a greater frequency than those who were only moderately or minimally involved; this likely caused positivity biases in the data. Second, the survey instrument was developed initially for marketing purposes by National 4-H Council and Edge Research, Inc. and thus may have suffered from validity and/or reliability issues, although the internal consistency reliability was statistically adequate. Third, we recognize that the timing of data collection—one sample collected pre-COVID-19 pandemic and the other during—likely contributed to inherent differences in responses due to changes in society and economic realities. Fourth, caution must be used when interpreting comparisons between the 4-H alumni and comparable U.S. samples. Our methods do not allow for causal interpretation. More research is needed to fully understand how 4-H involvement may foster more positive

long-term outcomes than those experienced by people who were not involved in 4-H. Finally, the U.S. general population sample was collected using online survey panels, which have their own limitations—they require participants to have access to the Internet, there are often data integrity issues from false responses or careless answers, etc.

CONCLUSION

For Extension educators: Youth development programs strive to support young people in becoming successful adults. As recent empirical research demonstrates, high-quality youth development programming is associated with stronger youth development outcomes (Lewis et al., 2021); however, until recently, national Extension programs have not been guided by a theoretical, scientifically-based youth development framework. This condition has changed with the emergence of the 4-H Thriving Model of PYD (Arnold & Gagnon, 2020). We recommend adoption of the 4-H Thriving Model, and other youth development programs may want to adopt another theory and empirical-based model. This should ensure high-quality programming to support youth in thriving and developing robust long-term outcomes into early adulthood. Extension educators should utilize the Thriving Model to guide program development and implementation, professional development, and evaluation to ensure a nourishing developmental context.

For researchers: We encourage future researchers to measure and report the long-term outcomes of their previous program participants. Because of the lack of empirical

Long-Term Outcomes of Early Adult 4-H Alumni

literature, there is a need to advance our understanding using multiple methods (including qualitative methods) and theoretical frameworks (i.e., not limited to Gambone et al. 2002 or more recent frameworks). Better understanding of the long-term outcomes experienced by 4-H alumni may allow the development of stronger, evidence-based youth development frameworks.

