Mentorship on the Doctoral Level: An Examination of Communication Faculty Mentors’ Traits and Functions

Serena Carpenter, Naheda Makhadmeh & Leslie-Jean Thornton

A mentor can be of great importance to doctoral student success and progress. While many have studied student perceptions of the process, research regarding how doctoral faculty mentors interpret and enact mentoring practices is less evident. To address this empirical gap, a doctoral student mentor functions measure was created. The measure is based on two surveys, one involving 21 specific mentors, and another of 551 communication faculty self-identified as mentoring doctoral students. Results show that research method preference, recent research productivity, academic rank, and mentor self-efficacy significantly related to variations in mentor functions (career, psychosocial, research, and intellectual). The findings reveal certain traits can influence participants’ interpretation of mentoring.

Keywords: Mentor Functions; Doctoral Education; Mentor Self-Efficacy; Pedagogy

Doctoral students perceive mentorship as the most important attribute of a high-quality graduate education (Golde, Bueschel, Jones, & Walker, 2009; Luna & Cullen, 1998). Such relationships can help to develop a mentee’s self-esteem, competence, and career efficacy (Day & Allen, 2004; Kram, 1983). Through mentors’ advice, friendship, and guidance, students come to understand both the purpose and the practice of research (Lovitts, 2001; Sands, Parson, & Duane, 1991). In fact, the mentoring of doctoral students can affect student retention, dissertation completion, research productivity, loneliness, and career advancement (Cronan-Hilllix, Gensheimer, Cronan-Hilllix, & Davidson, 1986; Gardner & Barnes, 2007).
Even though the value of mentors and their contributions to academic life is found repeatedly throughout the literature, specific supportive behaviors faculty mentors provide toward influencing student development are rarely addressed. As doctoral education scholar Susan Gardner (2010) noted, while “literature on doctoral education speaks extensively to the important role of faculty in the socialization of doctoral students, rarely are faculty asked about this role” (p. 50). Recent studies showing that approximately half of doctoral students in the United States fail to complete their degrees (Council of Graduate Schools, 2004; Gravois, 2007) suggest such an inquiry could be fruitful.

We explored, in two separate but related studies, how professors mentor Ph.D. students, and found determinants of variations in mentoring behavior. Two studies were necessary to build a mentor functions construct and to refine operational definitions for the particular type of mentor upon which this study focused. Kram’s (1985) theory of mentor roles categorizes mentoring perceptions and behaviors as either career related or psychosocial. We explored whether additional functions were perceived as necessary for doctoral student growth and development, and tested predictors of those mentor functions.

**Mentoring of Doctoral Students**

Research shows that mentors are an important part of the culture of Ph.D. programs. Mentoring practice, however, is affected more by experience than articulation. It has been observed that faculty mentors do not often discuss philosophies and strategies of mentoring, or the dynamics and challenges of establishing interpersonal mentor–mentee relationships (Gardner, 2010; Golde et al., 2009). A mentor is a person who teaches, supports, advises, and guides another person, less experienced and with fewer skills, into a social world (Levinson, Darrow, Levinson, & McKee, 1978). The roles of mentors within academia are based on individual perceptions of what behaviors are best for student and relationship development (Buell, 2004; Mansson & Myers, 2012). In comparison with advising, doctoral mentoring has been categorized as a deeper, intimate relationship with multiple relational stages. Mentors’ attitudes and behaviors are unique within the mentor–mentee relationship because they are motivated by various factors such as organizational requirements, perceived mentee potential and drive, altruism, intellectual growth, and advancement (Busch, 1985; Kalbfleisch & Davies, 1993; Mansson & Myers, 2012; Titus & Ballou, 2013).

**Theory of Mentor Roles**

To understand mentoring at the doctoral level, we turn to Kram’s (1985) theory of mentor roles. Her qualitative work has been a foundational lens for investigations into workplace mentoring practices. Kram (1983) categorized mentor functions into two broad dimensions, career and psychosocial. Career functions focus on assisting people in learning about their environment and preparing them for advancement opportunities, while psychosocial support helps individuals develop a sense of
confidence and effectiveness. Kram (1985) argued that mentees benefit when mentors provide multiple forms of support, which can deepen the information internalized during relationships with mentees.

**Concept Analysis of Mentor Functions**

Although Kram identified the existence of mentor role dimensions (career and psychosocial), the broader construct itself has never been clearly articulated. Merriam (1983) and Jacobi (1991) labeled this problem as “definitional vagueness” of concepts involved in mentoring research (p. 505). Perhaps, as Jacobi and Merriam stated, conceptual confusion stems from the tendency for scholars to not conceptually define mentor functions. Kram (1985, p. 22) described mentor functions as “essential characteristics that differentiate developmental relationships from other relationships,” in which the mentor provides a variety of functions “that support, guide, and counsel the young adult” (Kram, 1983, p. 806). We focused our operational efforts based on Haggard, Dougherty, Turban, and Wilbanks’ (2011) conceptual definition of mentor functions, which was defined as “actions or behaviors that mentors have engaged in on behalf of the protégé” (p. 284).

