Journal of Agricultural Education, 65(2), 209-225
https://doi.org/10.5032/jae.v65i2.2490

The Mentor Network for Junior Faculty in the Discipline

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Abstract

Mentorship is a valuable component of the growth of junior faculty, but mentorship and the mentorship network in the broadly defined agricultural education discipline is not well understood. This study describes junior faculty mentees in the discipline and their mentors, as well as the mentorship interactions, including the social network of connections. Junior faculty across the discipline were surveyed to determine their demographics, their mentors, and aspects of their mentorship relationships. The identified mentors were then surveyed for demographic information. The largest number of respondents were from school-based agricultural education for both mentees and mentors. Mentees were more likely to be younger and female than mentors were. Most mentors had one mentee in the network, though agricultural communication mentors were more likely to have multiple mentees than the other concentrations. Most connections were informally made and did not meet regularly. For the social network analysis, most communities were not connected to the rest of the network, though it is unclear if this is the nature of the network or an artifact of data collection. Having a shared institution was a statistically significant predictor of connections. Gender was not a significant predictor of connections, but age difference was positively associated at a statistically significant level. Those trying to ensure the success of junior faculty should be aware much of mentoring in the discipline in informal, which may not be ideal based on past research. More research is needed to understand what factors affect the quality of mentorship in the discipline.

Introduction & Literature Review

Mentorship

Mentorship is needed at all career stages for faculty members (Law et al., 2014; Minshew et al., 2021). However, it is a key aspect of the transition into higher education for junior faculty members (Mazerolle et al., 2018) and is more visible earlier in faculty members' careers (Sargent & Rientes, 2022) making them a notable group to study. Mentorship exists formally and informally (Fountain & Newcomer, 2016; Mullen & Klimaitis, 2021), though it is commonly recommended to be a part of institutional norms and structure (Bean et al., 2014; Etzkorn & Braddock, 2020).

Mentorship definitions vary but tend to revolve around the idea that it is a relationship for the purpose of developing one's career and relational functions, with the mentoring relationship evolving over time (de Janasz & Sullivan, 2004; Mullen & Klimaitis, 2021). The relationship critical component of

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mentorship (Bean et al., 2014; Lumpkin, 2011), and even when people have access to mentorship, they tend to still crave more authentic relationships (Shields et al., 2023).

The variety of definitions could be a result of different types of mentoring relationships and different roles mentors play for mentees. Some of these types of mentorship include traditional one-on-one mentorship, group mentorship (i.e., one mentor for a group of mentees), mosaic mentorship (i.e., one mentee with a group of mentors), and peer mentorship (Carey & Weissman, 2010; Moreau-Johnson et al., 2023; Williams et al., 2023).

By serving in a variety of roles, mentors satisfy different mentee needs (e.g., sponsor who makes connection, advisor who provides guidance, etc.; Bäker et al., 2020; Davis et al., 2023; Thorndike et al., 2008; Tobin, 2004). As such, mentees are likely to have multiple mentors who fulfill those different needs, including having mentors at different stages in their careers (Carey & Weissman, 2010; Mazerolle et al., 2018; Ransdell et al., 2021; Sorcinelli & Yun, 2007). These specific needs can include why they do what they do (i.e., identity), how they do what they do (i.e., competencies), and whom they connect with (i.e., network), though these needs shift over the faculty members' careers (de Janasz & Sullivan, 2004; Minshew et al., 2021; Nästesjö, 2021; Sargent & Rientes, 2022).

Benefits of Mentorship

Mentorship is valued by mentors and mentees (Fountain & Newcomer, 2016) and can benefit both parties (Mendez et al., 2017; Ransdell et al., 2021; van der Weijden et al., 2015). Mentors benefit from collaboration, being pushed by mentees, and building lasting relationships (Carey & Weissman, 2023).

