

RESEARCH

The Influence of Faculty Mentors on Junior Pharmacy Faculty Members' Career Decisions

Nicholas E. Hagemeyer, PharmD, PhD,^a Matthew M. Murawski, PhD,^b and Nicholas G. Popovich, PhD^c

^aEast Tennessee State University Gatton College of Pharmacy, Johnson City, Tennessee

^bPurdue University College of Pharmacy, West Lafayette, Indiana

^cUniversity of Illinois-Chicago College of Pharmacy, Chicago, Illinois

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Objective. To assess junior faculty members' perceptions regarding the impact of past faculty-mentoring relationships in their career decisions, including the decision to pursue postgraduate training and ultimately an academic career.

Methods. A mixed-mode survey instrument was developed and an invitation to participate in the survey was sent to 2,634 pharmacy faculty members designated as assistant professors in the American Association of Colleges of Pharmacy (AACP) directory data.

Results. Usable responses were received from 1,059 pharmacy faculty members. Approximately 59% of respondents indicated that they had received encouragement from 1 or more faculty mentors that was very or extremely influential in their decision to pursue postgraduate training. Mentor and mentee pharmacy training characteristics and postgraduate training paths tended to be similar. US pharmacy degree earners rated the likelihood that they would have pursued an academic career without mentor encouragement significantly lower than did their foreign pharmacy and nonpharmacy degree colleagues ($p = 0.006$, $p = 0.021$, respectively).

Conclusions. For the majority of junior pharmacy faculty members, faculty mentoring received prior to completing their doctor of pharmacy degree or nonpharmacy undergraduate degree influenced their subsequent career decisions.

Keywords: mentor, faculty, career, postgraduate training

INTRODUCTION

Mentoring is an activity intended to address and ultimately reduce contrasting levels of experience or skill between mentors and mentees or protégés.¹ Mentoring is considered an important aspect of faculty development, faculty retention, professionalization, and career path decision making.²⁻⁸ The most common pharmacy postgraduate training paths (eg, residency, fellowship, graduate education) are built on mentor models, with the implicit assumption that more experienced, skilled, and/or knowledgeable mentors can impart knowledge, wisdom, and other attributes along the way to foster the development of the mentee or protégé. The mentor model as a training modality is well understood and has been examined extensively.⁹

The role of mentoring relationships in the choice of pharmacy careers and postgraduate paths is not as well

understood. Smith and colleagues found the influence of undergraduate faculty members was mentioned by 23% of pharmacy school graduates and graduate students as a reason for pursuing graduate study.⁸ While not defined as mentoring in the study, influence could be conceptualized as such. Another study found "faculty stressing importance" was one of the most commonly cited reasons for pursuing residency or fellowship training.³ Although this could infer mentoring, "stressing importance" could also occur in a non-mentoring context. Clark and colleagues noted that 2 of the 3 community pharmacy residents surveyed in their study mentioned that a mentor/preceptor was influential in their decision to accept a faculty position post-residency.²

Career path decisions are undoubtedly complex and involve consideration of humanistic, behavioral, and environmental factors. Social cognitive career theory posits that self-efficacy beliefs (what am I capable of?), outcome expectations (what will I get out of this?), and personal goals (what do I want to accomplish?) are interwoven as individuals make career decisions.¹⁰ Theoretically, the mentor could influence each of these constructs as mentees

Corresponding Author: Nicholas E Hagemeyer, PharmD, PhD, Assistant Professor, Department of Pharmacy Practice, Gatton College of Pharmacy, East Tennessee State University, PO Box 70657, Johnson City, TN 37614. Tel: 423-439-6239. E-mail: hagemeyer@etsu.edu

make career decisions via social persuasion, vicarious learning, clarification of expected outcome perceptions, and critical evaluation of personal goal perceptions. This list of potential mentor influences on career path decisions is by no means exhaustive; however, the examples demonstrate the multi-faceted nature of mentoring relationships and the potential role mentors may play in career decision-making processes.