**Study 1**

Our first objective in this research was to articulate the range of functions that encompass mentor behaviors. Allen, Eby, O’Brien, and Lentz (2008) have criticized the lack of research on measurement development in mentoring literature; here, the goal was to identify potential items not found in the literature. The mentor functions were investigated by interviewing faculty members who were considered, by their department, to be professors who provided well-regarded mentoring experiences to their doctoral students.

RQ1: How do doctoral student mentors promote development among doctoral students?

**Method**

**Participants**

The respondents were 21 faculty members from schools with doctoral programs. Fifteen of the participants were professors, four were associate professors, and two were assistant professors. Fourteen were male; seven were female. Ages of respondents ranged from 38 to 63 years old (average of 54). They had taught an average of 22.5 years (from 6 to “about 40”) after getting their doctorate. More than half of the participants worked with quantitative methods (57%), four professors (19%) said they were primarily qualitative scholars, and five used mixed methods (24%).
Procedures and analysis

To build this construct at an operational level, an e-mail survey that included open-ended queries was sent to doctoral faculty identified as excellent mentors by directors of their departments. Communication program directors or chairs representing 15 universities identified in previous studies of highly regarded doctoral programs in the U.S. were selected (Bunz, 2005; Carpenter, 2008). We asked directors to identify the top doctoral student mentors in their program. Based on director suggestions, an e-mail survey that included open-ended queries was sent to 29 faculty members (two named mentors from each university; one university offered only one); 21 professors (from 14 of the universities) completed the survey within a five-week period. We asked respondents to describe their informal and formal mentoring activities, how they mentored a student throughout a Ph.D. student’s time within a program, and the various ways they encouraged student growth. Information from the open-ended questions was analyzed using a qualitative technique in which the answers were coded granularly. The information was then examined for categories and patterns relative to the research question. Following the examination of patterns, we identified potential items for the scale.

Results

RQ1 asked how well-regarded mentors went about mentoring Ph.D. students. Their in-depth responses indicate they provide mentees with knowledge, advice, stimulation, and support. Many responses tapped into the previously identified themes in the literature of career and research mentoring support. Interestingly, a new dimension emerged—the intellectual function.

Intellectual work involved critiquing student work, “[asking] them to write critiques, abstracts of articles, and defend what they write and say,” and “recommending books and articles, even if they are not required for a class.” “Encourage” was a word used often in the responses, meaning that the mentors invested intellectual capital in pulling a student to meet a higher potential. One mentor encouraged students to find “what they’re passionate about” and then will “push them to think through issues in this area.”

Engagement, as opposed to one-way instruction, was a theme: mentors “ask questions for them to answer instead of telling them how it is,” and the expectation of “thoughtful answers” represented a common tone in the responses. Activities likely to carry particular meaning from a student perspective included reading all of a student’s research (not just that done for the professor); going to informal student-run social gatherings on a regular basis; attending student presentations; spending time listening to the student; and offering advice. Mentors also taught mentees tactical social behaviors, such as “how to respond to hostile questions” at presentations, how to behave at conferences, and how to “treat others on campus.”

Research opportunities became more available once a relationship was established with a student. Professors appeared happy to invite students to conferences and
workshops; treat them as colleagues; collaborate with them on research; and welcome them into “research team environments.” Many of the activities involved an extension of the professor’s reputation to include the student in public ways, such as providing virtual and actual introductions, citing the student’s work, and inviting the student to join research and teaching efforts.

Study 2

A larger second study aimed to identify the theoretical structure of the doctoral student faculty mentor construct. Based on existing literature and our first study, we expected four, rather than two, categorical factors: career, psychosocial, intellectual, and research.

Operationalization of Mentor Functions

The theory of mentor roles states that career and psychosocial support are two common forms of adult professional support. We expected the statistical analysis of mentor items would result in identifying at least the psychosocial and career dimensions based on theory and previous factor analytic evidence (Tepper, Shaffer, & Tepper, 1996). No formal doctoral student mentor functions measure exists, but Noe’s (1988) scale is the most commonly used measure in mentor function research (Allen et al., 2008). Noe was interested in how mentors help K-12 educators obtain administrative positions. He created a 29-item scale based on work from Kram and other researchers. Noe’s scale is not directly applicable to the present study because: (1) it was created using exploratory factor analysis based on mentees’ perceptions of their relationship with their mentors, (2) the protégés surveyed were interested in K-12 administration positions, (3) the scale reflected only the career and psychosocial dimensions, and (4) the scale tapped into both behaviors and perceptions. We were interested in behaviors and acts based on our conceptualization of mentor functions. Specifically, his scale includes items related to perceptions of the mentor, mentor behaviors, and intended behaviors of the mentee. For example, “I respect and admire my mentor,” “My mentor has shared history of his/her career with you,” and “I will try to be like my mentor when I reach a similar position in my career.” A modified version of this scale was used to survey doctoral students’ perceptions of their advisers. Paglis, Green, and Bauer’s (2006) psychosocial and career subscales measuring advising closely resembled Noe’s scale with items reflecting the students’ perceptions of the adviser, intended behaviors of mentees, and perceived behaviors of advisers. Their psychosocial and career dimensions contained multiple cross-loadings that were not individually reported. Nevertheless, they followed Noe’s operational breakdown of mentor functions despite factor analytic evidence suggesting other possibilities.