For mentees, one of the most easily documented effects of successful mentorship is improved work performance through career prioritization, acquiring new skills, supporting teaching, increasing collaboration, increased research productivity, and leadership development (Bean et al., 2014; Carpenter et al., 2022; Minshew et al., 2021; van der Weijden et al., 2015; Williams et al., 2023). Mentorship can increase or improve interactions within academic programs and institutions (de Janasz & Sullivan, 2004; Mazerolle et al., 2018; Savin et al., 2006), improve workplace satisfaction (de Janasz & Sullivan, 2004; Minshew et al., 2021; van der Weijden et al., 2015), and help faculty navigate aspects of academia that have unwritten rules, such being a peer reviewer and surviving the peer review process (Adamson, 2012; Settle et al., 2020).

Creating Successful Mentoring

Different aspects have been reported to help create beneficial mentorship relationships. One of them is creating a screening or selection process to ensure that mentors and mentees are properly matched (Lumpkin, 2011; Shields et al., 2023; Voytko et al., 2018), which can help avoid issues where there is a disconnect between mentors and mentees (Ehrich et al., 2004; Minshew et al., 2021). An example of potential disconnect is that early career faculty tend to want more how-to information as a part of mentorship (e.g., navigating university structure and professional development), while post-tenure faculty tend to place more value with personal and social aspects of mentorship (Fountain & Newcomer, 2016).

Part of the mentorship matching process has to do with identity development and portrayal. Mentors' identities are a product of the work they have done (e.g., projects completed, where they got degrees, etc.), and if mentors can properly signal whom they are to prospective mentees, that can help ensure better matches in mentoring relationships (de Janasz & Sullivan, 2004). The identity aspect is important given that mentoring helps shape mentees' development of their academic identities through mentor feedback and mentee reflection (Ehrich et al., 2004; Nästesjö, 2021; Sargent & Rientes, 2022).

Evaluation is needed to ensure mentorship activities are effective (Lumpkin, 2011; Williams et al., 2023), including assessing if matching criteria are appropriate (Shields et al., 2023). The importance of

evaluation is clear because mentorship programs are likely to change over time, and flexibility is generally considered a positive aspect of mentorship programs (Etzkorn & Braddock, 2020; Savin et al., 2006), though a guiding framework can still be used as a starting point instead of leaving mentoring relationships to chance (Sargent & Rientes, 2022). Feedback from evaluation can help mentorship programs adjust to the needs and realities of their participants' situations (Etzkorn & Braddock, 2020; Minshew et al., 2021; Savin et al., 2006).

Not all mentoring relationships are ideal, and some can be downright toxic, such as issues of bias and discrimination (Ransdell et al., 2021). Under some circumstances, formal mentoring can deteriorate enough that mentees need to get help from superiors to address problems (Carey & Weissman, 2023). Time constraints and scheduling issues are often problems (Bean et al., 2014; Minshew et al., 2021; Ransdell et al., 2021). Time and scheduling are important because successful mentoring interactions generally meet more often than less successful ones (Bean et al., 2014), and mentees do not always meet as regularly with mentors as they can (Moreau-Johnson et al., 2023). Carey and Weissman (2023) recommended that mentees manage the mentoring relationship to ensure it keeps happening, including outlining their needs and goals.

One of the areas of particular importance is mentoring to serve underrepresented groups (Ehrich et al., 2004). Cline et al. (2019) noted that female faculty in the broadly defined agricultural education discipline reported benefiting from mentorship, regardless of if they had male or female mentors, but the authors still recommended fostering opportunities for women to connect with other women in the discipline, similar to the Cunningham et al. (2022) recommendation to pair female mentors and mentees together in Extension. In a study of academic medicine faculty, Voytko et al. (2018) found the mentoring relationships between women was beneficial, though not all mentors believed the mentorship was beneficial even though all the mentees did. Moreau-Johnson et al. (2023) found that women were not as satisfied as men with their mentoring relationships. Williams et al. (2023) recommended mentorship to improve diversity of junior faculty to help foster a sense of belong and connect junior faculty to resources. While a common recommendation is to pair underrepresented mentees with mentors who have similar demographic characteristics, Griffin (2021) found that increased mentoring expectations of Black faculty members had a detrimental impact on their productivity, at least in terms of traditional metrics of research outcomes, though participants did value the experiences in terms of being able to give back to their mentees and underrepresented students in general. This highlights the risk of expecting mentors from underrepresented populations to mentor junior faculty and graduate students with similar demographic characteristics.

