University of Massachusetts Boston

From the SelectedWorks of James L. Soldner

Winter 2012

Relationships among leader-member exchange, satisfaction, productivity, and self-efficacy of rehabilitation doctoral students

James L. Soldner

Available at: https://works.bepress.com/james_soldner/18/
A satisfactory relationship between doctoral students and their academic advisors is an essential component of successful doctoral training. The purpose of this study was to investigate the relationships between leader-member exchange (LMX), satisfaction with their programs, self-efficacy, and productivity of rehabilitation doctoral students. We also examined the potential effects of students having advisors of a different gender or ethnicity from the students’ own. Data were collected from a nationwide sample of 101 current rehabilitation doctoral students with at least one term of doctoral training experience. An internet-based survey was used for data collection purposes. Results indicated that LMX was significantly correlated with both satisfaction ($r_{99} = .325$, $p = .001$) and self-efficacy ($r_{99} = .262$, $p = .008$), satisfaction and efficacy were also significantly correlated $r_{99} = .637$, $p < .0001$, and the ethnicity and productivity correlation was significant, $r_{99} = -.239$, $p = .016$. Implications of the student-advisor relationship for doctoral training are discussed, and suggestions for future research are provided.
Advisor-Advisee Relationship

Historically, focus on the advisor-advisee relationship in graduate training originated from efforts to understand how graduate programs might foster student interest in conducting research (Gelso, 1979). Gelso (1979, 1993, 2006) proposed nine areas of a research-training environment that influence student interest in conducting research, including an emphasis on the advisor-advisee influence. The advisor-advisee relationship has taken on even greater significance in the research-training environment since initially proposed (Gelso, 1997; Hill, 1997; Schlosser & Gelso, 2001), with evidence supporting the hypothesized positive influence of the advisor-advisee relationship on advisees’ research self-efficacy and research interest at the individual level (Gelso, Raphael, Black, Rardin, & Skalkos, 1983; Hollingsworth & Fassinger, 2002; Krebs, Smither, & Hurley, 1991; Schlosser & Gelso, 2001, 2005) and program level (Gelso, Mallinckrodt, & Judge, 1996; Kahn & Schlosser, 2010; Royalty, Gelso, Mallinckrodt, & Garrett, 1986). Recent efforts have been made to measure factors influencing satisfaction in the advisor-advisee relationship. In a study considering both advisor and advisee perspectives, advisees indicated research self-efficacy positively related to the strength of the advisory working alliance and advisors indicated the advisees research competence positively related to the strength of the advisory working alliance (Schlosser & Kahn, 2007). Also, research on Canadian psychology programs suggests that the factors influencing advisory relationship satisfaction may differ between different kinds of graduate programs; for example, advising in self-care and work-life were most predictive of a strong advisor-advisee relationship for clinical students, advising in research design for experimental students, and advising in clinical work for counseling students (Peluso, Carleton, Richter, & Asmundson, 2011). Finally, in a study that included a consideration of attachment styles, Huber, Sauer, Mrdjenovich, and Gugiu (2010) showed that lower attachment-anxiety orientation, lower attachment-avoidance orientation, and autonomy to choose advisor were related to advisory working alliance. Despite these notable advancements in understanding the advisor-advisee relationship, many questions remain about its formation and influence on graduate student outcomes.

Although most studies have focused on the mentoring experience in relation to the student-advisor relationship and its relationship to other variables of interest (e.g., student satisfaction, scholarly productivity, and self-efficacy), very few studies have approached the student-advisor relationship from a traditional leadership perspective (Ives & Rowley, 2005; Kjeldal, Rindfleish, & Sheridan, 2005; Myers, 2006). To account for this gap in the literature, a significant component of the current study was to investigate the advisor-student relationship by focusing on a contemporary leadership theory, known as leader-member exchange (LMX) theory.

