Exploring the Importance of Mentoring for New Scholars: A Social Exchange Perspective

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ABSTRACT

This exploratory study examines the importance of mentor/mentee relationships on faculty development by measuring how social exchange between new faculty members (mentees) in information systems and their former dissertation chairs (mentors) relate to how quickly the new faculty members completed their doctoral program and the number of peer reviewed publications they produced in their first six years of academic employment. In addition, this study measures how gender and ethnicity relate to the strength of the social exchange between mentors and mentees. The results show a statistically significant relationship between social ties and the number of publications new faculty obtain in their early years of academic employment. The results also indicate that mixed gender pairs have higher social exchange in this context. This study has implications for shaping doctoral education by providing insight into the importance of social ties on the development and productivity of new faculty.

Keywords: Mentoring, Leader-Member Exchange, Doctoral Education, Mentor, Mentee

1. INTRODUCTION

Mentoring can take many forms. In some cases, a senior member of the organization is assigned to "show the ropes" to a new employee or junior faculty member; in other settings, it can be a senior faculty member that a younger, junior faculty member is comfortable with when needing advice on decisions or problems they are faced with; or it can take the form of a conversation (or series of conversations) that took place early in an individual's career. In each instance, the mentor provides advice, direction, and serves as a role model for the younger individual. These relationships can be ongoing, irregular, or of very short duration; however,

these interactions have a profound impact on the future direction and decisions of the younger individual. Many times these interactions provide a roadmap for the success or failure of the younger individual.

In an academic setting, mentoring requires that a senior faculty member be willing to take the time to listen and provide direction to students and/or junior faculty members. Mentoring can be a rewarding, sometimes frustrating, and time consuming process; but it is a role that should be embraced by senior faculty. It is posited that through the mentoring process senior faculty members can make their most significant contribution to future generations. There are many instances where an individual's greatest legacy is not

the number of publications that he or she achieved, but their influence on the future generations through listening, providing advice, serving as a role model, and helping students or junior faculty understand what it takes to be successful.

Over the past decade, there has been considerable discussion that the Information Systems (IS) academic community is facing an identity crisis. Benbasat and Zmud (2003), Agarwal and Lucas (2003), Wu and Saunders (2003), Alter (2003) and Robey (2003) have provided opinions as to whether this identity crisis actually exists, and recommendations on how the crisis can be overcome. The common theme from these discussions seems to be that faculty within the IS field must undertake research that reverberates across the business community and society in general (Agarwal and Lucas, 2003). Without this type of research, the IS discipline will not be able to achieve legitimacy within the academic community or with other important external stakeholders. Identifying and completing this type of research is difficult, especially for junior faculty members.

Junior faculty members are pressured by the tenure and promotion decision that typically occurs during their sixth year of employment. These junior faculties must perform well to succeed in the academic profession. We believe the productivity of these junior faculty members typically is highly affected by their academic training and by the relationship they have developed with a senior faculty member (a mentor). A mentor who has been successful in academia and who has published can generally provide direction on topic selection, method of study, possible outlets for manuscripts, and help with the review process. This type of relationship with a mentor helps the junior faculty member produce research that has the necessary rigor and relevance to be publishable in the top-tier journals of the IS discipline.

Studies have examined many factors that contribute to the success of junior faculty members and have attributed their success, failure, and productivity to a complex combination of individual, institutional, and social factors (Blackburn, Chapman, and Cameron, 1981; Bowen and Rudenstien, 1992; Cook and Swanson, 1978; de Velero 2001; Golde and Dore, 2001; Hunter and Kuh, 1987). One factor that has been overlooked, particularly in the study of business schools, is the role that mentoring can have in the productivity of the junior faculty member. The few studies that have addressed this issue have reported mixed results (Blackburn et al., 1981; Golde and Dore, 2001).

In light of the uncertainty about the importance and quality of mentoring relationships in academics, it seems important to examine how the productivity of new faculty members can be affected by mentoring. We do this by exploring how higher level relationships between mentors and mentees relate to the productivity of junior faculty members in information systems, particularly by testing if a positive social relationship with their dissertation chair relates with how quickly they complete their doctoral program and if that relationship correlates with more productivity during the startup phase of the junior faculty's academic career. To measure this social relationship between junior faculty members and their former dissertation chair,

we use leader member exchange (LMX). LMX has been used extensively as a measure of the quality of a mentoring relationship in organizations and it has been shown that higher LMX relates with positive results in the workplace such as greater employee effort (Graen, Blank, and Linden, 1983) and reduced stress (Harris and Kacmar, 2006). We suspect that high LMX scores will lead to similar positive results in an academic setting. Many factors have been shown to relate with higher LMX scores, such as gender and ethnicity (Goertzen and Fritz, 2004). In light of the low number of minority faculty members in the field (AACSB, 2003), it is timely to examine how factors like mentoring relate to these demographic groups in particular. Thus, this paper will also examine how gender and ethnicity relate with higher LMX scores.