Mentorship in the Discipline

Mentorship needs to be studied in different disciplines because each differs in its norms (Nästesjö, 2021). While mentorship has been studied in contexts related to the broadly defined field of agricultural education, such as Extension (Cunningham et al., 2022), school-based agricultural education (Foor & Cano, 2012; Jones et al., 2014; Lambert et al., 2010), agricultural communications (Ruth et al., 2020), and women in agriculture (Cline et al., 2019; Cline & Weeks, 2020), there is a need to understand mentorship of faculty members across the broadly defined field of agricultural education given that school-based agricultural education, agricultural communication, Extension education, and agricultural leadership are often housed in the same departments (Birkenholz & Simonsen, 2011), and there may be overlap in mentorship networks between the groups. Even though analysis of theoretical underpinnings of the different groups suggests that differences exist between the disciplines, particularly agricultural communications, there are still likely opportunities for these different but related disciplines to benefit each other (Harder et al., 2021; Tucker et al., 2003). Research in the discipline has addressed elements related to mentorship, such as research productivity (Hajdik et al., 2003; Harder et al., 2008; Kelly & Warmbrod, 1986; Myers & Osborne, 2006) and coauthor networks (Settle et al., 2020), but there is a need to more directly address mentorship in the discipline if we want to fully realize its potential. This research served as a baseline to assess the mentor network of junior faculty in the broadly defined agricultural education discipline.

Theoretical Framework

The guiding framework for this study was social capital theory. Social capital is "a collective asset in the form of shared norms, trust, networks, social relations, and institution that facilitate cooperation and collective action for mutual benefits" (Bhandari & Yasunobu, 2009, p. 504) and allows people to share resources and knowledge with each other (Yang et al., 2017). The value of social capital is tied to the connections that people have with each other, which pairs with the notion that the absence of those connections negatively impacts a person (Woolcock & Narayan, 2000). Social capital is fostered by those connections (Scott, 2017), but it also helps foster more connections within communities in general (Hustedde, 2015).

Compared to other forms of capital (e.g., financial, human, etc.), social capital is unique in that it is inherently shared between individuals and benefits everyone involved (Burt, 1992; Coleman, 1990; Kriesi, 2007), and it can be argued that social capital is actually a resource possessed by communities (Putnam, 2000). It is not typically the primary goal of activities people engage in, instead being a byproduct of other activities (Falk & Kilpatrick, 2000; Hauberer, 2011). Social capital can be used and built at the same time, but not all interactions inherently build it (Falk & Kilpatrick, 2000). Quality and quantity of interactions affect the development of social capital (Falk & Kilpatrick, 2000). Opportunities to foster social capital have to be cultivated (Falk & Kilpatrick, 2000).

Glanville and Bienenstock (2009) reported there are three components of social capital: network structure, trust and reciprocity, and resources. Network structure refers concepts related to concepts like density, bridges, and homogeneity of connections. Trust and reciprocity refer to relationship-related aspects that are necessary to generate social capital. And resources refer to material and relational capital. As an example of how structural aspects are related to social capital for teaching faculty members, Benbow and Lee (2019) found that those at 2-year institutions were more likely to have broader networks than those teaching at 4-year institutions, and those who have been teaching longer have smaller social networks, though some participants suggested it was because they were more confident in themselves as teachers.

Mentorship and social capital both have an emphasis on connecting people to foster trust and growth (Mullen & Klimaitis, 2021). Smith (2007), who researched faculty mentorship of undergraduate students, posited that while mentoring relationships develop social capital, there is often not enough emphasis on developing social capital, which weakens mentoring relationships. Notably, the sponsoring role of mentorship is one of the more visible values of social capital (Bäker et al., 2020). Even when not explicitly listing fostering social capital as a goal, mentorship studies' findings and recommendations often relate to social capital, such as fostering quality relationships (e.g., Ruth et al., 2020), developing networks of connections (e.g., Carpenter et al., 2022), and what types of interactions produce tangible outcomes for mentors and mentees (e.g., Fountain & Newcomer, 2016). Similarly, a coauthorship study done in the agricultural education discipline that was grounded in social capital had implicit ties to mentorship because prolific coauthor pairs were often advisors and advisees (Settle et al., 2020).