We expected intellectual and research functions would emerge as important forms of graduate student support. In fact, we found that many items in the literature represent the doctoral-program goal of training students in research. As Barnett,
Danomski, Feeley, and Stalker (2010) said, “A quality doctoral program is to prepare and place students in research positions so that they may conduct scientific research” (p. 390). Other scholars treated research collaboration as a separate scale in their surveys of doctoral students. That measure included items measuring the extent to which an adviser invited students to coauthor on five types of research categories (Green, 1991; Paglis et al., 2006). Potential items identified across mentoring and graduate education literature included: encouraging mentees to turn papers into research presentations and publications; encouraging students to attend academic conferences; promoting the exploration of diverse perspectives; coauthoring publications with students; teaching how to write research grants; making joint research presentations; working on research projects; promoting mentees; exchanging constructive criticism; and supporting research scholarship (Buell, 2004; Chao, Walz, & Gardner, 1992; Green, 1991; Lovitts, 2001; Paglis et al., 2006).

Mentor Characteristics and Preferences

Mentors likely enact certain behaviors depending upon their perspectives, training, characteristics, and organizational context (Buell, 2004; Kalbfleisch & Davies, 1993; Pompper & Adams, 2006). In social psychology, role theory posits that particular beliefs about a role influence individuals’ attitudes and behaviors (Biddle, 1956). Variations in mentoring philosophies likely lead to variations in mentoring behaviors during ongoing relationships. Mentor characteristics, such as communication competence, gender, self-esteem, self-confidence, locus of control, and organizational position, have been shown to relate to mentor support and the intent to mentor (Kalbfleisch & Davies, 1993). Predictor variables selected for this research were gender, academic rank, research method preference, mentor self-efficacy, and recent research productivity.

Gender. Most research on mentoring students concentrates on gender. Research relevant to this study shows that female mentors are more likely to encourage students’ personal growth and emotional competence than male mentors (O’Brien, Biga, Kessler, & Allen, 2010). For example, Burke, McKeen, and McKenna (1993) surveyed 94 mentors to investigate the relationship between personal characteristics of mentors and mentor functions. These scholars found differences between male and female mentors; male mentors offered more career and instrumental support, while female mentors provided more emotional support for their students. However, for advancement, female mentees need career support as well (Pompper & Adams, 2006). In an academic context, more research is needed to investigate the influence of this variable.

H1a: Male doctoral student mentors provide more career mentor support than female mentors.

H1b: Female doctoral student mentors provide more psychosocial support than male mentors.

RQ2: How do male and female doctoral student mentors differ in their use of intellectual and research mentoring?
Academic rank. Increased rank provides the mentor with assumed and relative positional credibility. A mentor of higher rank should be able to offer students more career functions, such as visibility and sponsorship, than mentors with lower ranks. A new mentor with less experience is still learning about which functions students need and is likely to be preoccupied with surviving a new faculty position (Rice, Sorcinelli, & Austin, 2000).

H2: As academic rank of doctoral student mentors increases, career mentoring increases.

RQ3: How does academic rank of doctoral student mentors associate with psychosocial, intellectual, and research mentoring?

Doctoral student mentor self-efficacy. Confidant people are more likely to volunteer to guide a mentee through the life-changing Ph.D. process. Self-efficacy deals with how well people perceive they can execute a course of action (Bandura, 1995). We expect that perceptions of efficacy will relate to a greater deployment of functions by mentors. In this research, doctoral student mentor self-efficacy was defined as “the confidence in one’s ability to mentor doctoral students.”

H3a: Doctoral student mentor self-confidence associates positively with career, psychosocial, intellectual, and research mentoring.

H3b: Doctoral student mentor self-anxiety will associates negatively with career, psychosocial, intellectual, and research mentoring.

Recent research productivity. Most research-intensive programs tend to have Ph.D. programs, and prestige is often associated with the productivity of students (Cole & Cole, 1973). Doctoral graduates are often successful in research when they work with more productive faculty (Baker & Wilson, 1992). Since mentoring likely consists of multiple forms of support, it is important to see how productive faculty members interpret mentoring. Students’ preferred characteristics of doctoral student mentors include someone who has an international or national reputation, publishes more often than other professors, and helps with their research objectives; however they also want someone who helps them find employment, is influential within the department, is a good and fair teacher, is interested/supportive, spends time with them outside of class, and is available for academic advice (Bell-Ellison & Dedrick, 2008; Cronan-Hillix et al., 1986; Ekrut & Mokros, 1984). Thus, it is theoretically relevant to investigate how research productivity relates to how mentors are able to mentor students.

RQ4: How does recent research productivity of doctoral student mentors associate with psychosocial, intellectual, career, and research mentoring?
Research method preference. Some programs hire faculty members to create organizational reputations around particular research methods, and this practice likely affects the type of mentor support students receive. Berliner (2006) has argued against the methodological hegemony of some programs, stressing the need for students to learn alternative methodological approaches. Studies have yet to examine the validity of these concerns, and whether and how method preferences predict mentor behaviors. We suggest this is a theoretically relevant variable that needs exploring. We believe that critical, historical, qualitative, quantitative, rhetorical, and mixed-methods scholars differ in the type of mentor support they provide students. Myers and Martin (2008) said Ph.D. students are socialized into communication traditions when they select a doctoral program: “While students generally are not forced to select one tradition to study, depending on the choices they make, ultimately they will spend considerably more time focusing on one or two traditions while minimizing their attention to different traditions” (p. 36).