The remainder of this paper is formatted as follows: first, we examine some existing studies on mentoring and LMX and discuss how we expect increased mentoring relationships to help the mentee successfully complete his or her doctoral program in a timely manner and continue to help them as they begin their academic career. We then discuss relevant research relating demographics and LMX. This is followed by a discussion of the methodology used in this study and a presentation of the results. Finally, a discussion of the results is presented with thoughts about the limitations and potential contributions.

2. RESEARCH QUESTIONS

2.1 Mentoring

As previously mentioned, research on the importance and quality of mentoring in graduate schools is mixed (Blackburn et al., 1981; Golde and Dore, 2001). Blackburn et al. found that the quality of mentoring in doctoral programs is important as it carries over into early careers, influencing the production of new faculty. Golde and Dore (2001) found that the importance and quality of mentoring to graduate students varied among disciplines. Our study is context specific, focusing directly on junior faculty in information systems. In addition, one of the major contributions in this study is the introduction of leader member exchange (LMX) as an independent variable.

LMX measures the quality of the social exchange in dyadic (paired) relationships. Initially introduced by Dansereau, Graen, and Haga (1975) as vertical-dyad linkage theory (VDL), LMX measures the social ties between a mentor and mentee. LMX (or social exchange) has been correlated with increased attention from the mentor (Sidhu, 1988; Tanner and Castleberry, 1990), increased mutual trust (Graen, 1976; Klien and Kim, 1998), a higher level of contribution from employees (Graen et al., 1983), additional help from the mentor with mentee job problems (Novak, 1984), support (Blau, 1988; Tanner and Castleberry, 1990; Uhl-Bien et al., 1990) and reduced stress amongst mentees (Harris and Kacmar, 2006) among other things.

LMX has been used in a wide range of studies that have focused primarily on the work-place. Shriesheim, Castro and Cogliser (1999) list 147 studies that occurred between 1975 and 1998 that used LMX. Although the LMX instrument has been primarily used in the workplace setting to examine the relationship between supervisors and

subordinates, after reviewing variables that LMX has been correlated with, we feel that LMX has application in measuring the relationships of faculty and graduate students. In addition, Graen and Uhl-Bien (1995) note that LMX is not just concerned with relationships in the work context but rather the relationship in general.

We propose that when mentees receive attention, support, trust, help with problems, and have low stress; all things that have been associated with high LMX, they will achieve greater levels of success. One way we expect this to be evidenced is by junior faculty members having completed their doctoral programs in a timely manner. For example, the attention and support they likely received due to high social exchange with their chair should help them deal with issues that arise during their doctoral program, such as managing time effectively, or selecting appropriate research topics that may eventually lead to the dissertation. Thus, it can be conjectured that junior faculty that have a high LMX score when combining their score with their dissertation chair's will have fewer months invested in completing their doctoral program relative to those that have a low LMX score.

R1: Did junior faculty members with high LMX scores take longer to complete their doctoral program relative to those that have low LMX scores?

The benefits associated with LMX should continue to help junior faculty members into their academic career through continued interaction with their dissertation chair. This is supported by Blackburn et al. (1981) who concluded that mentoring relationships continue beyond graduate school and have an impact on placement and scholarly productivity of graduates. However, Blackburn et al.'s results leave alternative explanations. For example, they found that for the relationship to be successful after graduate school the student must take a similar career path as the mentor, which could suggest that doctoral students that train under chairs that have more scholarly activity will tend to be more active regardless of their relationship with their chair. Another potential confound to previous studies is that they fail to control for the type of institution at which the junior faculty member is employed. For example, students that are employed at institutions that require a higher number of publications for tenure; such as doctoral granting institutions, may have greater scholarly productivity out of necessity rather than the continuing relationship. None the less, it can be conjectured that students that are part of dyads that have high LMX scores relative to students that have low LMX scores will have a greater number of publications in their first six years of academic employment because of the continued relationship. We strengthen this argument by controlling for the potential confounding effects of the institution where the junior faculty is employed and the level of productivity of their chair (mentor).