Much of the mentoring literature grounded in social capital focuses on serving underrepresented populations in academia, such as when Cunningham et al. (2022) recommended expanding mentorship programs for women in Extension to improve social capital. Espino and Zambrana (2019) found that mentorship for underrepresented faculty was often lackluster, which then limited the networks and collaborations for those mentees. Williams and Williams (2006) reported that while other types of capital, such as financial and political, were needed to support African American male faculty members in academia, social capital approach is also needed to help foster community. The participants in the study felt isolated as they were trying to navigate the unwritten norms of faculty life, and they often believed their work was not valued within their institution. Zambrana et al. (2015) had similar findings in looking at

mentoring experiences of underrepresented minority faculty members. Zambrana et al. also looked at creating pathways for underrepresented populations, with mentoring activities beginning as early as K-12 education. These pathways were designed to improve skills necessary for academia, provide emotional support, and learning how to navigate the academy. They also recommended providing training for mentors that was specific to supporting underrepresented minority populations.

In a unique take, Esnard et al. (2015) documented a cross-cultural mentorship program the authors were a part of for female faculty members. While they experienced many of the typical benefits of mentorship, they also navigated differences between their respective cultural identities. One of the findings was the need to focus on what the group needed to foster its social capital as opposed to what an individual alone might need, which could hinder the group's dynamics. Stuckey et al. (2019) assessed a mentoring program targeting women and underrepresented minority faculty members, reporting that the program was beneficial for fostering social capital in terms of creating a place for faculty members to engage with each other, broaden their networks, and learning how to navigate the university's culture and political structures. The mentoring program was originally designed to increase research productivity of the participants but showed its most clear effects on their well-being, which relates to the relational aspects of mentorship noted in much of the literature. The authors noted the importance of institutional support for the program to be successful.

Purpose & Objectives

The purpose of this study was to understand the mentor network for junior faculty in the broadly defined agricultural education discipline. The objectives of the study were to

1. Describe junior faculty mentees and their mentors within the discipline, and
2. Describe the mentorship interactions and network.

Methods

This study consisted of an online survey of junior faculty in the broadly defined field of agricultural education, followed by a survey of mentors identified in the initial survey. The target population of the initial survey was defined as pre-tenure faculty in agricultural education, as well as non-tenure track faculty and post-doctoral associates who had been in their positions for fewer than 6 years and intended to pursue a tenure track position. The sampling frame was developed starting with the universities listed on the American Association for Agricultural Education's (AAAE) website. Those universities were then searched for relevant programs in school-based agricultural education (SBAE), agricultural communication (ACOM), agricultural leadership (AGLE), and Extension education (EE). Any faculty who fell within the study's criteria based on those individuals' titles and stated emphasis areas were added to the initial participant list. Those 202 prospective participants were sent an initial invitation via Qualtrics, as well as a follow-up through Qualtrics and a final reminder sent directly via email in case the Qualtrics messages were being filtered into junk folders. There were 71 responses from the mentee list (35.1%), and after removing incomplete responses and those who did not meet study criteria, there were 41 mentee respondents included in the study.

Those mentees identified 103 mentors. To help collect their demographic data, the mentors were then surveyed, though not all of them had accessible emails. Two had contact information that was unavailable, and one individual passed away between mentee data collection and mentor data collection. Email invitations and reminders via Qualtrics were sent to 100 individuals and 64 completed the instrument. For nonrespondents, their faculty pages were searched to fill in publicly available information, such as focus area and what institutions they had worked at and had received degrees from.

The mentee instrument first collected demographic data to ensure respondents met the study's criteria. Individuals who were assistant professors began the instrument, associate and full professors were