RQ5: How does the research method preference of doctoral student mentors associate with psychosocial, intellectual, research, and career mentoring?

Method

Participants

The respondents consisted of 551 faculty members at doctoral programs. There was a roughly even split between among those who reported gender, with males (47.9%) females (44.5%), and nonresponse (7.6%). The mean age was 50.5. The majority of the respondents were white (75.9%); followed by Asian (5.1%); Spanish, Hispanic, or Latino origin (4.2%); black or African American (2.9%); Native American (0.2%); or something else (2.7%). Many different communication fields were represented: communication (47.2%), journalism (13.6%), rhetoric (6.2%), other (5.4%), media arts and film (4.5%), telecommunication (4.4%), public relations (3.3%), performance studies (1.5%), and language, literature, and writing (0.7%). The mentors coauthored manuscripts with doctoral students for an average of 3.2 publications within the past three years. Most respondents (73.5%) had a mentor when they began their research careers, and they had been mentoring an average of 15.6 years at the time of survey.

Sampling procedures

The sampling frame consisted of educators from the National Communication Association’s list of U.S. doctoral programs in communication. There were a total of 77 communication Ph.D. programs listed. Researchers visited the website of each department or school to identify all educators. It would be difficult to identify each person working directly with doctoral students without querying each individual. The list, therefore, likely included some faculty who do not mentor doctoral students. In our email invitations, addressees were asked to let us know if they did not mentor doctoral students. Those who did so were removed from the list. After dropping 142
names, the number of invitees was reduced to 2027. We did not include people who clearly abandoned the survey, or instructors or lecturers, in the analysis. This resulted in a 27.2% response rate.

The Web survey method was chosen because this population was highly accessible via e-mail. The researchers used Dillman’s (2007) Tailored Design method using Qualtrics. Prior to administering the survey, five doctoral faculty mentors provided expert feedback on the survey and item wordings, and it was pretested with different faculty members. The online questionnaire took approximately 15 minutes to complete. The online survey was active for three weeks from September 3 to 24, 2013. The respondents answered questions concerning their mentoring behaviors, mentoring efficacy, and research productivity.

Measures

Doctoral student mentor functions. We included 32 mentor function items in our final questionnaire based on the open-ended survey; Noe’s (1988) and Paglis et al.’s (2006) scales; and the literature review. The Doctoral Student Mentor Functions (DSMF) scale reflected both modified existing scale items and newly created items. We included 14 psychosocial and career scale items that could be reworded to fit doctoral faculty mentor contexts (e.g., “Mentor reduced unnecessary risks that could threaten the possibility of becoming a school principal or receiving a promotion” was changed to “I reduce threats that would prevent my students from being leaders”). We created 19 items resulting from the open-ended survey. Sample items included: “I teach students how to interact with other academics,” “I spend time with students at conferences,” “I ask students to critique other scholars’ work,” and “I socialize with students outside of the academic setting.” Several items stemmed from both the literature review and survey results, such as “I coauthor with students on research papers.” Addressees were asked, “Below are a number of statements related to the doctoral student mentoring preferences of faculty. Please read each one and report on the extent to which it describes your mentoring behavior with doctoral students.” Responses ranged in 5 points from never to always. See Table 1 for items used to measure each dimension.

Doctoral student mentor self-efficacy. Self-efficacy measures are based on Riggs’ (2000) Mentoring Efficacy scale. We removed six sample-inappropriate items from the scale, such as, “I am continually finding better ways to be a mentor to my beginning teachers.” We modified items focused on child development to fit academic contexts. We also added items in an attempt to create the mentor self-efficacy measure as shown in Table 2. Specifically, we added, “I struggle helping students become better researchers” and “I am confident in my ability to aid students in their intellectual growth” to better fit graduate academic contexts. Respondents were asked “to indicate to what extent you agree or disagree with 11 statements concerning your interactions with doctoral students” on a 5-point scale.
For the other independent variables, the researchers asked the mentors about their gender, academic rank, and recent research productivity. The latter was measured by asking doctoral student mentors to estimate how many peer-reviewed, refereed journal articles, peer-reviewed articles, books, book chapters, and conference proceedings they had contributed to in the previous year.

Table 1 Exploratory Factor Pattern Coefficients for the Four-Factor Doctoral Student Mentor Functions (DSMF) Structure