The current study sought to build on previous literature by examining junior pharmacy faculty members' perceptions regarding the role of mentoring relationships in their past career decisions, including the decision to pursue postgraduate training and ultimately an academic career. Whereas faculty development and mentoring relationships theoretically serve to increase faculty retention once an individual has entered an academic career, this study sought to examine the role of mentoring in the crucial decision to pursue postgraduate training and an academic career in the first place (ie, recruitment). Specific objectives of the study included: (1) investigate the relative influence of faculty member encouragement in the decision to pursue postgraduate training; (2) quantify the faculty members perceived to be positively influential in the decision to pursue postgraduate training; (3) compare junior faculty members (ie, mentees) and their most-influential mentors across training pathway characteristics; and (4) examine junior faculty members' perceptions of the likelihood that they would have pursued postgraduate training and an academic career if their most-influential mentors had not provided encouragement.

METHODS

Survey items were constructed by the authors and included as a section of a larger survey instrument administered in spring 2011 to a national sample of junior pharmacy faculty members. Items with responses based on a 5-point Likert-type scale (not at all influential/extremely influential; extremely unlikely/extremely likely) were used as well as categorical, and constructed-response items to capture pharmacy faculty members' perceptions, demographic data, and mentor demographic data. Items were developed to assess what pharmacy faculty members' perceptions were while earning their pharmacy or undergraduate degree including: (1) the influence that encouragement from faculty members had in their decision to pursue postgraduate training; (2) the number of faculty members who positively influenced that decision; (3) degree and postgraduate training characteristics of the faculty mentor who was the most influential in their decision to pursue postgraduate training; and (4) the likelihood that they would have chosen a postgraduate training path and academic career without the encouragement of that faculty mentor.

Prior to conducting the national study, a pilot study was conducted at Purdue University. For the subset of instrument items discussed in this manuscript, no changes were made based on pilot study feedback. A directory of all faculty members designated as assistant professors as of November 8, 2010 (N=2,700), was obtained from the AACP. The study sample consisted of the AACP-designated assistant professor population, excluding faculty members at institutions outside the United States included in the AACP database and individuals who did not have e-mail addresses included in the AACP database and for whom e-mail addresses could not be located. The resulting sampling frame, to which an initial contact e-mail was sent, consisted of 2,634 faculty members. Assistant professors were targeted as these individuals were more likely to have completed their postgraduate training more recently than associate or full professors. Institutional review board approval was granted by Purdue University prior to study implementation.

A mixed-mode tailored design method involving 3 contacts was used to recruit pharmacy faculty members to participate in the study.¹¹ After sending a pre-notification e-mail, faculty members were recruited via 2 personalized e-mails with links to the online survey instrument and a final paper-based mailing that included a cover letter, a paper-based survey instrument, and a self-addressed, stamped return envelope. Identification numbers were assigned to faculty members and used strictly to remove respondents from subsequent recruitment efforts. Qualtrics survey software (Qualtrics, Inc., Provo, UT) was used to construct the survey instrument and to collect online survey responses.

Data were analyzed using PASW/SPSS version 18.0 (IBM Corp., Armonk, NY). Descriptive statistics were calculated for all items. The *a priori* significance level was set at 0.05. Data gathered via response scales were assumed to be ordinal. Differences in the number of faculty members influential in the choice of postgraduate training were examined across educational background using one-way ANOVA techniques with post-hoc Tukey tests. The chi-square test for independence was used to examine relationships between respondent and mentor educational backgrounds. The Kruskal-Wallis test of significance was used to examine differences in likelihood of pursuing the chosen postgraduate training path and an academic career were it not for mentor encouragement across respondent demographic characteristics.

RESULTS

The raw response rate (ie, response of any type divided by the potential sample size) for the survey instrument was 48%. For this portion of the instrument, 1,059

usable responses were obtained. To be included in the analysis, respondents were required to complete a minimum of 75% of the survey instrument. Several respondents indicated they were not qualified to complete the study and were therefore excluded from the original study sample. Respondents who earned an entry-level PharmD degree (as opposed to a post-BS PharmD degree) and pursued no additional postgraduate training were excluded because of the postgraduate training focus of the study. Overall, our usable response rate was approximately 43% (1059/2465).

Demographic characteristics of respondents are presented in Table 1. Approximately 59% indicated that the encouragement received from 1 or more faculty members was very or extremely influential in their decision to pursue postgraduate training. Twenty-eight percent indicated encouragement was slightly or moderately influential, 9% indicated encouragement from faculty mentors was not at all influential, and 4% indicated the item was not applicable. Of the 12 influential factors included in this section of the survey instrument, encouragement from faculty mentors had the highest mean value (3.7 ± 1.3 on a 5-point scale; median = 4; Table 2). Differences in the extent to which encouragement from faculty members was influential were not significant across type of postgraduate training pursued by respondents or pharmacy training characteristics of respondents.