sent to the end of the instrument, and non-tenure track faculty, clinical faculty, and post-doctoral associates were asked how long they had been in their current position and if they intended to pursue a tenure track position. If they had been in their position 6 or fewer years and intended to pursue a tenure track position, they began the survey. Respondents were provided a description of what was included in the agricultural education discipline and if they had any mentors in the discipline. No definition was provided for mentorship, so mentees were able to interpret the term in whatever manner they wished. Those who reported not having mentors were asked why they believed they did not have mentors, while those who had mentors then were asked to list up to 5 of the mentors, including their institutions. For each mentor listed, items were displayed for mentees to report if their mentors had tenure, what their primary concentration was, if they were formally or informally connected to their mentors, who initiated the relationship, if they had regularly scheduled meetings, how often they met if they met regularly, and any additional information they believed to be pertinent about how they were connected to their mentors. Mentees then provided the institutions they received their degrees from, if they had worked at other institutions prior to their current one, their primary concentration, their membership in agricultural education-related organizations, age, gender, race, and if they were Hispanic or Latino/Latinx. The organizations included AAAE, North American Colleges and Teachers of Agriculture (NACTA), Association for Communication Excellence (ACE), Association for International Agricultural and Extension Education (AIAEE), Association of Leadership Educators (ALE), International Leadership Association (ILA), National Association of Extension 4-H Youth Development Professionals (NAE4-HYD), National Association of Extension Program & Staff Development Professionals (NAEPSDP), and National Association of Community Development Extension Professionals (NACDEP). These organizations were included because this could help inform where mentees in the discipline are meeting, which could be a location to potentially foster connections between mentors and mentees beyond the universities they worked at and received degrees from.

The mentor instrument collected demographic information to match the mentee instrument: job title, tenure status, if they worked primarily as faculty or administration, where they completed their degrees, where they worked before their current institution, their primary concentration, membership in agricultural education-related organizations, age, gender, race, and if they were Hispanic or Latino/Latinx.

For objectives 1 and 2, descriptive statistics were measured in SPSS to describe mentees, mentors, and their interactions. For objective 2, we employed a social network community detection algorithm using the Igraph package in R and an inferential network model known as exponential random graph models (ERGM), using the ergm package in R (Csardi et al., 2023; Krivitsky, 2023). Social network analysis (SNA) is used to describe the nodes (i.e., mentors and mentees in this study) and relationship between these nodes (i.e., how those individuals are connected to each other; Yang et al., 2017). Community detection in social networks is useful for determining and visually representing how the network is and can provide information on individual nodes. The algorithm we used determines community membership by modularity, which maximizes connections within communities and minimizes connections between communities. This helped us to determine if the network is characterized by a hierarchical core-periphery structure (i.e., mentors primarily coming from a small set of universities) or if the network is defined by several clusters of equal or different sizes. ERGMs allowed us to test if ties were driven by structural terms, such a clustering or reciprocity, as well as exogenous covariates. ERGMs do not assume linearity in the relationship between the covariates and the network ties nor does it rely on IID data assumptions, making it preferable to most generalized linear models (Scott, 2017). More information about the SNA is provided in the results.

To help ensure the construct validity of the instrument (Dooley, 2001), an expert panel consisting of four faculty members external to the research team from the broadly defined discipline of agricultural education reviewed the instrument. Their feedback led to changes in the instrument to ensure that how the discipline was referred to was inclusive of the different concentrations, clear and consistent use of terminology, inclusivity of demographic questions, and overall clarity of questions. Because the items in

the instrument were all about demographic information, reliability, which refers to consistency and stability of measures (Kimberlin & Winterstein, 2008), was not calculated.

Results

Objective 1: Describe Junior Faculty Mentees and Their Mentors Within the Discipline

All but two of the mentee respondents reported having mentors in the discipline. The vast majority of the mentee respondents were assistant professors (n = 36, 87.8%), followed by 4 non-tenure track faculty (9.8%) and 1 post-doctoral associate (2.4%). The majority of mentors were full professors (n = 60, 58.3%), followed by associate professors (n = 26, 25.2%), assistant professors (n = 7, 6.8%) and one non-tenure track instructor (1.0%). Nine preferred not to say (8.7%). The majority were in faculty positions (n = 65, 65.0%), followed by administrators (n = 18.0%), and 17 who selected other (17.0%), with many of those being split between faculty and administration, as well as retired faculty members. Of those who responded to the survey, the majority were tenured (n = 68, 87.2%).