<table>
<thead>
<tr>
<th>Scale items</th>
<th>Mean</th>
<th>Career</th>
<th>Intellectual</th>
<th>Psychosocial</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I assign responsibilities to students that could increase their contact with people in the university who may judge their potential for future advancement</td>
<td>3.29</td>
<td>.87</td>
<td>-.05</td>
<td>-.15</td>
<td>.05</td>
</tr>
<tr>
<td>2. I give students assignments that increase personal contact with academic faculty</td>
<td>3.32</td>
<td>.77</td>
<td>-.06</td>
<td>.03</td>
<td>-.05</td>
</tr>
<tr>
<td>3. I teach students how to interact with other academics</td>
<td>3.91</td>
<td>.61</td>
<td>.14</td>
<td>.02</td>
<td>.00</td>
</tr>
<tr>
<td>4. I teach students how to treat other people within the university</td>
<td>3.84</td>
<td>.60</td>
<td>-.05</td>
<td>.13</td>
<td>.01</td>
</tr>
<tr>
<td>5. I reduce threats that would prevent my students from being leaders</td>
<td>3.51</td>
<td>.55</td>
<td>.04</td>
<td>.06</td>
<td>-.03</td>
</tr>
<tr>
<td>6. I ask students to defend their theoretical logic</td>
<td>4.39</td>
<td>-.16</td>
<td>.74</td>
<td>.01</td>
<td>.07</td>
</tr>
<tr>
<td>7. I ask students questions that challenge their understanding of research</td>
<td>4.33</td>
<td>.10</td>
<td>.67</td>
<td>-.07</td>
<td>-.03</td>
</tr>
<tr>
<td>8. I critique students’ research studies</td>
<td>4.34</td>
<td>-.03</td>
<td>.64</td>
<td>-.05</td>
<td>-.02</td>
</tr>
<tr>
<td>9. I suggest appropriate reading materials to help students advance intellectually as a scholar</td>
<td>4.52</td>
<td>.05</td>
<td>.43</td>
<td>.14</td>
<td>-.03</td>
</tr>
<tr>
<td>10. I ask students to critique other scholars’ work</td>
<td>3.92</td>
<td>.12</td>
<td>.42</td>
<td>.05</td>
<td>-.04</td>
</tr>
<tr>
<td>11. I share my personal experiences to help students with their problems</td>
<td>4.00</td>
<td>-.10</td>
<td>-.06</td>
<td>.76</td>
<td>.04</td>
</tr>
<tr>
<td>12. I discuss my career history with students</td>
<td>3.99</td>
<td>.09</td>
<td>-.04</td>
<td>.59</td>
<td>.07</td>
</tr>
<tr>
<td>13. I encourage students to talk openly about anxiety and fears that detract from their work</td>
<td>3.66</td>
<td>.07</td>
<td>.04</td>
<td>.58</td>
<td>-.03</td>
</tr>
<tr>
<td>14. I convey empathy for concerns and feelings students have discussed with me</td>
<td>4.40</td>
<td>.02</td>
<td>.10</td>
<td>.53</td>
<td>-.10</td>
</tr>
<tr>
<td>15. I coauthor with students on research papers</td>
<td>3.23</td>
<td>-.03</td>
<td>-.01</td>
<td>-.01</td>
<td>.76</td>
</tr>
<tr>
<td>16. I invite students to join my research efforts</td>
<td>3.76</td>
<td>.10</td>
<td>.10</td>
<td>.05</td>
<td>.67</td>
</tr>
<tr>
<td>17. I avoid sharing authorship with students (reversed)</td>
<td>4.18</td>
<td>-.03</td>
<td>-.01</td>
<td>-.01</td>
<td>.57</td>
</tr>
</tbody>
</table>

Note. Principal Axis factoring and Promax rotation were used. Factor loading cutoff was .40. Items 1–5 = Career (eigenvalue: 4.90, mean: 17.90, SD = 3.61, α = .81). Items 6–10 = Intellectual (eigenvalue: 1.82, mean: 21.48, SD = 2.57, α = .72). Items 11–14 = Psychosocial (eigenvalue: 1.53, mean: 16.04, SD = 2.45, α = .70). Items 15–17 = Research (eigenvalue: 1.31, mean: 11.20, SD = 2.47, α = .71).

Gender, academic rank, and recent research productivity. For the other independent variables, the researchers asked the mentors about their gender, academic rank, and recent research productivity. The latter was measured by asking doctoral student mentors to estimate how many peer-reviewed, refereed journal articles, peer-reviewed articles, books, book chapters, and conference proceedings they had contributed to in the previous year.
book chapters, and scholarly books they published within the past three years. This number included all publications including ones that they did and did not coauthor with students. The academic ranks included in the regression analyses were assistant professor, associate professor, and professor.

**Research method preference.** Participants were asked to select one of the following research method preferences: critical, historical, qualitative, quantitative, rhetorical, or mixed methods. The faculty members were diverse in methodological perspectives: quantitative (31.6%), mixed methods (24.5%), qualitative (14.3%), critical (9.1%), historical (6.2%), rhetorical (5.3%), and other (1.1%).

**Results**

We created doctoral student mentor functions and doctoral student mentor efficacy measures prior to specifying our research questions. Following the scale development process, we developed models to assess their impact on four mentor functions—research, intellectual, psychosocial, and career. In four regression analyses, gender (female = 0; male = 1), academic rank (assistant = 1; associate = 2; professor = 3), recent research productivity (total number of publications), the mentor self-efficacy subscales (mentor apprehension and mentor confidence), and method preferences (0 = no; 1 = yes) were included to predict four different mentor functions.