Leader-Member Exchange Theory (LMX)

Research on LMX theory, formerly referred to as the vertical-dyad linkage model, began in the early 1970s as an alternative theoretical approach to understanding leadership at work (Graen & Cashman, 1975). In LMX theory, mutual consideration is given to the behavior of both the supervisor and subordinate in the leadership dynamic (Martin, Thomas, Charles, Epitropaki, & McNamara, 2005). The central focus of LMX theory is the individual relationship and interaction (a dyadic exchange) between a supervisor (termed ‘leaders’) and each of their subordinates (termed ‘members’). A major tenet of this theory is that leaders interact with their subordinates at varying levels dependent on whether the subordinates are part of the “in-group” (high quality relationship) or “out-group” (low quality relationship) (Gerstner & Day, 1997; Graen & Cashman, 1975). A large body of LMX research has shown the quality of relationships to develop quickly and remain relatively stable over time (Schriesheim, Castro, & Cogliser, 1999).

The importance of the LMX relationship for both leader and member is well documented in the literature (Soldner, 2009; Soldner & Crimando, 2010). In particular, the relationship between LMX quality and various individual and organizational outcomes is well known. High quality LMX relationships are often associated with higher levels of subordinate satisfaction (Anseel & Lievens, 2007; Beehr et al., 2006; Clemens, Milsom, & Cashwell, 2009), performance (Deluga & Perry, 1994), lower levels of subordinate stress (Harris & Kacmar,
2005), and lower subordinate absenteeism (Di-
erendonck, LeBlanc, & Breukelen, 2001). Other
desirable individual outcomes linked to LMX for
members of the “in-group,” include additional re-
ponsibility, autonomy, increased communication
and trust from their supervisors (Beehr et al., 2006).
Inversely, low quality LMX relationships have been
shown to lead to higher levels of supervisor control
and directives, lower levels of subordinate satis-
faction, higher levels of subordinate turnover, and
less desired assignments (Graen & Cashman, 1975;
Koniczka Heck, Bedeian, & Day, 2005; Varma
& Stroh, 2001). Some undesirable individual out-
comes linked to LMX for “out-group” members
include: diminished amounts of responsibility, au-
tonomy, communication, and trust with their super-
visors (Mueller & Lee, 2002).

A number of other studies have focused on how
leader and member characteristics, such as gender
(Milner, Katz, Fisher, & Notrica, 2007), socio-eco-
nomic status (Duchon, Green, & Taber, 1986), age
and education (Tsui & O’Reilly, 1989), and ethnici-
itv (Nishii & Mayer, 2009) may influence the LMX
relationship. In particular, the relationship between
gender and LMX has been well documented. Re-
search has shown that same-sex leader-subordinate
pairs are likely to develop higher quality LMXs than
those leader-subordinate pairs of the opposite sex
(Lee, 1999; Wayne, Liden, & Sparrow, 1994). Addi-
tionally, Lee (1999) found that perceived quality
of LMX affects subordinates’ expectations of over-
all communication patterns with the supervisors
depending on gender. Other LMX research found a
stronger relationship between high aggregated LMX
and the positive relationship between diversity and
group turnover among personnel employed at a su-
permarket (Nishii & Mayer, 2009). In addition to
LMX, a number of other important variables have
been shown to impact the advisor-advisee relation-
ship, including student satisfaction and productivity.

Satisfaction/Productivity
Attrition is a serious problem in doctoral study
across disciplines and institutions. Nationwide, doc-
toral student attrition has been estimated to be 40%
to 70% (Gardner, 2010; Ives & Rowley, 2005). A
high quality advisor-advisee relationship has been
linked with higher levels of scholarly productivity,
lower doctoral student attrition, and greater advisee
satisfaction (Moses, 2008). As evidence, Ives and
Rowley (2005) found that doctoral students who felt
involved in the selection of their advisors, whose in-
terests were matched with their advisor’s expertise,
and who developed a good working relationship
with their advisor were more likely to indicate high
satisfaction and progress in their graduate training.
Similarly, it has been found that both the criteria
used in selecting an advisor and the overall advisor
behaviors—including supportiveness (Long, 1987),
levels of interaction (Gerholm, 1990), and treating
the student as a junior colleague (Girves & Wem-
merus, 1988)—strongly influenced doctoral student
satisfaction (Zhao, Golde, & McCormick, 2007). As
mentioned, doctoral student productivity has been
shown to have a positive relationship with the ad-
visor-advisee relationship. Hollingsworth and Fass-
inger (2002) investigated the role of advisors in the
research training of counseling psychology doctoral
students and found that research mentoring experi-
ences mediated the effect of the research training
environment on research productivity. In addition to
doctoral student satisfaction and productivity, stu-
dent self-efficacy has been shown to positively im-
 pact students’ overall educational experiences.