R2: Did junior faculty members with high LMX scores have more publications in their first six years relative to those that have low LMX scores?

2.2 The Relationship between Gender and Ethnicity and LMX

The Association to Advance Collegiate Schools of Business (AACSB, 2003) states that a PhD shortage in business schools exists for women and minorities. Developing a better understanding of how to improve outcomes for these demographic groups is important. Having proposed that LMX relates with how efficiently junior faculty progress through their doctoral programs and how effectively they perform in early years of academic employment, we feel that examining how gender and ethnicity affect LMX scores in this context provides valuable insight for the profession. Intuitively and theoretically, we might expect that dyads of similar demographics would have high LMX scores. However, empirical results are mixed.

Ragins (1997) provides a theoretical model for investigating relationships. In short, Ragins suggests that the makeup of a mentoring relationship influences the type of assistance provided by the mentor, which will have an impact on mentee outcomes. For example, the mentor can take on roles such as role modeling, friendship, and career counseling amongst other things. The type of role the mentor assumes influences the type of outcomes the mentee achieves. Ragins also notes that these relationships are moderated by factors such as demographics (e.g. gender and ethnicity). The reason for this is that mentors often assume roles and mentees often perceive roles based on stereotypes. For example, "sex role stereotypes are cognitive knowledge structures that provide behavioral expectations for men and women. As such, the congruence between sex roles and mentor behaviors (as perceived by the mentee) may play an important role in mentee perceptions of mentoring functions received" (Sosik and Godshlack, 2000, pg. 104).

Ragins posited that homogeneous dyads will generally perform better because of shared identity and interpersonal comfort. "Shared identity and interpersonal comfort facilitate automatic recognition-based processes associated with identification with significant others (e.g., mentors), emulation of behavior, and attributions of positive characteristics. As such, the behaviors exhibited by mentors in homogeneous mentoring relationships are more likely to provide a close "stereotype fit" (Dipboye, 1985) with cognitive knowledge structures possessed by their mentees. Such a positive evaluation by the mentee (e.g., stereotype fit) may promote mentee's identification with the mentor and increase perceptions of role modeling and psychosocial support functions by the mentee" (Sosik and Godshlack, 2000, pg. 106).

Despite the theoretical support for homogeneous relationships, empirical results are equivocal (e.g. Koberg, Boss, and Goodmand, 1998; Ensher and Murphy, 1997). In relation to LMX, Goertzen and Fritz (2004, pg. 12) perform a thorough review of past literature in their examination of the effects of demographics on LMX. After reviewing the literature, their conclusion is that "it is still unclear how sex of dyad members impacts LMX. Research examining demographic similarities and sex similarities has yielded, at best, inconclusive results." For example, in their study of demographic variables on relationships, Tsui and O'Reilly (1989) found that homogeneity of gender had a positive effect on relationships while mixed dyads were slightly

favorable for race. On the other hand, Basu and Green (1995) found no relationship between demographics and LMX.

In addition to being inconclusive, most LMX studies, including those cited above, take place in an organizational context. In reaction to the uncertainty about demographics, particularly in this context, we test the effects of gender and ethnicity on LMX scores. We are unable to form hypotheses related to gender and ethnicity from existing literature, but the following research questions are raised:

R3: Do same gender dyads have higher LMX scores relative to mixed gender dyads?

R4: Do same race dyads have higher LMX scores relative to mixed race dyads?

3. METHODOLOGY

3.1 Sampling and Data Collection
The target population consists of Information Systems faculty at U.S. business schools. The junior faculty selected needed to be at least six years out of their doctoral program, but not so far out that the time frame would become a factor in remembering the type of relationship between the junior faculty and their chair. Therefore, we limited the sampling frame to faculty that graduated with their doctorate between 1990 and 2000. A convenience sample consisting of a mailing list of 35 senior faculty members and 101 students was used. Due to the exploratory nature of the study, a sample of this type was adequate. In addition, responses were received from participants at various types of institutions (14 from students at doctoral granting and 21 from non-doctoral granting institutions) with a wide range of publishing activity (from 1 publication to 13 total publications amongst mentees with a mean of 6.51 publications and a standard deviation of 3.63 publications along with 1.00 publications per year to 2.87 publications per year with a mean of 1.62 and a standard deviation of .58 publications per year for mentors) and diverse demographics. Thus, the sample represents a broad base of academics. Table 1 shows the demographics makeup of the mentor and mentee samples.