An exploratory factor analysis (EFA) was selected to allow new factors to emerge for Doctoral Student Mentor Functions scale, such as a research mentor function. Bartlett’s test of sphericity ($\chi^2 = 4421.833, df = 496, p < .001$) and the KMO statistic of .91 suggested that the matrix was appropriate for factor analysis. Theory, the

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Confidence</th>
<th>Anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I develop students’ problem-solving skills through a good use of questioning</td>
<td>4.09</td>
<td>.63</td>
<td>.14</td>
</tr>
<tr>
<td>2. I am continually finding better ways to be a mentor to students</td>
<td>3.93</td>
<td>.62</td>
<td>.03</td>
</tr>
<tr>
<td>3. I am confident in my ability to aid students in their intellectual growth</td>
<td>4.33</td>
<td>.57</td>
<td>-.18</td>
</tr>
<tr>
<td>4. I am a good advocate for students in university-related matters</td>
<td>4.21</td>
<td>.55</td>
<td>-.05</td>
</tr>
<tr>
<td>5. I understand how to help students develop a personal awareness of their strengths</td>
<td>3.87</td>
<td>.53</td>
<td>-.01</td>
</tr>
<tr>
<td>6. I struggle helping students become better researchers</td>
<td>2.22</td>
<td>.07</td>
<td>.75</td>
</tr>
<tr>
<td>7. I struggle helping students understand their responsibilities in the university</td>
<td>2.05</td>
<td>.14</td>
<td>.73</td>
</tr>
<tr>
<td>8. I feel anxious when helping students with academic matters</td>
<td>1.70</td>
<td>-.19</td>
<td>.50</td>
</tr>
<tr>
<td>9. I have difficulty managing our tasks during my meetings with students</td>
<td>1.85</td>
<td>-.13</td>
<td>.41</td>
</tr>
</tbody>
</table>

Note. Principal Axis factoring and Promax rotation were used. Factor loadings cutoff was .40. Items 1–5 = Confidence (eigenvalue: 3.02, mean: 20.45, SD = 2.37, $\alpha = .72$). Items 6–9 = Anxiety (eigenvalue: 1.58, mean: 7.82, SD = 2.63, $\alpha = .70$).
scree plot, and parallel analysis suggested four factors. EFA was done using Principal Axis factoring and a Promax (oblique) rotation. Simple factor structure as proposed by Thurstone (1947) was determined based on the following scale development standards suggested by methodologists: variables with item loadings at or above the .40 level, theoretical convergence, no cross-loadings, and no factors with fewer than three items were considered to have the best fit to the data and were further analyzed (Gorsuch, 1997; Tabachnick & Fidell, 2007). We reduced the number of items based on low factor loadings and theory. This analysis resulted in a four-factor structure with 17 items as shown in Table 1. The total variance explained was 56.2 percent.

### Table 3  Summary of Regression Results for Mentor Functions.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Beta</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.04</td>
<td>0.21</td>
</tr>
<tr>
<td>Academic rank</td>
<td>-0.11</td>
<td>0.15*</td>
</tr>
<tr>
<td>Recent research productivity</td>
<td>0.22</td>
<td>0.02**</td>
</tr>
<tr>
<td>Mentor apprehension</td>
<td>-0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>Mentor confidence</td>
<td>0.14</td>
<td>0.05*</td>
</tr>
<tr>
<td>Quantitative method preference</td>
<td>0.50</td>
<td>0.29**</td>
</tr>
<tr>
<td>Qualitative method preference</td>
<td>0.20</td>
<td>0.34**</td>
</tr>
<tr>
<td>Mixed methods preference</td>
<td>0.30</td>
<td>0.29**</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.281</td>
<td>$n = 420$, $df = 8$</td>
</tr>
<tr>
<td><strong>Psychosocial</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-0.02</td>
<td>0.22</td>
</tr>
<tr>
<td>Academic rank</td>
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<td>0.16*</td>
</tr>
<tr>
<td>Recent research productivity</td>
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<td>0.02</td>
</tr>
<tr>
<td>Mentor apprehension</td>
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<td>0.04</td>
</tr>
<tr>
<td>Mentor confidence</td>
<td>0.46</td>
<td>0.05**</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.188</td>
<td>$n = 421$, $df = 5$</td>
</tr>
<tr>
<td><strong>Intellectual</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.02</td>
<td>0.22</td>
</tr>
<tr>
<td>Academic rank</td>
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<td>0.16</td>
</tr>
<tr>
<td>Recent research productivity</td>
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<td>0.05</td>
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<tr>
<td>Mentor confidence</td>
<td>0.52</td>
<td>0.05**</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
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<td>$n = 421$, $df = 5$</td>
</tr>
<tr>
<td><strong>Career</strong></td>
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<td></td>
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<tr>
<td>Gender</td>
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<td>0.32</td>
</tr>
<tr>
<td>Academic rank</td>
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<td>0.22</td>
</tr>
<tr>
<td>Recent research productivity</td>
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<td>0.03</td>
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<tr>
<td>Mentor apprehension</td>
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<td>Mentor confidence</td>
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<tr>
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<td>-0.20</td>
<td>-0.34**</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.307</td>
<td>$n = 420$, $df = 6$</td>
</tr>
</tbody>
</table>

*Note.* Four standard regressions were conducted (one for each outcome variable). Betas are standardized coefficients. Academic rank: (Assistant = 1; Associate = 2; Full = 3). Gender (Female = 0; Male = 1). Quantitative, qualitative, and mixed method preferences (0 = No; 1 = Yes). Mentor self-efficacy scale reflects two dimensions: mentor confidence and mentor apprehension. **$p < .001$; *$p < .01$. 