Self-Efficacy
According to Bandura (1986), self-efficacy
encompasses the environment, motivation, and
the prior experiences of the individual. As one of
the central components of Social Cognitive Career
Theory (SCCT), self-efficacy has become a central
domain to examine when researching career expecta-
tions, aspirations, and choice (Nauta, 2004; Pin-
quart, Juang, & Silbereisen, 2003). Self-efficacy
has been defined as “people’s judgments of their
capabilities to organize and execute courses of ac-
tion required to attaining designated types of per-
formance” (Bandura, 1986, p. 391). This suggests
that previous successes will result in increased self-
efficacy and mastery of the specific behavior or be-
haviors (Bandura, 1977). Bandura (1977) analyzed
levels of self-efficacy as a determinant of whether
coping behaviors were initiated. Individuals who
display lower levels of self-efficacy have been
found to use coping strategies that focus on emo-
tions. These emotions tend to be characterized as self-blame and denial, increased stress, depression, anxiety, barrier perception, and lower problem solving skills (Borders & Archadel, 1987; Karademas & Kalatzis-Azizi, 2004; Terry, 1994).

A more comprehensive understanding of self-efficacy has resulted in increased investigations focusing on the concepts of self-efficacy and career decision-making. Betz and Hackett (1981) pioneered these investigations by demonstrating that self-efficacy influences career decisions and vocational aspirations. This fostered the development of career self-efficacy, which Strauser (1995) defined as the self-efficacy that one exhibits in relation to occupational choices. It is believed that individuals with low self-efficacy tend to restrict their participation in work-related activities and are more likely to withdraw when complications arise, thus compromising occupational growth (Brown, 1999). Self-efficacy affects the willingness of individuals to initiate certain behaviors, their persistence when confronting barriers, and their emotional reactions to conflict (Bandura, 1997; Cinnamon, 2006). In a similar manner, it is assumed for doctoral students that self-efficacy can influence academic and career related outcomes.

It is important to point out that modeling/mentoring has been thought to play a significant role in the process of pursuing a career (Bandura, 1997). This concept has been suggested since many underrepresented groups (e.g., women) were once not inclined to choose career paths in the hard sciences. This lack of representation did not allow for role models and mentors to emerge as a source of encouragement to similar members of the population, therefore leading to a gap in the career paths chosen by minority groups (Bandura, 1997). The same has been reported in racial minority groups. Acknowledgment has been given to the role that the environment plays in a person’s career self-efficacy (Hackett & Byars, 1996; Helmes & Piper; 1994). Additionally, it has been thought that a person’s career self-efficacy is derived from the perspective of the ethnic group which one identifies (Smith, 1976, 1991). In order to expand the scope of occupational self-efficacy, it is recommended that individuals be exposed to models/mentors from similar backgrounds who serve as examples of how to perform the tasks related to the occupation successfully. Bandura (1977) states, in addition to positive encouragement, social support, and feedback, seeing models with attributes of similarity as they succeed in mastering career/occupational goals originally thought to be beyond one’s competence increased the individuals’ self-efficacy in their own potential regarding that occupation. As it pertains to doctoral students and their advisor/mentors, it can reasonably be expected that the same would apply to increasing the self-efficacy of the student via the advisor/mentor similarity and relationship.

Henceforth, a large body of literature has shown empirical evidence for the relationship between LMX and a variety of important individual and organizational outcomes. While the majority of published LMX research has been conducted in business and industry settings (Anseel & Lievens, 2007; Beehr et al., 2006, & Stringer, 2006), very few LMX studies have been conducted in educational settings (Kjeldal, Rindfleish, & Sheridan, 2005; Myers, 2005) and none in rehabilitation education, specifically. This is surprising considering empirical evidence for LMX to predict a variety of individual and organizational outcomes considered prevalent in rehabilitation settings, including turnover (Barrett, Riggar, Flowers, Crimando, & Bailey, 1997), burnout and job satisfaction (Capella & Andrew, 2004; Kirk-Brown & Wallace, 2004), and job performance (Parsons, Reid, & Crow, 2003). Therefore, the purpose of the present study was to investigate the relationship between LMX and the following variables: (a) satisfaction, (b) productivity, and (c) self-efficacy among doctoral students in rehabilitation. The following research questions were investigated:

1. Is there a relationship between rehabilitation doctoral students’ perception of the quality of the leader-member exchange relationship (LMX) and their satisfaction with their current academic program?
2. Is there a relationship between rehabilitation doctoral students’ perception of the quality of the leader-member exchange relationship (LMX) and their self-efficacy?
3. Is there a relationship between rehabilitation doctoral students’ perception of the quality of the leader-member exchange relationship (LMX) and their scholarly productivity?
4. Is there a relationship between dyadic ethnicity and dyadic gender and rehabilitation doctoral students’ satisfaction with their current academic program, their self-efficacy, and their scholarly productivity?

**Method**

**Sample**

The sample was comprised of 101 current rehabilitation doctoral students enrolled in National Council on Rehabilitation Education (NCRED) member institutions. The majority of respondents came from Region V (N = 60); all other regions were represented, with the exception of Region I, with frequencies ranging from 1-10. Of the 101 participants, 71 were female and 30 were male. Approximately 18% reported having a disability. On average, participants had completed 5.6 semesters of doctoral study and had a mean age of 35 years old. A breakdown of the ethnicity of the participants and their major academic advisors is depicted in Table 1.

**Instrument**

The instrument in this study was composed of two existing instruments and questions written specifically for the study. Prior permission had been obtained for adapting and using (a) the LMX-Team Leader-Member Exchange Scale (LMX-SLX; Graen, Hui, & Taylor, 2004); and (b) the Satisfaction Survey of Special Education Doctoral Students (Wasburn-Moses, 2008). To this we added questions on professional productivity, as well as a demographic section. The instrument was further adapted for implementation on the Internet.

**LMX-SLX.** The 10-item LMX-Team Leader-Member Exchange Scale (Graen, Hui, & Taylor, 2004) was used to assess the quality of the doctoral student-advisor relationship from the student’s perspective. It is purported to measure three dimensions—trust, respect, and obligation in the supervisor-subordinate relationship—with questions such as “My supervisor would help me with my job problems,” and “My supervisor has trust that I would carry my workload.” In the present study, the term “supervisor” was substituted with the term “major advisor.” Evidence to measure these three dimensions has been provided by previous LMX research (Schriesheim, Castro, & Cogliser, 1999). A five-point Likert-type scale (possible range of 1-5 with higher scores indicating better quality) was used. Previous research has shown high (.95) internal consistency of scores, and high levels of differentiation, using classic item analysis, between individuals whose scores were close but not equal (Graen et al., 2004; Scherbaum, Naidoo, & Ferrer, 2007). In this study, internal consistency of scores was acceptable, \( \alpha = .92 \). Composite scores for LMX-SLX was computed using the mean of all of the items (for a more comprehensive overview of the psychometric properties of the LMX-SLX, see Graen et al., 2004).

**Satisfaction Survey.** The first section of the Satisfaction Survey of Special Education Doctoral Students (Wasburn-Moses, 2008) was used to measure rehabilitation doctoral students’ satisfaction with their programs and their perceived preparedness. This section is divided into two subsections, the first of which includes questions on respondents satisfaction with their doctoral program in general and with nine aspects of the program (e.g., advisor, faculty, financial support, and courses). Possible answers ranged from strongly dissatisfied

---

**Table 1: Reported ethnic background of participants and their major academic advisors**

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Participants</th>
<th>Advisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian/Pacific Islander</td>
<td>10 (9.9)</td>
<td>1 (1.0)</td>
</tr>
<tr>
<td>Black, Non-Hispanic</td>
<td>21 (20.8)</td>
<td>9 (8.9)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>13 (12.9)</td>
<td>1 (1.0)</td>
</tr>
<tr>
<td>White, Non-Hispanic</td>
<td>55 (54.5)</td>
<td>87 (86.1)</td>
</tr>
<tr>
<td>Native American</td>
<td>1 (1.0)</td>
<td></td>
</tr>
<tr>
<td>Unsure</td>
<td>1 (1.0)</td>
<td></td>
</tr>
</tbody>
</table>
(1) to strongly satisfied (5). A second subsection concerned respondents’ perceived preparedness for their desired career and for performing six professional functions (e.g., designing and implementing a research agenda, publishing in refereed journals, and leading programs in schools, which was changed to leading rehabilitation programs). This subsection was used to measure efficacy. Wasburn-Moses (2008) reported internal consistency for the 10 satisfaction items, $\alpha = .84$, and the 7 preparedness items, $\alpha = .85$. In the present study, Cronbach’s coefficient for the satisfaction and preparedness scales were .83 and .89 respectively. No validity studies of the scales were reported having been completed since the initial development and use of this research instrument. Composite scores for these scales were computed using the means of the items in each scale.