Respondents indicated the mean number of faculty members who were a positive influence in their decision to pursue postgraduate training was 3.4 ± 2.5 (median = 3; range = 1-20). Approximately 7% of respondents indicated no faculty members were positively influential in their decision to pursue postgraduate training. Overall, 82% of respondents indicated that 1 to 5 faculty members were positively influential. The mean number of influential faculty members across postgraduate training path pursued was: post-BS PharmD, 2.7; residency training, 3.7; fellowship training, 3.9; master's degree, 3.2, and doctoral degree (eg, PhD), 3.2 faculty members. Differences in the number of faculty members considered influential were not significant across level of postgraduate training.

Respondents reported the postgraduate training and pharmacy training characteristics of their most-influential faculty member in their decision to pursue postgraduate training. Respondents indicated that the highest level of training completed by their most-influential faculty member was: PharmD, 5%; residency training, 37%; fellowship training, 12%; and graduate education, 46%. Seventy-three percent of mentors considered to be the most influential had earned a US pharmacy practice degree, 6% had earned a foreign pharmacy degree, and 21% had earned a nonpharmacy degree.

Table 1. Demographic Characteristics of Junior Pharmacy Faculty Members (N=1059)^a

Variable	No. (%)
Gender, No. (%)	
Female	619 (59.1)
Male	429 (40.9)
Ethnicity, No. (%)	
African American	43 (4.1)
American Indian	3 (0.3)
Asian	173 (16.5)
Caucasian	746 (71.3)
Hispanic	36 (3.4)
Pacific Islander	12 (1.1)
Other	34 (3.2)
Institution Type, No. (%)	
Private	447 (42.7)
Public	601 (57.3)
Department, No. (%)	
Medicinal chemistry	49 (4.6)
Pharmaceutics	89 (8.4)
Pharmacology	67 (6.4)
Pharmacy practice	715 (67.8)
Social/behavioral	54 (5.1)
Other	81 (7.7)
Professorial Rank, No. (%)	
Assistant	976 (93.0)
Associate	41 (3.9)
Full	4 (0.4)
Other	29 (2.8)
Level of Postgraduate Training, No. (%)	
Post-BS PharmD	66 (6.2)
Residency	499 (47.1)
Fellowship	60 (5.7)
Master's degree	103 (9.7)
Doctoral degree	331 (31.3)
Age in years, mean (SD)	36.9 (8.78)
Years at current rank, mean (SD)	4.0 (3.37)

^a Differences in the number of responses across items are the result of missing data.

Results for the chi-square test for independence examining the relationship between respondent type of postgraduate training and influential faculty member type of postgraduate training are presented in Table 3. Over 95% of doctoral degree earners indicated their most-influential faculty member had earned a graduate degree. For residency completers, 64% indicated their most-influential faculty member also completed a residency, and 51% of fellowship completers indicated their most-influential faculty member also completed a fellowship. Of those respondents who had earned a post-BS PharmD degree, 33% indicated their most-influential faculty member had completed a residency and 37% said their most-influential faculty member had earned a graduate degree.

Table 2. Descriptive Statistics for Factors Influential in Junior Pharmacy Faculty Members' Decision to Pursue Postgraduate Training (n=1059)^a

Item	Median	Mean (SD)
Encouragement from professor(s)	4	3.7 (1.3)
Encouragement from preceptor(s)	4	3.6 (1.3)
Work-related experiences	4	3.6 (1.2)
Completion of a course in the interest area	4	3.5 (1.4)
Introductory/advanced pharmacy practice experiences	4	3.4 (1.5)
Encouragement from individuals who were completing the postgraduate training at the time	4	3.4 (1.2)
Participation in teaching activities	4	3.4 (1.4)
Participation in research/scholarly activities	3	3.3 (1.4)
Job shadowing experiences	3	3.0 (1.4)
Attendance at state/national meetings/conferences	3	3.0 (1.4)
Encouragement from family members	2	2.6 (1.4)
Encouragement from someone in the pharmaceutical industry	1	1.9 (1.3)

^a Response scale: 1=not at all influential; 2=slightly influential; 3=moderately influential; 4=very influential; 5=extremely influential.