REFERENCES

- 4-H Thriving Model Task Force (n.d.). *About the 4-H thriving model*. <https://helping-youth-thrive.extension.org/home/>
- Anderson, J., Bruce, J., & Mouton, L. (2010). 4-H made me a leader: A college-level alumni perspective of leadership life skill development. *Journal of Leadership Education*, 9(2), 35–49. https://journalofleadershiped.org/wp-content/uploads/2019/02/9_2_Anderson_Bruce_and_Mouton.pdf
- Arnold, M. E. (2018). From context to outcomes: A thriving model for 4-H youth development programs. *Journal of Human Sciences and Extension*, 6(1), 141–160. <https://doi.org/10.54718/NBNL5438>
- Arnold, M. E., & Gagnon, R. J. (2019). Illuminating the process of youth development: The mediating effect of thriving on youth development program outcomes. *Journal of Human Sciences and Extension*, 7(3), 24–51. <https://doi.org/10.54718/GHUP2927>
- Arnold, M. E., & Gagnon, R. J. (2020). Positive youth development theory in practice: An update on the 4-H thriving model. *Journal of Youth Development*, 15(6). www.doi.org/10.5195/jyd.2020.954
- Benson, P. L., Scales, P. C., Hamilton, S. F., & Sesma, A. (2006). Positive youth development: Theory, research, and applications. In W. Damon & R. M. Lerner (Eds.), *Handbook of Child Psychology*, (Sixth ed., Vol. 1, pp. 894–940). Hoboken, NJ: John Wiley & Sons, Inc.
- Callegaro, M., Baker, R. P., Bethlehem, J., Goritz, A. S., Krosnick, J. A., & Lavrakas, P. J. (eds.) (2014). *Online Panel Research: A Data Quality Perspective*. Wiley.
- Dogan, S., Miner, G., Worker, S., Bottoms, M., Hill, R., and Mautte, S. (2012). *UC 4-H youth development program framework*. University of California Agriculture and Natural Resources. <https://4h.ucanr.edu/files/146514.pdf>
- Durlak, J. A., Weissberg, R. P., & Pachan, M. (2010). A meta-analysis of after-school programs that seek to promote personal and social skills in children and adolescents. *American Journal of Community Psychology*, 45(3–4), 294–309. www.doi.org/10.1007/s10464-010-9300-6
- Flynn, A., Frick, M., & Steele, D. (2010). Relationship between participation in 4-H and community leadership in rural Montana. *Journal of Extension*, 48(2). https://archives.joe.org/joe/2010april/pdf/JOE_v48_2rb1.pdf
- Fox, J., Schroeder, D., & Lodl, K. (2003). Life skill development through 4-H clubs: The perspective of 4-H alumni. *Journal of Extension*, 41(6). <https://archives.joe.org/joe/2003december/rb2.php>
- Gambone, M. A., Klem, A. M., & Connell, J. P. (2002). *Finding out what matters for youth: Testing key links in a community action framework for youth development*. Youth Development Strategies, Inc., and Institute for Research and Reform in Education. <http://www.ydsi.org/ydsi/pdf/whatmatters.pdf>
- Hamilton, S. F., Hamilton, M. A., & Pittman, K. (2004). Principles for youth development. In S. F. Hamilton & M. A. Hamilton (Eds.), *The Youth Development Handbook: Coming of Age in American Communities* (pp. 3–22). Sage Publications, Inc.
- Hawkins, M. T., Letcher, P., Sanson, A., Smart, D., & Toubourou, J. W. (2009). Positive development in emerging adulthood. *Australian Journal of Psychology*, 61(2), 89–99. www.doi.org/10.1080/00049530802001346
- Heck, K. E., Subramaniam, A., & 4-H Center for Youth Development. (2009, winter). *Monograph: Youth development frameworks*. YOUTHREX. <https://youthrex.com/wp-content/uploads/2019/02/1224.pdf>
- Hirsch, B. J., Mekinda, M. A., & Stawicki, J. (2010). More than attendance: The importance of after-school program quality. *American Journal of Community Psychology*, 45(3–4), 447–452. www.doi.org/10.1007/s10464-010-9310-4
- Ladewig, H., & Thomas, J. K. (1987). *Assessing the impact of 4-H on former members*. The Texas A&M University System. <https://files.eric.ed.gov/fulltext/ED282681.pdf>
- Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in psychology*, 4, 863. <https://doi.org/10.3389/fpsyg.2013.00863>
- Lerner, R. M. (2007). *The good teen: Rescuing adolescence from the myths of the storms and stress years*. Stonesong Press.
- Lerner, J. V., Phelps, E., Forman, Y., Bowers, E. P. (2009). Positive youth development. *Handbook of Adolescent Psychology* (Third ed., Vol. 1, pp. 524–558). John Wiley & Sons, Inc.
- Lerner, R. M., Lerner, J. V., Lewin-Bizan, S., Bowers, E. P., Boyd, M. J., Mueller, M. K., Schmid, K. L., & Napolitano, C. M., (2011). Positive youth development: Processes, programs, and problematics. *Journal of Youth Development*, 6(3), 41–64. <https://doi.org/10.5195/jyd.2011.174>
- Lerner, R. M., & Lerner, J. V. (2013). *The positive development of youth: Comprehensive findings from the*