The largest number of mentees reported their concentration was SBAE (n = 17, 41.5%), followed by ACOM (n = 12, 29.3%), AGLE (n = 5, 12.2%), EE (n = 3, 7.3%), and other (n = 3, 7.3%). For mentors, almost half were in SBAE (n = 45, 46.9%), followed by ACOM (n = 19, 19.8%), AGLE (n = 16, 16.7%), other (n = 10, 9.7%), and EE (n = 6, 6.3%)

The majority of mentees were AAAE members (n = 37, 90.2%), followed by NACTA (n = 28, 68.3%), ACE (n = 10, 27.0%), AIAEE (n = 10, 24.4%), ALE (n = 7, 20.0%), ILA (n = 4, 9.8%), NAE4-HYDP (n = 3, 7.3%), NAEPSDP (n = 2, 4.9%), and none were members of NACDEP. The majority of mentors were AAAE members (n = 53, 84.1%), followed by NACTA (n = 35, 59.3%), AIAEE (n = 22, 38.6%), ACE (n = 15, 27.8%), ALE (n = 14, 25.0%), ILA (n = 14, 24.6%), NAEPSDP (n = 3, 5.7%), NACDEP (n = 2, 3.8%), and none were members of NAE4-HYDP.

There were 95 institutions represented in the total sample, including where individuals had worked and completed degrees. The average of age of mentees was 35.7 years (SD = 7.1), while the average age of mentors was 48.7 (SD = 8.2). The majority of mentees were women (n = 22, 53.7%) and White (n = 37, 90.2%), while the majority of mentors were men (n = 36, 57.1%) and all were White, with one respondent also reporting being American Indian or Alaska Native and three who reported being Hispanic or Latino/Latinx.

Objective 2: Describe the Mentorship Interactions and Network

The majority of mentors had no more than one mentee in the study, while 26 mentors were linked to multiple mentees. Two mentors had four mentees, which was the most in the study. For the edges (i.e., connections between mentors and mentees), which could be more than one per mentor if they had multiple mentees, the mentors' concentrations were SBAE (n = 62, 43.7%), ACOM (n = 35, 24.6%), AGLE (n = 20, 14.1%), EE (n = 14, 9.9%), and other (n = 11, 7.7%). When compared with the results in objective 1, which describes the mentors directly as opposed to objective 2 describing the connections, ACOM mentors were more likely to have more mentees per person than the other concentrations.

There were 142 edges in the network. The following numbers are reflective of the number of connections in the network, not the number of respondents. The majority of the connections were informally made (n = 88, 66.7%). The mentees (n = 67, 47.5%) reported that they were more likely than mentors (n = 40, 28.3%) to initiate the mentoring relationships, while the remainder were formally assigned without either mentor or mentee initiating (n = 34, 24.1%).

The majority of mentor/mentee connections did not meet regularly (n = 103, 72.5%). For those who met regularly, the majority met monthly (n = 22, 56.4%), followed by weekly (n = 10, 25.6%) and other (n

= 7, 17.9%). For the other responses, once a semester was the most common answer to the open-ended follow-up question.

Plots were created using an undirected network (Figure 1). Mentors are circles, Mentees are squares, and triangles are both mentor and mentee in the network. The nine isolates (i.e., those disconnected from others in the network) from the surveys were dropped for the graphs. The gender plot is blue for male, red for female, and white for non-answered. The community plot used Igraph's fast-greedy algorithm, which maximizes modularity to identify communities (i.e., clusters of mentoring relationship), which are shown in Figure 2. Black lines represent connections within communities, red lines are connections between communities. Most communities are not connected to the rest of the network, which may be an artifact of how the network was created (e.g., data were limited by responses to the survey and therefore may represent a sub-graph of the entire field's network.). The numbers in Figures 1 and 2 are the anonymized identifiers of the individuals in the network.

Figure 1

Mentor Network in the Agricultural Education Discipline.