**Scholarly productivity.** Respondents were asked how many of the following they achieved during their tenure as a doctoral student: (a) publications as sole author; (b) publications co-authored with advisor; (c) presentations given alone or with peers; (d) presentations given with advisor; (e) professionally-oriented awards or scholarships; and (f) grants for which respondent had applied and that were awarded.

**Demographics.** The following demographic items were included:

- a. NCRE region: Geographic region where respondent attended university was queried using the same divisions that NCRE uses. A list of states/territories included in each region was provided to aid responding.
- b. Number of semesters completed: The number of full semesters the respondent had completed as a doctoral student at the time of the survey was answered.
- c. Respondent age in years
- d. Respondent’s sex and sex of respondent’s advisor (2 items)
- e. Respondent and advisor’s ethnicity (2 items): Categories included Hispanic, Native American, White-not Hispanic, Black-not Hispanic, Asian/Pacific Islander, and other. An “Unsure” category was provided for advisor’s ethnicity.
- f. Disability status: This was provided as a yes/no question.
- g. How well the respondent knew advisor prior to entering doctoral program: Answer options ranged from 0 (Did not know at all) to 4 (Knew very well).

**Internet implementation.** The Internet-based survey was developed using LimeSurvey, a JavaScript application used to develop software language for surveys using text and design elements supplied by the current researchers. Questions were entered verbatim, with the word substitutions as noted above, and then triple-checked. Random tokens were assigned participants and then stored separately from results; these would prevent both unauthorized persons from taking the survey, and students from taking the survey twice, while preserving students’ anonymity. Further protection of anonymity was ensured by opting LimeSurvey not to save IP addresses of respondents.

The survey was administered from a server at Southern Illinois University Carbondale. There was a Welcome page that all participants saw when they first accessed the survey that introduced the administration of the survey. The page also reminded participants of some of the terms of the informed consent (e.g., anonymity of responses, voluntary nature of participation, and protection of data). The survey was comprised of a Relationship section, Satisfaction section, and a Demographics section. All sections were mandatory, that is, participants were required to supply an answer before moving on. However, for the item inquiring whether or not the individual has a disability, they were given an,” I prefer not to answer option for the item.” Only one question (regarding grant funding) was a conditional question. That is, an additional question regarding grants funded was presented contingent on the response given in the previous question pertaining to grants applied for.

**Data Collection**

A sampling frame from four different sources was used for data collection purposes: (a) the National Council on Rehabilitation Education (NCRE) listserv; (b) direct e-mail appeal to NCRE student members; (c) direct e-mail appeal to doctoral stu-
LEADER-MEMBER EXCHANGE

Results

Two dichotomous variables were created by examining the gender and ethnicity of the major advisor/student dyad. Dyadic gender was given a value of 0 if both were the same gender and 1 if they were different genders. Dyadic ethnicity was assigned a value of 0 if both were the same ethnicity and 1 if they were different. There were 39 (38.6%) same gender dyads and 62 (61.4%) different gender dyads. A similar breakdown of dyadic ethnicity revealed a more even split, with 53 (52.9%) dyads of the same ethnicity and 48 (47.1%) of different ethnicities.

Because we suspected that the productivity items would be intercorrelated, a single index was created representing all of the items. This was accomplished using a principle components analysis: Both Kaiser-Meyer-Olkin and Bartlett’s test showed that such an analysis was appropriate. We solved for a single component; this component accounted for 36.6% of the variance. Regression scores from the analysis were used as the productivity index.

Table 2 displays the means and standard deviations for LMX, satisfaction, efficacy, and the seven productivity items. Because the productivity index consisted of regression scores from the principle components analysis, their distribution is a standard, normal curve with a mean of 0 and a standard deviation of 1.