Gender	Students	Chairs
Female	7	5
Male	28	14
Ethnicity	**Students**	**Chairs**
Caucasian or White	26	15
Asian or Pacific Islander	8	2
Indian or Middle Eastern	1	2

Table 1: Sample Demographics

The data collection was as follows: first, the chairs were contacted by email asking for their participation. If they agreed to participate, they completed an online mentor survey for each of their former doctoral students that we were able to find contact information for and were then listed in the email. Once a response from a chair was received, an email was sent to his/her former students asking them to complete a corresponding online student survey. Code numbers were used to link the student and chair responses. Due to the sensitivity of the data, it was clearly indicated in the emails to both the chair and former student that names and data linking individuals would be destroyed after a limited amount of time and only code numbers would be maintained. Responses were received from 19 senior faculty members representing 12 universities (a response rate of 54 percent) and from 38 former students (a response rate of 38 percent). The response rate may be due to 1) we contacted senior faculty which we had prior relations with; and 2) we contacted junior faculty only after we had received a response from their dissertation chair and requested that the chair forward an email to their former students indicating their participation in the project. These factors seem to have compelled both junior and senior faculty to participate. Finally, data from three sets of respondents was deleted due to incompleteness resulting usable information for 35 dyads. Table 2 shows the makeup of the usable dyadic pairs.

Gender Makeup		**Ethnicity Makeup**	
Same Gender	11	*Same Ethnicity*	11
Male/Male	8	Caucasian/Caucasian	7
Female/Female	3	Asian/Asian	4
Mixed Gender	24	*Mixed Ethnicity*	24
Male Chair/ Female Student	19	Caucasian Chair/ Asian Student	18
Female Chair/ Male Student	5	Caucasian Chair/ Indian Student	1
		Asian Chair/ Caucasian Student	3
		Indian or Middle Eastern Chair/ Caucasian Student	2

Table 2: Makeup of the Dyadic Pairs

3.2 Measures
To measure the quality of the mentor/mentee (dissertation chair/junior faculty) relationship, we used five items from the seven item LMX-7 scale that fit the context studied here. The LMX-7 was introduced by Graen and Scandura (1984) and has progressed through extensive revision and testing (Shriesheim et al., 1999). In a review of the history of LMX development, Graen and Uhl-Bien (1995) suggest that the LMX-7 is the most appropriate measure. A meta-analysis by Linden, Sparrowe and Wayne (1997) reviewed 48 LMX studies and found that 18 used the LMX-7. Shriesheim et al. (1999) also found the LMX-7 to be the most widely accepted. Due to the revision of the items to fit the context, we utilized a focus group of six academics to assess item clarity and appropriateness. Confusion among the focus group over applicability of two of the questions in this context resulted in their removal from the scale. The Chronbach Alpha for the remaining five items was .876 for the mentee scale and .790 for the mentor scale indicating overall reliability and consistency for use as a measurement for LMX in this setting.

The score for each member of the dyad is the sum of their responses to the items in the scale. The score for the dyad is the composite of these scores for each student and his

	Independent Variable	Dependent Variable	t	Sig.	R^2
R1	LMX	Time to Degree	1.027	.312	.031
R2*	LMX	Number of Publications	3.202	.003	.555

* Controlling for: 1) the type of school the mentee had been employed at 2) the publishing activity of the chair

Table 3: Results for Research Questions 1 & 2

or her chair. A high LMX score represents strong social exchange. The questions are displayed in the appendix.

How efficiently junior faculty completed their doctoral programs was operationalized by measuring the time (in months) between enrolling in their doctoral program and obtaining the PhD (Time_to_Degree). How effectively junior faculty performed scholarly activity was measured by the number of peer reviewed publications in their first six years of employment (Mentee_Pubs). Ethnicity was defined White/Caucasian, African-American/Black, Indian or Middle Eastern, Asian or Pacific Islander, Hispanic or Latino and

To test research question two, another regression using the number of refereed publications the junior faculty member had in his or her first six years of academic employment as the dependent variable and LMX as the independent variable was ran. This regression controls for the type of institution the junior faculty member was employed with during his or her first six years of employment (doctoral granting institution versus non-doctoral granting institution) and the level of publishing activity of their dissertation chair were included. The results showed a statistically significant relationship between LMX and the number of refereed publications (p = .003). Thus in the sample, higher LMX scores were associated with more publications (Table 3).