A communication education study provides Table 3, which summarizes the regression results for mentor functions.
Doctoral student mentor self-efficacy was broken down into subscales: mentor confidence and mentor apprehension, based on the factor-analysis results (see Table 2). The scree plot and parallel analysis suggested two factors. An EFA with Principal Axis factoring and a Promax rotation resulted in two subscales, with nine items. We labeled the dimensions mentor confidence (e.g., “I develop students’ problem-solving skills through a good use of questioning”) and mentor apprehension (e.g., “I feel anxious when helping students with academic matters”). All items loaded at or above .40. Two of the lowest-loading items were removed from the confidence factor to reduce scale length: “I enjoy it when students ask me questions” and “I use good listening skills when students talk with me.”

H1a predicted that males would provide more career support, and H1b predicted that female doctoral mentors would significantly provide more psychosocial support. RQ2 asked how gender would relate to the research and intellectual functions. The regression results show that gender did not significantly predict any of the functions, and as a result, H1a and H1b were not supported (see Table 3). RQ2 would best be answered by asserting that we did not see evidence of a connection between gender and the two mentor functions it addressed.

H2 posited that higher ranks would provide more career support. In relation to H2, RQ3 queried how academic rank would relate to the other mentor functions. Academic rank negatively correlated with the psychosocial ($\beta = -0.14, p < .01$) and research ($\beta = -0.11, p < .01$) functions according to the regression results. However H2 was not supported by the data, as rank was not significantly associated with career support.

H3a predicted that mentor confidence would positively correlate with mentor functions, and H3b predicted that mentor apprehension would negatively correlate with them. Mentor confidence was a moderate positive predictor of the career support ($\beta = 0.58, p < .001$) and intellectual support ($\beta = 0.52, p < .001$). Mentor confidence also positively predicted the psychosocial ($\beta = 0.46, p < .001$) and research ($\beta = 0.14, p < .01$) mentor functions. Thus, H3a was supported because confidence significantly predicted all four functions, and H3b predicting mentor apprehension would negatively relate to all functions was not supported.

RQ4 asked how recent research productivity predicted the four mentor functions. The regressions revealed that recent research productivity positively related only to the research mentor function ($\beta = 0.22, p < .001$).

RQ5 queried how research method preference would relate to mentor functions. The goal was to identify potential variables to add to the models predicting mentor functions. One-way between-groups analysis of variance and post hoc comparisons using Tukey’s HSD tests were conducted to identify specific significant mean score differences. The results show that preference led to significant differences in career and research support. In the model predicting research support, quantitative, qualitative, and mixed methods were dummy coded and applied as three separate variables predicting research support, and the quantitative method preference was entered to predict variations in career support. The regression analysis showed quantitative methods ($\beta = 0.50 p < .001$), mixed methods ($\beta = 0.30, p < .001$), and qualitative
methods ($\beta = .20$, $p < .001$) preferences were positive predictors of research mentoring. In the last model, quantitative method preference ($\beta = -0.20$, $p < .001$) negatively related to career support.

**Discussion**

This research provides a framework for understanding how doctoral student mentors go about mentoring, and for exploring predictable variation in mentoring behaviors. This study provides solid indications that mentoring properties extend beyond two functions (career and psychosocial) into at least four. Based on Study 1 and Study 2 findings, the literature review, and factor analysis evidence, doctoral student mentors enact four types of function support: career, psychosocial, research, and intellectual. The developed theoretical model of mentor functions provides a more comprehensive and applicable measure than Noe’s scale, and may also serve as a reminder that mentoring is a multidimensional process. The concept that good mentoring can, and perhaps should, encompass these four distinct dimensions could help broaden the guidance and support offered to mentees, and serve as guides to aspiring mentors.

This research also identifies key variables predicting the enactment of mentoring functions. Mentor confidence, academic rank, research method preference, and research productivity should be included in future theoretical models. Of particular importance is confidence, which showed as a moderate predictor. We found that mentors possessing confidence consider themselves empowered to seek and maintain mentoring relationships with students. Interestingly, both confident and lower-academic-ranked mentors were more likely to interact with students psychosocially. Within those parameters, students are not as likely to obtain career support from quantitative scholars as they are from scholars practicing other methods. Research support was a unique dependent variable in that many different variables predicted that particular role enactment. The results show that research-productive, confident, quantitative, qualitative, mixed method, and assistant professors were most likely to provide guidance on how to conduct research. Each of the individual predictors is discussed.

This research found gender did not significantly relate to any functions. Most general mentoring research, however, has found that women offer more psychosocial support, and men provide more career support (Burke, McKeen, & McKenna, 1990). Research on androgyny shows that people can exhibit both masculine (instrumental/ assertive) and feminine (expressive/empathetic) behaviors, and high-ranking women have been found to display androgynous or masculine characteristics (Scandura & Ragins, 1993). Thus, both males and females may employ a range of gender-associative mentoring strategies in order to respond to Ph.D. students’ needs throughout their relationship. Mansson and Myers (2012) found that male and female doctoral student advisees’ use of relational maintenance behaviors was not significantly different. Perhaps the results may be also explained by the considerable socialization Ph.D. faculty members have gone through prior to working at an academic institution; that conditioning may enact environmentally expected behaviors. It would be of future theoretical interest to determine whether women in varying positions of authority
possess similar views of mentoring in comparison with men. Past research has shown that male students prefer male mentors because of perceptions related to receiving more career support from male professors (Ekrut & Mokros, 1984). The additional examination of whether male and female students find mentors differ in forms of support depending on whether the mentors are male or female may be theoretically relevant as well.