Correlational analysis assumes univariate and bivariate normality. Univariate normality was examined through visual inspection of histograms of scores from the LMX-SLX, satisfaction survey (both satisfaction and efficacy scales), and productivity index. All but the productivity index were normally distributed; there was significant positive skewness in the productivity index. Bivariate normality was examined through visual analysis of residuals; again, only plots involving the productivity index showed nonnormality.

Pearson correlations were computed for the variable pairs that exhibited bivariate normality. Table 3 displays the correlations and their 95% confidence intervals. In response to Research Questions 1 and 2 respectively, it can be seen that LMX was

Students who participated in a recent professional conference; and (d) e-mail appeal to the directors/chairs of the 35 doctoral-granting member programs of the NCRE for the e-mail addresses of potential participants. Each of these groups was also requested to relay the message on to other potential participants who meet the inclusion criteria, to facilitate a “snowball sampling approach.” This multi-element sampling procedure was utilized to maximize the return rate among targeted research participants.

In these emails, potential participants (or program chairs) were informed of the purposes of the study, and instructed to respond by e-mail if they were willing to be contacted again about the study. The purpose of this step was only to construct a sampling frame of potential participants. Those not responding to this appeal received no additional appeals. The names and e-mail addresses of those responding with their willingness were included in the sampling frame then cleaned up to remove duplicates. Next, an email with the purpose of the study, nature of participation, terms of informed consent, conditions of anonymity, and a URL for those who wished to participate was sent to all persons on the sampling frame. Potential participants were instructed that submission of completed surveys constituted their informed consent to use the data. In addition, participants were also notified of follow-up requests for non-participants and opt-out procedures; terms of consent were also described.

Participants were assigned a token upon clicking on the survey link. Tokens were used to facilitate follow-up for nonresponse, as individualized passwords to make sure that the survey was only completed by those who were invited, and to ensure that participants only completed the survey one time. Tokens were generated automatically by the survey administration software, and maintained in a separate file. As such, there was no way to connect a specific person with his or her submitted survey. Data from submitted surveys were maintained and backed-up in encrypted computer files in password-protected computers in the offices of the researchers, as were the separate files with names, e-mail addresses, and tokens. Files with names, e-mail addresses and tokens were destroyed upon completion of the study.
Table 2. Means and standard deviations of scores from LMX-SLX, satisfaction scale, efficacy scale, and the seven productivity items (n = 101).

<table>
<thead>
<tr>
<th>Score</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMX-SLX</td>
<td>4.01</td>
<td>.81</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>3.87</td>
<td>.59</td>
</tr>
<tr>
<td>Efficacy</td>
<td>3.76</td>
<td>.77</td>
</tr>
<tr>
<td>Professional publications, solo</td>
<td>.34</td>
<td>.79</td>
</tr>
<tr>
<td>Professional publications, with advisor</td>
<td>.89</td>
<td>1.82</td>
</tr>
<tr>
<td>Professional presentations, solo or peers</td>
<td>3.83</td>
<td>4.01</td>
</tr>
<tr>
<td>Professional presentations, with advisor</td>
<td>1.13</td>
<td>2.71</td>
</tr>
<tr>
<td>Grants applied for</td>
<td>.67</td>
<td>1.31</td>
</tr>
<tr>
<td>Grants received</td>
<td>.38</td>
<td>1.15</td>
</tr>
<tr>
<td>Professionally-oriented awards or scholarships</td>
<td>1.02</td>
<td>1.38</td>
</tr>
</tbody>
</table>

significantly correlated with both satisfaction ($r_{90} = .325, p = .001$) and efficacy ($r_{90} = .262, p = .008$). Increases in LMX were related to increases in both satisfaction and efficacy. As might be expected, satisfaction and efficacy were also correlated ($r_{90} = .637, p < .0001$). Because of the nonnormality in the productivity index, in Research Question 3, the correlation between LMX and productivity was computed using Spearman’s rho, which was not significant ($r_{99} = .073, ns$). Research question 4 involved

Table 3. Correlations among LMX, satisfaction, efficacy, productivity, dyadic gender, and dyadic ethnicity (n = 101).