- 4-H study of positive youth development. National 4-H Council. <https://dunn.extension.wisc.edu/files/2018/04/4-H-Study-of-Positive-Youth-Development-Full-Report.pdf>
- Lewis, K. M., Kok, C. M., Worker, S. M., & Miner, G. (2021). Exploring the relationship between program experience and youth developmental outcomes. *Journal of Human Sciences and Extension*, 9(3), 68–106. <https://scholarsjunction.msstate.edu/jhse/vol9/iss3/5/>
- Maas, S. E., Wilken, C.S., Jordan, J., Culen, G., & Place, N. (2006). A comparison of 4-H and other youth development organizations in the development of life skills. *Journal of Extension*, 44(4). <https://archives.joe.org/joe/2006october/rb2.php>
- Merten, K., Locke, D., Williams, M., Carter, M., & Lehman, K. (2014). Impact of 4-H on alumni's community involvement. *Journal of Extension*, 52(5). <https://archives.joe.org/joe/2014october/rb8.php>
- National 4-H Council and Edge Research, Inc. (2019). *4-H alumni research: National online survey. Programming: 5–8-19* [Unpublished raw data NFH1901].
- National Research Council and Institute of Medicine. (2002). *Community programs to promote youth development*. (J. Eccles and J. A. Gootman, Eds.). National Academy Press. <https://nap.nationalacademies.org/catalog/10022/community-programs-to-promote-youth-development>
- O'Connor, M., Sanson, A., Hawkins, M. T., Letcher, P., Toumbourou, J. W., Smart, D., Vassallo, S., & Olsson, C. A. (2011). Predictors of positive development in emerging adulthood. *Journal of Youth and Adolescence*, 40, 860–874. www.doi.org/10.1007/s10964-010-9593-7
- Pennington, P. & Edwards, M. C. (2006). Former 4-H key club members' perceptions of the impact of "giving" life skills preparation on their civic engagement. *Journal of Extension*, 44(1). <https://archives.joe.org/joe/2006february/a7.php>
- Powell, A., Bennett, N., Lamm, K. W. (2021). Expanding 4-H alumni life perspectives: An experiential and programmatic evaluation. *Journal of Agricultural Education*, 62(2), 185–200. <https://doi.org/10.5032/jae.2021.02185>
- Radhakrishna, R., & Doamekpor, P. (2009). Teaching leadership and communication skills and responsibilities: A comparison of 4-H and other youth organizations. *Journal of Extension*, 47(2). <https://archives.joe.org/joe/2009april/a6.php>
- Radhakrishna, R. B. & Sinasky, M. (2005). 4-H experiences contributing to leadership and personal development of 4-H alumni. *Journal of Extension*, 43(6). <https://archives.joe.org/joe/2005december/rb2.php>
- Ratkos, J. & Knollenberg, L. (2015). College transition study shows 4-H helps youth prepare for and succeed in college. *Journal of Extension*, 53(4). <https://archives.joe.org/joe/2015august/a7.php>
- Rea, L. M., & Parker, R. A. (2005). *Designing and conducting survey research: A comprehensive guide*. John Wiley & Sons, Inc.
- Roth, J. L., & Brooks-Gunn, J. (2003). What exactly is a youth development program? Answers from research and practice. *Applied Developmental Science*, 7(2), 94–111. https://doi.org/10.1207/S1532480XADS0702_6
- Roth, J. L., & Brooks-Gunn, J. (2016). Evaluating youth development programs: Progress and promise. *Applied Developmental Science*, 20(3), 188–202. <https://doi.org/10.1080/10888691.2015.1113879>
- Scales, P. C., Benson, P. L., Oesterle, S., Hill, K. G., Hawkins, J. D., & Pashak, T. J. (2016). The dimensions of successful young adult development: A conceptual and measurement framework. *Applied Developmental Science*, 20(3), 150–174. <https://doi.org/10.1080/10888691.2015.1082429>
- Smischney, T. M., Roberts, M. A., Gliske, K., Borden, L. M., & Perkins, D. F. (2018). Developing youth competencies: The impact of program quality. *Journal of Youth Development*, 13(4). www.doi.org/10.5195/jyd.2018.587
- Temescal Associates. (2018). *Youth development guide 2.0: Engaging young people in after-school programming*. <https://www.dropbox.com/s/2n0suaofc4nsp7r/YD%20GUIDE%202.0%20Final.pdf?dl=0>
- Tracy, A., Charmaraman, L., Ceder, I., Richer, A., & Surr, W. (2016). Measuring program quality: Evidence of the scientific validity of the assessment of program practices tool. *Afterschool Matters*, 24, 3–11. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1120616.pdf>