

**Investigating the Predictive Ability of Agricultural Students' Skill Development on their Academic Career Characteristics**

Jean Parrella  
600 John Kimbrough Blvd.  
College Station, TX 77843  
(530) 219-5642  
jparrella@tamu.edu

Holli Leggette  
600 John Kimbrough Blvd.  
College Station, TX 77843  
(979) 458-3039  
holli.leggette@ag.tamu.edu

Theresa Murphrey  
600 John Kimbrough Blvd.  
College Station, TX 77843  
(979) 458-2749  
theresa.murphrey@ag.tamu.edu

Christi Esquivel  
2423 Blinn Blvd.  
Bryan, TX 77802  
(979) 209-7512  
christi.esquivel@blinn.edu

Peng Lu  
600 John Kimbrough Blvd.  
College Station, TX 77843  
(979) 845-2953  
peng.lu@ag.tamu.edu

This project was supported by a Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom (SPECAs) Challenge Grants Program no. 2019-38414-30265 from the USDA National Institute of Food and Agriculture.

## **Investigating the Predictive Ability of Agricultural Students' Skill Development on their Academic Career Characteristics**

### **Introduction**

Agricultural students' postsecondary education often focuses heavily on their development of discipline-specific skills while lacking opportunities to develop other important cognitive and behavioral skills (Hendrix & Morrison, 2018; Robinson & Garton, 2008). Therefore, there is a need to identify student characteristics that influence their skill development and make them more prone to being involved in skill development opportunities. Scholars have identified some characteristics that influence skill development. For example, Truax (2020) found that students involved in 4-H, FFA, or collegiate clubs believed their skills were more developed than students not involved in those extra-curricular activities. Similarly, Foreman and Retallick (2012) found that students who held a leadership position in a college organization believed their leadership skills were more developed than those who did not. By better understanding characteristics of students that influence their skill development and how students' skill development influences certain characteristics (e.g., decision to join a professional organization), we can develop targeted strategies for instructors to recommend, encourage, and promote development opportunities for specific subpopulations.

### **Theoretical and Conceptual Frameworks**

According to Becker's (1964) human capital theory, general human capital refers to cognitive and behavioral skills that students acquire through education and continue to develop in the workplace (Cooper et al., 1994; Leighton & Speer, 2020). These skills are transferable and beneficial to most employment opportunities (Becker, 1964; Rauch & Rijsdijk, 2013). In 2011, Crawford et al. developed a framework that outlines six skill clusters employers in agriculture and related disciplines believe are most important for students to acquire before entering the workplace (i.e., communication, decision-making, leadership, professionalism, self-management, teamwork). Therefore, for the purpose of our study, we considered the skills in Crawford et al.'s (2011) framework as general human capital to align with Becker's (1964) theory. We sought to answer two research questions: What is the association between agricultural students' gender and their skill development?; and 2) What is the predictive ability of agricultural students' skill development on their career knowledge and professional organization membership?

### **Methods**

We used a cross-sectional survey research design and relied on Crawford et al.'s (2011) framework to guide the development of our survey instrument. Crawford et al.'s skill clusters include seven descriptive characteristics that explain the specific competencies associated with each skill. We measured students' perceived development of each skill using the seven associated competencies. Students indicated their perceived development of each skill using a 5-point Likert-type scale (*Fully Developed* to *Not at All Developed*). In the instrument, we also inquired about students' demographic characteristics (e.g., gender) and academic career characteristics (e.g., career knowledge, professional organization membership). We distributed the survey instrument to all students (undergraduate and graduate) in a college of agriculture at a

large land-grant university using Dillman et al.'s (2014) recommendations for web-based survey distribution. After collecting 991 usable responses, we used a Pearson product-moment correlation to determine the association between students' perceived skill development and gender. We also used logistic regressions to determine how students' skill development predicted their academic career characteristics.