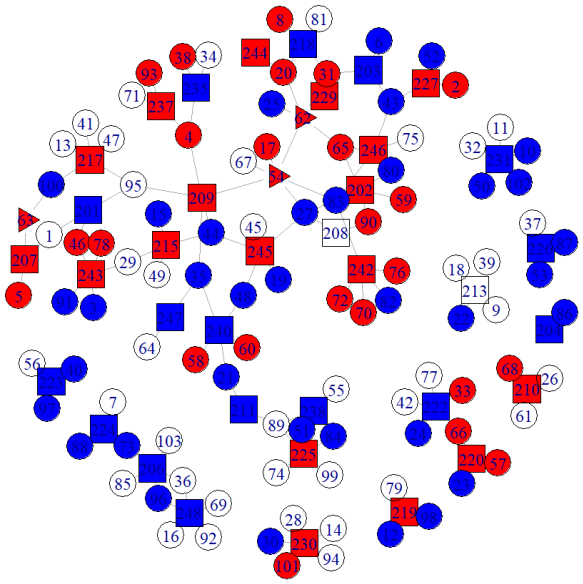
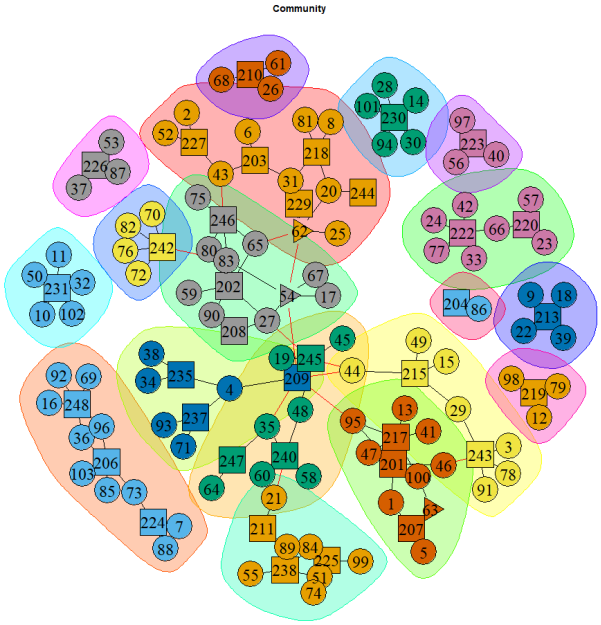


Figure 2

Community Plot of the Agricultural Education Discipline Network.



For the Exponential Random Graph Model (ERGMs), we used the undirected network. The first model checks for clustering (triangles) and popularity. Neither was statistically significant. We proceeded to the model that included exogenous covariates without structural terms (i.e., control variables collected in the survey) given the evidence that the network was not defined by this type of structural dependence. In the second model, having the same institution, either from working together or being a student at the mentor's institutions was significantly associated with mentor/mentee connections, with the studied institutional relationship being slight stronger. Gender was not significant for predicting connections. Age difference was positively and significantly associated with mentor/mentee relationships (i.e., mentors are typically older than mentees).

Table 1

Exponential Random Graph Model of the Mentor Network in the Agricultural Education Discipline.

	(1)	(2)
Edges	-4.571*	-5.051*
	(0.524)	(0.280)
Triangle	-0.147	
	(0.991)	
Popularity	0.054	
	(0.116)	
Studied/Worked		1.942*
		(0.366)
Worked Together		1.280*
		(0.391)
Gender, Match		0.177
		(0.242)
Age Difference		0.037*
		(0.014)
Num.Obs.	10878	4095
AIC	1520.0	650.7
BIC	1541.9	682.3

*$p < .05$

Conclusions, Discussion, & Recommendations

Because of the importance of mentorship throughout one's career (Law et al., 2014; Minshew et al., 2021), especially for early career faculty (Mazerolle et al., 2018), understanding mentorship in the discipline is critical. Mentees in the discipline were primarily connecting to senior faculty in the discipline and primarily other faculty, not administrators. In looking at concentrations, SBAE was the largest in both groups. ACOM mentees were proportionally more represented than mentors, which helps explain why there were more mentees per ACOM mentor than the other concentrations. AAAE was the most-represented professional organization, though the initial sampling frame was developed from AAAE's list of universities in the discipline, and AAAE is not specific to any of the concentrations like many of the other organizations. This was followed by NACTA, which is multidisciplinary beyond agricultural education, and then the concentration-specific organizations.

In terms of demographics, the vast majority of individuals in the network were White in both groups. But while 90% of the mentees identified as White, all of the mentors did, which indicates that there may be a lack of non-White mentors available in the discipline for the non-White early career faculty. There were also about 10% fewer women mentors than there were women mentees, indicating another potential gap of mentorship, which is important given recommendations for women to have female mentors (Cline et al., 2019; Cunningham et al., 2022; Voytko, 2018). This could lead to a potential burden on mentors from those demographic areas that adversely affects their traditional measures of productivity (Griffin, 2021).