The pharmacy training characteristics of faculty members were similar to those of their most-influential faculty members (Table 4). Nearly 79% of respondents who were nonpharmacy degree earners indicated their most-influential faculty member also did not earn a pharmacy degree. Ninety-five percent of respondents who were US pharmacy degree earners indicated their most-influential faculty member had also earned a US pharmacy practice degree. Fifty-two percent of respondents who were foreign pharmacy degree earners indicated that their most-influential faculty member had a foreign pharmacy degree, whereas 34% indicated their most-influential faculty member had earned a US pharmacy practice degree, and 14% indicated their most-influential faculty member had no pharmacy degree.

Two final items asked respondents to rate the likelihood they would have pursued the postgraduate training path they pursued and the likelihood they would have pursued an academic career without the encouragement of their most influential faculty member. Approximately 20% of respondents indicated they would have been unlikely or extremely unlikely to pursue the postgraduate training path they pursued without the encouragement from their most influential faculty member, whereas 60% were likely or extremely likely to have pursued the postgraduate path regardless. Regarding the likelihood of pursuing an academic career, 32% of respondents indicated they would have been unlikely or extremely unlikely to pursue an academic career without encouragement from their most-influential faculty member. Approximately 42% indicated they would have pursued an academic career regardless.

Perceptions of faculty members regarding the likelihood of pursuing the same postgraduate path were it not for their most-influential faculty member were not significantly different across type of postgraduate training ($p=0.106$). The percentage of respondents who indicated they were likely or extremely likely to have pursued the same postgraduate path ranged from 54% of doctoral degree (eg, PhD) earners to 69% of post-BS PharmD degree earners. Doctoral degree earners did indicate a significant increased likelihood of pursuing an academic career regardless of faculty member influence as compared to post-BS PharmD earners, residency completers, and master's degree earners (p values ≤ 0.03). The percentage of respondents who indicated they were likely or very likely to have pursued an academic career regardless of the encouragement of their most-influential faculty member ranged from 33% of post-BS PharmD earners to 51% of doctoral degree earners. Percentage of likely/very likely responses for additional levels of postgraduate training included: residency training, 36%; fellowship training, 43%; and master's degree education, 38%.

Across faculty member pharmacy training characteristics, the likelihood of pursuing the same postgraduate

Table 3. Comparison Between Respondent's Postgraduate Training and That of Their Most-Influential Faculty Mentor (n=925)^a

Respondent Level of Postgraduate Training	Faculty Member Level of Postgraduate Training, No. (%)				P^b
	PharmD	Residency	Fellowship	Graduate Degree	
PharmD	11 (21.2)	17 (32.7)	5 (9.6)	19 (36.5)	<0.001
Residency	32 (6.8)	300 (63.6)	65 (13.8)	75 (15.9)	
Fellowship	3 (5.1)	18 (30.5)	30 (50.8)	8 (13.6)	
Master's Degree	5 (5.5)	21 (23.1)	12 (13.2)	53 (58.2)	
Doctoral Degree	0 (0)	5 (1.6)	9 (2.9)	296 (95.5)	

^a Differences in the number of responses across items are the result of missing data.

^b Chi-square test of independence, $P < 0.001$.

Table 4. Comparison of Respondent’s Pharmacy Training Characteristics With Those of Their Most-Influential Faculty Mentor (n=1025)^a

Respondent Pharmacy Training Characteristics	Faculty Member Pharmacy Training Characteristics, No. (%)			P ^b
	Other (Non-Pharmacy) Degree	Foreign Pharmacy Degree	US Pharmacy Degree	
Other (non-pharmacy) degree	171 (78.8)	7 (3.2)	39 (18.0)	<0.001
Foreign pharmacy degree	13 (14.1)	48 (52.2)	31 (33.7)	
US pharmacy degree	29 (4.1)	7 (1.0)	680 (95.0)	

^a Differences in the number of responses across items are due to missing data.

^b Chi-square test of independence, , P < 0.001.

path was not significant ($p=0.457$), whereas differences across the likelihood of pursuing an academic career were significant ($p=0.004$). The percentage of respondents who reported themselves as being likely or extremely likely to have pursued the same postgraduate path ranged from 56% of nonpharmacy degree earners to 62% of foreign pharmacy degree earners. US pharmacy practice degree earners indicated that it was likely or extremely likely they would have pursued the same path in 61% of cases. Regarding the likelihood of pursuing an academic career without the encouragement of their most-influential faculty member, the percentage of likely or extremely likely responses was 38% of US pharmacy degree earners, 52% of foreign pharmacy degree earners, and 49% of nonpharmacy degree earners. US pharmacy degree earners rated the likelihood that they would have pursued an academic career without influential faculty member encouragement significantly lower than did their foreign pharmacy and nonpharmacy degree colleagues ($p = 0.006$, $p = 0.021$, respectively).