An independent samples t-test was performed to analyze research questions three and four (Levene's test for equality of variance was not significant for gender (p = .431) and ethnicity (p =.434)). The results for research question three show that dyads consisting of mentors and mentees of the opposite sex had LMX scores that were statistically different from one another (p =. 012). The mean LMX score for opposite gender dyads in this sample was 59.53 and the mean LMX score for same gender dyads in this sample was 52.79 (Table 4).

The results for research question four did not show a statistically significant difference in the LMX scores of dyads consisting of mentors and mentees of different ethnic groups (p = .300). The mean LMX score for opposite ethnicity dyads in this sample was 56.91 and the mean LMX score for same ethnicity dyads in this sample was 54.00.

coded as same/not same. A summary of the main variables is presented in the appendix.

Additional control variables were collected including the type of university the junior faculty member was employed at during his or her first six years of employment (doctoral granting '1' or non-doctoral granting '0') (Job_Type) and the level of publishing activity of their dissertation chair (the chairs total number of publications divided by the number of years since receiving his or her doctorate or 'average number of publications per year')(Mentor_Pubs). We expect these variables to covary with the mentees level of publishing activity.

4. DATA ANALYSIS

To test research question one, a regression using the number of months it took junior faculty members to complete their doctoral program as the dependent variable and the LMX score between the junior faculty member and his or her dissertation chair as the independent variable was ran. The results did not show a significant relationship between LMX and years to degree completion (p = .312) (Table 3).

5. DISCUSSION AND CONCLUSIONS

After computing the initial findings, we performed a supplemental qualitative analysis to provide additional insight into the results. To do this, we requested additional follow up information from participants. 7 chairs (4 males and 3 females) and 13 former students (9 males and 4 females) provided feedback. Participants were asked "what they felt the implication of their relationship with their chair/student was" "if they prefer working with individuals of the same or opposite gender and ethnicity and why" "in general, what characteristics result in better relationships." The open ended responses were analyzed for common themes. The common themes are summarized in the discussion below.

In general, participants felt that a strong relationship would result in more collaboration on research and more trust in the advice of the chair. The importance of this for new scholars is that in our sample, a stronger relationship draws a parallel with increased productivity in early years of academic employment; as shown by the significant relationship between LMX and the number of publications our participants had obtained in their early years of employment, and in a "publish or perish" occupation, those that produce reap rewards.

The results for research question three and four indicate that the relationship between mixed pairs (for gender) is stronger which conflicts the findings of LMX in the workplace setting. This also seems contradictory to

	Independent Variable	Dependent Variable	Mean Difference	Std. Error Difference	t	Sig.
*R3	Gender (Same vs. Different)	LMX	6.74	2.55	2.65	.012
**R4	Ethnicity (Same vs. Different)	LMX	2.91	2.76	1.054	.300

* Same Gender = 11 (Mean LMX, 52.79); Opposite Gender = 24 (Mean LMX 59.55)

** Same Ethnicity = 11 (Mean LMX, 54.00); Opposite Ethnicity = 24 (Mean LMX, 56.91)

Table 4: T-Test Results for Research Question 3 & 4

conventional wisdom; particularly that related to communication between men and women that suggests men and women have different types of communication and the theoretical propositions of Ragins (1997). However, participant responses to the follow-up questions asking if individuals prefer working with others of the same or opposite gender and the same or opposite ethnicity may give some insight into why our results are different. In general, the feedback mirrored the results and individuals stated they preferred mixed relationships, especially mixed gender. A common theme was that working with individuals of the opposite gender or ethnicity allowed them to avoid unnecessary activities (for example, office chit-chat) and thus, they were able to focus on more important tasks. Responses from female mentees indicated that they seemed to feel that similar pairs can get into a competitive relationship and thus, they preferred working with males to avoid this. This reiterates the findings of Burke and Mckeen (1997) that found that female mentees were less satisfied with female mentors in the workplace.

Follow-up responses from chairs (mentors) seem to indicate that they feel they are better able to cultivate relationships with individuals that they feel have potential, can help them achieve their own goals through complimentary skills, and have particular personality qualities that they like. Responses from junior faculty (mentees) seem to indicate that they feel they get along better with a mentor that has common research interests and can help them achieve their career goals. Thus both mentors and mentees seem to be seeking relationships that can help them meet individual goals.