The SNA revealed that mentorship is spread out in the network, with the majority only having one mentee in the network, though about one-fourth of the identified mentors had more than one. Most mentees have multiple mentors, though the strength of each mentoring relationship was not determined in this study.

Having multiple mentors was reflective of literature (Carey & Weissman, 2010; Mazerolle et al., 2018; Ransdell et al., 2021; Sorcinelli & Yun, 2007). The broad number of mentors in the discipline is a possible indicator that agricultural education faculty members value mentorship like those in other fields (Fountain & Newcomer, 2016; Mendez et al., 2017; Ransdell et al., 2021; van der Weijden et al., 2015). Social capital related to mentorship appears to be dispersed throughout in the network, though the nature of the study cannot tell us why this is happening.

While formalization of mentorship is often suggested in the literature (Bean et al., 2014; Etzkorn & Braddock, 2020), the majority of mentorship connections were informally made, with mentees believing they were more likely to initiate the relationships than their mentors, which links to the Carey and Weissman (2023) recommendation for mentees to manage their mentoring relationship. Most mentee-mentor relationships did not include regular meetings, which indicates mentees may not be getting as much out of their mentorship relationships as ideal based on past research (Bean et al., 2014). While social capital is likely being built, it is worth remembering that not all interactions inherently develop social capital, so quality of mentor-mentee interactions matters (Falk & Kilpatrick, 2000).

Many of the mentoring communities in the SNA were not connected to the rest of the network. While this could be because of the sampling method, it is possible the overall mentoring network is somewhat fragmented in the discipline. The analysis found some predictors for network connections happening, including having a shared institution through work or education, particularly for where people received their degrees. Age difference between mentors and mentees was positively associated with relationships, which aligns with many of the traditional norms senior faculty serving in mentoring roles, though it is worth noting that some assistant professors were mentoring other junior faculty, which aligns with peer mentoring (Carey & Weissman, 2010; Moreau-Johnson et al., 2023; Williams et al., 2023). The variation of senior and junior faculty mentors in the network shows that mentoring connections are likely being made in a variety of ways (de Janasz & Sullivan, 2004). Gender was not a significant predictor of relationships. The nature of this research does not say if sharing gender between mentor and mentee is beneficial, but it is worth noting that what is happening in the network does not match recommendations from past research (Cline et al., 2019; Cunningham et al., 2022; Voytko, 2018).

For department chairs hiring new faculty, there is a need to be aware of how much of mentorship is left up to chance or is not happening on a regular basis, especially given recommendations to formalize mentorship (Bean et al., 2014; Etzkorn & Braddock, 2020) and implement mentorship matching programs (Lumpkin, 2011; Shields et al., 2023; Voytko et al., 2018). New faculty should be aware that the onus may be on them to initiate most of their mentorship relationships (Carey & Weissman, 2010). For those seeking to prevent junior faculty from missing out on mentorship, they may need to ensure senior faculty are reaching out to junior faculty, particularly those who do not come from larger programs with built-in connections.

Future research is needed in a variety of areas. More quantitative research is needed to study mentorship across the discipline. Given differing needs and preferences for mentorship as careers progress (Etzkorn & Braddock, 2020; de Janasz & Sullivan, 2004; Fountain & Newcomer, 2016; Minshew et al., 2021), mentorship of post-tenure faculty should be assessed to determine if the network differs from the early career faculty mentor network. Qualitative research is needed to assessment mentoring relationships in-depth. Based on those qualitative results, a survey addressing those factors across the discipline would be valuable to address the quality of mentorship that is occurring. Research addressing those without mentors would also be valuable to better understand why those individuals unconnected and what effect that has on their social capital in the discipline.

Mentorship is a critical component for the growth of faculty members (Law et al., 2014; Minshew et al., 2021). As the agricultural education discipline seeks to continue growing, understanding the needs of

the personnel involved will be a critical component. Continued work is needed to improve mentorship in the discipline.

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