The literature supports that faculty with higher academic ranks would likely provide more career support than assistant professors (Burke et al., 1993). In this study, higher-ranked professors offered more, but not significantly more, career and intellectual support. Interestingly, the regression results showed that academic rank was significantly negatively related to the research and psychosocial functions. Perhaps, assistant professors are more likely to empathize with students because they have recently transitioned from the life of a doctoral student, or they may be more open to relationships with students because they have not been fully socialized within their home department or university. Assistant professors may be more likely to engage in research to further tenure and promotion possibilities, as well, and may welcome the assistance and collaboration of doctoral students to a higher degree than tenured or higher-ranked colleagues. Assistant professors have been found to author and coauthor more articles than other ranks (Bunz, 2005).

This study developed a two-dimensional scale on self-efficacy, which also serves as an important predictor in determining mentoring support. Mentor confidence, a subscale of mentor self-efficacy, explained a significant amount of variance in all of the dependent variables. Mentors tend to be open and extraverted (Niehoff, 2006). Such people may feel they are able to provide career, psychosocial, research, and intellectual support because they may feel in more control, an extrovert quality. Administrators could use the doctoral student mentor functions and the doctoral student faculty mentor confidence scales to identify areas of strength and weakness among the faculty in order to target specific perceptions or behaviors.

The recent research productivity of a scholar significantly positively predicted the likelihood they would deliver research mentor support for doctoral students, but not psychosocial, intellectual, or career functions. Thus, a student might be advised to seek a faculty mentor actively involved in research if they want help publishing their own research. Productive faculty may rely on graduate student help in order to advance themselves, or they may interpret mentoring as providing research assistance. Such productivity may influence the amount of time they can devote to mentoring, however, which may restrict the range of mentoring support they offer. While the aggregate amount of research published is a common indicator of program quality, it may not be the only indicator, on an individual level, of mentor excellence.

Research method preferences predicted how mentors interpret mentoring in practice. Based on the results, doctoral students would likely gain the most research and least career support from quantitative scholars. Possible implications may mean that students could be disadvantaged if mentored by quantitative scholars when seeking a job that does not involve high research expectations. And perhaps due to the nature of their research and authorship practices, historical, rhetorical, and
critical scholars were not as apt to offer students research support. Overall, students may need to adjust their expectations of mentors based on scholars’ methodological preferences. Methodological cultures are, in themselves, replicative, and attitudes toward mentorship may be similarly inherited. People who had mentors are more likely to become mentors (Busch, 1985), and thus it is possible that the type of mentoring mentors receive influences the type of mentoring they provide.

**Future Research and Limitations**

The validity of the structure of the mentor functions and efficacy scales should be assessed by testing it on similar and different samples, fields, and cultures. The DSMF scale reflects theoretical efforts based on responses from communication faculty. Comparative research of other departments, with contrasting doctoral completion rates such as the natural sciences, is necessary to identify if and how faculty mentors differ in mentoring students. In addition, lower alpha levels (e.g., .70) and variance explained by the model mean that this scale needs additional testing. Additional dimensions could be explored to help explain more variance associated with mentoring functions. For example, a function related to obtaining grants could be a unique mentoring component. Only one item related to grants was presented to respondents in this research, and it loaded on the career factor. In addition, mentors were asked how many doctoral students were funded with grant money within the past three years. Respondents said they funded an average of 1.45. The mentor apprehension subscale of the mentor self-efficacy scale did not significantly predict any of the functions and should be further reviewed to determine its validity as well.

This research suggests several predictors of mentoring support. Future research could determine whether these relationships exist by testing them on other data sets. If certain relationships were confirmed, the next step would be to specify a theory that would explain why these relationships exist. Some variables had low levels of association, which means predictors of mentoring support must be further explored to determine precisely what variables predict mentoring behaviors.

Mentor functions reflect the needs of graduate students, which may or may not be fulfilled by a mentor. Students learn from communities, not just mentors—other professors, peers, friends, family, etc. Future research might well consider a holistic investigation of doctoral students and their support system.

**Conclusion**

This research examined mentors’ perspectives to understand how they interpret mentoring. Programs may have formal mentoring programs, but they may not be serving the breadth of doctoral students’ needs. Based on these findings, doctoral program leaders might reassess their program’s culture and critically reflect on how their faculty members contribute to the success of their graduate students. Program leaders could inform students about the various functions that mentors provide during new student orientations, and mentoring practices could be discussed during new
faculty orientation. The difference between what the novice is capable of when acting alone and when guided by an expert is critical to the success of doctoral students and the advancement of scientific knowledge. The hope is that this research will contribute to the success and standing of doctoral programs by helping those involved in them become more aware of the range, influence, and importance of mentoring functions.

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**References**