DISCUSSION

This study described pharmacy faculty members’ perceptions of the role of faculty member encouragement in their postgraduate training and academic career path decision-making processes. While the extent to which faculty/student mentor/mentee relationships directly impact the choice of postgraduate training path is unknown and difficult to quantify, respondents did indicate faculty member encouragement was influential in the decision-making process. Nearly 80% of respondents indicated that encouragement from faculty members was at least moderately influential in their decision to pursue their chosen postgraduate training paths. Encouragement from faculty members was ranked as the single most influential factor in their decision to pursue postgraduate training regardless of postgraduate training pursued or pharmacy training characteristics. Whereas recruitment and retention are often discussed jointly when considering the concept of faculty development, this study addressed an aspect of student development (and potential recruitment)

through the mentoring process. For pharmacy students, student development and nurturing could be considered an aspect of professional development.¹²

Mentoring is an abstract construct and can be conceptualized in multiple ways. We chose not to define mentoring in the current study, but instead focused on the influence and the encouragement of faculty members—2 key aspects of a mentor/protégé relationship. Advisors could also serve to influence and/or encourage advisees to pursue postgraduate training and academic careers. Advising and mentoring can be considered synonymous or disparate. Popovich and Jackson¹³ provided a good overview of the advising process in colleges and schools and described a process for developing the advisor-advisee relationship efficiently in a college of pharmacy. They defined advising broadly to encompass personal and professional development (ie, mentoring), whereas advising can also be considered specifically as the responsibility “for helping students navigate academic rules and regulations.”¹⁴ Our experiences suggest pharmacy students tend to be assigned an academic advisor or choose a faculty member to serve in that role prior to or shortly after matriculation. Respondents in this study indicated, on average, 3 to 4 faculty members who were influential in their decisions to pursue their chosen postgraduate training paths. Given the quantity of influential faculty member indicated, mentoring likely occurs outside of the formal advising process. The extent to which the advisor, if applicable, serves as a mentor remains unknown.

Social cognitive career theory proposes that the beliefs of others and past experiences are elements of one’s task-specific self-efficacy beliefs and can also serve to inform outcome expectations.^{10,15} Therefore, the opinions of mentors can theoretically influence career interests and decisions. That faculty retention efforts commonly involve a mentoring aspect is theoretically justified. While causality cannot be inferred, congruent with social cognitive career theory, we hypothesized that the backgrounds of junior pharmacy faculty members and their most-influential faculty mentors would be similar. The results of the study supported our hypothesis. Over 95%

of respondents who had earned doctoral degrees indicated that their influential faculty members also had earned doctoral degrees. Likewise, 95% of respondents with US pharmacy practice degrees indicated their most influential faculty mentors also had earned US pharmacy degrees. The implications of these findings are dependent on the construction of the mentor/mentee dyad. Do mentees tend to seek out faculty members who pursued a path similar to what they are considering? Does assigned mentoring tend to direct the path of the student toward a path that was pursued by the mentor? Or, do non-assigned faculty members seek out and encourage students to pursue careers, including careers the students may not have considered on their own? In each of these scenarios, similarities in mentor/mentee postgraduate training paths and pharmacy training characteristics are perhaps to be expected. If the first scenario prevails, then the academy should seek to preserve the variety of postgraduate training experiences pursued among pharmacy faculties. When considering results for US pharmacists in particular, preservation is particularly salient for postgraduate training paths less commonly pursued by US pharmacists, eg, fellowship training, graduate education. If faculty mentors do tend to influence their mentees' paths, then preservation is inherent as long as mentor/mentee relationships exist across all postgraduate training paths.