Based on the results and the follow-up responses we conjecture that it may be the more individualistic and goal related nature of academia that is driving the difference between our findings and those in the workplace. Like those in the traditional workplace, mentors and mentees prefer relationships with individuals that they can have a positive camaraderie with, but the relationships with those that they feel can help them achieve goals (e.g. finishing their program or getting publication) are more important in an individualistic, academic setting, and those relationships are the ones that individuals try to cultivate regardless of demographic differences. It may be the additional effort they make to try to build those relationships that is driving the increased exchange scores. Additional study into the impact of goals and the type of relationship individuals try to cultivate is needed to confirm our speculation. Perhaps a study comparing individuals at organizations that have clearly defined goals versus individuals that do not, would help clear up this question.

Finally, in the follow-up responses, several faculty members indicated that they prefer working with people that have personality traits that they like. This seems to indicate that LMX is influenced by a more complex set of factors that need further exploration. Other studies such as Wayne, Shore, and Liden (1997) have examined more complex combinations of antecedents of LMX in the workplace that should be examined in the academic setting. Also, the type of roles assumed by the mentor and mentee may influence the relationship. For example, does the mentor take on more of a supportive role rather than a 'boss' role in an academic

relationship? And do common stereotypes from the workplace hold true in an academic setting? Recent research related to gender and cultural differences on supportive communications, shows that there is no significant difference in how men and women give and take supportive communication (McGeorge et al., 2004).

There are several limitations to this study. First, individuals often have a tendency to participate only if they feel compelled thus we may have received only responses from individuals that felt they had an extremely positive or negative relationship. In addition, participants were required to recall relationships that in some cases were over a decade ago. Thus, the results may be influenced by hindsight, failure to accurately recall the relationships, and may also contribute to participation from individuals with strong positions in regards to their relationship. Third, we measured scholarly productivity by merely counting the number of peer review-ed publications and did not focus on the quality of the journals published in. One reason for this is that journal quality is a subjective measure and with an exception of a few highly respected journals, journal rankings can vary significantly. Future researchers may want to account for journal quality and publication quality by using measures like available journal rankings, the number of times participant's research is cited by others, or other means that future researchers feel are as objective as possible. Finally, the small sample size limits the results related to gender and ethnicity. The sample size did not allow us to ask what type of mixed relationships worked the best and does it matter who is in the mentor or mentee role? We also didn't examine the impact of a complex combination of individual and situational factors on LMX. We suggest that future research look more closely at issues like these to find out how exchange relationships can be improved in the academic setting.

Despite the limitations, this study provides valuable insight into how mentoring can help doctoral students and new faculty members by exploring how mentoring relationships relate to scholarly productivity. In conclusion, our results show that strong social exchange between doctoral students and their chairs relate to positive outcomes for the students in terms of productivity in their early years of academic employment. The results also seem to indicate that mixed mentor/mentee dyads have stronger social exchange. Overall, the paper has important implications to academia. Strong relationships can help produce new PhDs that are high quality researchers.

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APPENDIX

LMX Scale for Mentee (Derived from Graen and Uhl-Bien, 1995) - Five item, five-point likert scale measuring the mentee's evaluation of his/her relationship with mentor.

1. Did you know where you stood with your advisor, did you usually know how satisfied your advisor was with what you did?
2. How well did your advisor understand your problems and needs?
3. How well did your advisor recognize your potential?
4. How would you characterize your working relationship with your advisor?
5. To what extent could you count on your advisor to "bail you out" at his or her expense when you really needed it?

LMX Scale for Mentor (Derived from Graen and Uhl-Bien, 1995) - Five item, five-point likert scale measuring the mentors evaluation of his/her relationship with Mentee.

1. Did you know where you stood with this student, did you usually know how satisfied this student was with what you did?
2. How well did this student understand your problems and needs?
3. How well did this student recognize your abilities?
4. How would you characterize your working relationship with this student?
5. To what extent could you count on this student to "bail you out" at his or her expense when you really needed it?

Efficiently Completing Doctoral Program - One item measuring years to Ph.D.

1. How long did it take you to finish your PhD (input the number of **months** between the time you enrolled and were officially awarded your PhD)?

Effectively Performing Scholarly Activity - One item measuring number of publications.

1. How many publications in blind peer reviewed journals did you have in your first **six** years of academic employment after receiving your PhD (input the number of publications)?

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