## Results

We found a low, statistically significant association between students' perceived development of teamwork skills and gender ( $r = -.12$ ). We also found that students' perceived development of teamwork skills is a statistically significant predictor of their career knowledge, and that their perceived development of professionalism skills is a statistically significant predictor of their professional organization membership (see Table 1). Results suggest that agricultural students who identified as male believed their teamwork skills were more developed than those who identified as female. In addition, agricultural students who had higher perceptions about their development of teamwork skills were less likely to know the type of career they wanted to pursue in the future. As students' perceptions of their teamwork skills increased by one point, the odds of them knowing the type of career they wanted to pursue decreased by 5.6%. Finally, agricultural students who had higher perceptions about their development of professionalism skills were less likely to hold membership in a professional organization. As students' perceptions of their professionalism skills increased by one point, the odds of them having membership in a professional organization decreased by 4.7%.

**Table 1**

*Logistic Regression Results Representing the Predictive Ability of Agricultural Students' Perceived Skill Development On their Career Knowledge and Professional Organization Membership*

Skill Area	Career Knowledge				
	B	S.E.	df	p	Odds Ratio
Teamwork	-.057	.260	1	.030*	.944
	Professional Organization Membership				
	B	S.E.	df	p	Odds Ratio
Professionalism	-.048	.024	1	.045*	.953

Note. \*  $p < .01$

## Conclusions and Recommendations

Our study results suggest that male students could have more general human capital to offer in the area of teamwork compared to their female counterparts. Results also suggest that students who have higher perceived professionalism skills may have less professional organization membership experience and, therefore, have inaccurate perceptions about the strength of their skills. We recommend instructors encourage students' involvement in professional organizations and help them identify opportunities for involvement because this experience likely helps them develop professionalism skills. In addition, future research should investigate why better teamwork skills are associated with less career knowledge.

## References

- Becker, G. S. (1964). Human capital: A theoretical and empirical analysis with special reference to education. *National Bureau of Economic Research*. <https://www.nber.org/books-and-chapters/human-capital-theoretical-and-empirical-analysis-special-reference-education-first-edition>
- Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9(5), 371–395. [https://doi.org/10.1016/0883-9026\(94\)90013-2](https://doi.org/10.1016/0883-9026(94)90013-2)
- Crawford, P., Lang, S., Fink, W., Dalton, R., & Fielitz, L. (2011). *Comparative analysis of soft skills: What is important for new graduates?* Association of Public and Land-grant Universities. <https://www.aplu.org/members/commissions/food-environment-and-renewable-resources/board-on-agriculture-assembly/academic-programs-section/documents/Soft%20Skills%20Survey%202011%20Crawford%20Lang%20Fink%20Dalton%20Fielitz.pdf>
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys* (4th ed.). John Wiley and Sons, Inc.
- Foreman, A. E., & Retallick, S. M. (2012). Undergraduate involvement in extracurricular activities and leadership development in college of agriculture and life sciences students. *Journal of Agricultural Education*, 53(3), 111–123. <https://doi.org/10.5032/jae.2012.03111>
- Hendrix, R., & Morrison, C. C. (2018). Student perceptions of workforce readiness in agriculture. *Journal of Agricultural Education*, 59(3), 213–228. <https://doi.org/10.5032/jae.2018.03213>
- Leighton, M., & Speer, J. D. (2020). Labor market returns to college major specificity. *European Economic Review*, 128, 1–25. <https://doi.org/10.1016/j.eurocorev.2020.103489>
- Rauch, A., & Rijdsdijk, S. A. (2013). The effects of general and specific human capital on long-term growth and failure of newly founded businesses. *Entrepreneurship Theory and Practice*, 37(4), 923–941. <https://doi.org/10.1111/j.1540-6520.2011.00487.x>
- Robinson, J. S., & Garton, B. L. (2008). An assessment of the employability skills needed by College of Agriculture, Food and Natural Resources graduates at the University of Missouri-Columbia. *Journal of Agricultural Education*, 34(4), 96–105. <https://doi.org/10.50322/jae.2008.04096>
- Truax, T. F. (2020). *Preparing our students for the future: An employability skills analysis within a college of agriculture* [Master's thesis, California State University, Fresno]. ProQuest Dissertations and Theses. <https://www.proquest.com/docview/2518778513?pq-origsite=gscholar&fromopenview=true>