Despite similarities in mentor/mentee postgraduate training paths, a majority of respondents indicated they would have pursued the same path had they not received encouragement from their most influential faculty member. Perhaps mentors serve more of a reinforcement role or as a confidence booster for decisions already made by students rather than as molders of student paths. The lesser influence that faculty mentors had on doctoral degree earners as compared to other respondents could have been a function of the career paths available to this cohort. Across training characteristics, respondents with nonpharmacy and foreign pharmacy degrees attributed significantly less influence to their faculty mentor's encouragement as compared to respondents in the US pharmacist cohort. Considering that nonpharmacists and foreign pharmacists comprise the majority of doctoral degree earners, perhaps the lesser influence of faculty mentor encouragement on doctoral degree earners is related to having career goals regardless of or prior to receiving faculty mentor encouragement or to sociocultural differences across cohorts.

This study also examined the role of faculty encouragement in the decision to pursue an academic career. Approximately one-third of respondents indicated they would have been unlikely or extremely unlikely to pursue an academic career had it not been for their most influential faculty member. While hypothetical in nature, this

finding does suggest mentoring relationships influence faculty recruitment, a topic that has been of considerable interest to the academy in recent years.¹⁶⁻¹⁹ US pharmacists, in particular, indicated an increased influence from mentoring on their decisions to pursue academic careers as compared to foreign pharmacists and faculty members without pharmacy degrees. This finding serves to reinforce the importance of and influence of mentoring in US colleges and schools of pharmacy from the perspective of recruiting US-trained pharmacists to become faculty members.

Several points regarding mentoring and this study should be noted. First, mentoring is one of many factors that can potentially influence career decisions. Environmental, relational, and financial considerations constitute a short list of influential factors when considering postgraduate training and career paths. Second, mentoring can be a time-intensive commitment for the mentor and the mentee with perceivably little return on investment from the mentor's perspective. Popovich and Jackson mentioned the lack of direct academic incentives (ie, tenure and promotion value) associated with advising (or mentoring).¹³ Third, faculty mentoring skills may differ across faculty members, and thus may necessitate mentor training in some faculty members desiring to mentor. Fourth, an underlying assumption in mentoring programs is that faculty members desire to and are willing to mentor students. This assumption may not be valid for all or even a majority of faculty members. Finally, mentoring is relational and involves willingness from the mentor and mentee to engage in the relationship.

This study has several limitations. Despite securing over 1,000 usable responses, our response rate was less than optimal. Therefore, nonresponse bias is a potential limitation. Efforts were taken to maximize the response rate and determine the extent to which the study sample resembled faculty members from a demographic perspective as presented in the AACP's Profile of Pharmacy Faculty.²⁰ Although designated as being assistant professors in the AACP database, some of the faculty members invited to participate in the study were not assistant professors/junior faculty members. Because no differences were found in the results when the data were analyzed with non-assistant professors excluded, all usable responses were included in the analysis. Recall bias was also a potential limitation of this study considering that faculty members had to recall events and information from years before. The instrument used was also a limitation in that survey items were examined individually; therefore, instrument reliability cannot be assessed and may be questionable.

Considering the perceived influence of faculty mentoring on career decision-making processes, further research is warranted to examine the impact of structured mentor/mentee programs on the postgraduate training choices of

pharmacy students. This would perhaps provide an indication as to the direction (student initiated, faculty-member initiated, or a combination thereof) of the relationships between mentor and mentee postgraduate training paths. In a study conducted by Sylvia, 35% of respondents indicated the presence of a formal mentoring program in colleges and schools of pharmacy.²¹ If identifiable, these institutions could perhaps be targeted for mentoring program research. Of interest, too, is the extent to which faculty members feel equipped to encourage student pharmacists to pursue a postgraduate training path other than the path they themselves pursued. Another segment of the instrument used in this study found that the cohort of faculty members who possess US pharmacy degrees from this sample indicated a perceived lack of information regarding fellowship training and graduate education when the faculty members earned their pharmacy degrees.²² Unknown is the extent to which respondents perceive themselves to have adequate information regarding these alternative paths in their current roles as mentors or advisors and the influence of mentor postgraduate training awareness on mentee postgraduate training decisions.

CONCLUSION

Faculty mentoring was influential in the early career decision-making processes of junior pharmacy faculty members. When considering the choice to pursue an academic career, more US pharmacists reported having been influenced by faculty mentors. The postgraduate training pursued and pharmacy training characteristics of mentees tended to resemble those of their mentors. Further research is warranted to examine the role of mentoring in student development and career decision-making processes. In the same way that dyads of senior and junior faculty members often form the foundation of faculty development in colleges and schools, so too faculty/student dyads could be formed that serve to promote student development and faculty recruitment.

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