<table>
<thead>
<tr>
<th>Variable pair</th>
<th>Correlation</th>
<th>$p$ LL</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>UL</td>
</tr>
<tr>
<td>Research question 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMX-Satisfaction</td>
<td>.325</td>
<td>.001</td>
<td>.139</td>
</tr>
<tr>
<td>Research question 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMX-Efficacy</td>
<td>.262</td>
<td>.008</td>
<td>.071</td>
</tr>
<tr>
<td>Research question 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMX-Productivity (Spearman’s rho)</td>
<td>.073</td>
<td>.469</td>
<td>-.124</td>
</tr>
<tr>
<td>Research question 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender/Satisfaction</td>
<td>-.008</td>
<td>.936</td>
<td>-.203</td>
</tr>
<tr>
<td>Gender/Efficacy</td>
<td>.128</td>
<td>.201</td>
<td>-.069</td>
</tr>
<tr>
<td>Gender/Productivity (Spearman’s rho)</td>
<td>.06</td>
<td>.549</td>
<td>-.252</td>
</tr>
<tr>
<td>Ethnicity/Satisfaction</td>
<td>-.127</td>
<td>.205</td>
<td>-.314</td>
</tr>
<tr>
<td>Ethnicity/Efficacy</td>
<td>-.103</td>
<td>.304</td>
<td>-.292</td>
</tr>
<tr>
<td>Ethnicity/Productivity (Spearman’s rho)</td>
<td>-.239</td>
<td>.016</td>
<td>-.415</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction/Efficacy</td>
<td>.637</td>
<td>.000</td>
<td>.505</td>
</tr>
</tbody>
</table>

Note: Unless otherwise labeled, these are Pearson’s correlations.
correlations among dyadic gender, dyadic ethnicity, satisfaction, efficacy, and productivity. The gender/satisfaction, gender/efficacy, ethnicity/satisfaction, ethnicity/efficacy, and gender/productivity correlations were not significant, but the ethnicity/productivity correlation was, $r_{99} = -0.239, p = .016$. The students in pairs of different ethnicity reported lower productivity (Mean = -1.35, SD = .144), while same ethnicity dyads were associated with higher productivity (Mean = .122, SD = 1.37).

**Discussion**

A growing body of literature supports the doctoral-level advising relationship as an important predictor of doctoral student success. The results of the current study have provided additional information into the doctoral advising relationship in rehabilitation education. Strengths of the current study included the investigation of the doctoral student-advisor relationship from a unique LMX perspective, instead of the traditional mentor-protégé perspective. In addition, the current study investigated the relationship between LMX and student satisfaction with their program, productivity, and self-efficacy, all considered critically important factors for doctoral student success. Lastly, the relationships between dyadic ethnicity and dyadic gender and rehabilitation doctoral students’ satisfaction, productivity, and self-efficacy were investigated. These investigations are significant, as evidenced by the growing body of professional literature devoted to diversity and multicultural issues in the areas of rehabilitation research, education and practice (e.g., Donnell, Robertson, & Shannon, 2009; Staten, Staten, Hollis, & Whittaker, 2009).

Results from this exploratory consideration of LMX, demographic variables, and student outcome variables provide implications for both education and practice. First, findings that LMX was significantly related to both student satisfaction and student self-efficacy support the importance of the student-advisor relationship. Therefore, rehabilitation counselor educators would do well to consider methods for strengthening their own advising relationships. These methods will likely include both informal and more formal approaches. Future research might be conducted to obtain a better understanding of specific educator behaviors that influence the strengthening and maintenance of student-advisor relationships.

In addition, it is important to note that the correlation between self-efficacy and dyadic ethnicity was not significant. This finding is noteworthy considering previous research showing that student self-efficacy is negatively impacted when there is a difference in backgrounds between student and advisor (Hollingsworth & Fassinger, 2002). Moreover, it is thought that a person will master a task more easily if a mentor of a similar background is training them (Bandura, 1997). It is important to note that no other factors, other than ethnicity and gender, were considered when referring to “similar backgrounds.” Other factors that might impact the area of self-efficacy should be explored further in future studies.

Several limitations also must be considered in interpreting these results. First, a small sample of current rehabilitation doctoral students was used in the current study. Therefore, the small sample may or may not accurately represent the entire population of past and present rehabilitation doctoral students. For example, a large proportion of respondents (60 of 101) were from Region V (i.e., Midwestern region of USA). Therefore, it is difficult to know if the sample of respondents is representative of rehabilitation doctoral students nationwide. Second, the data were based on respondent’s self-reported recollections, which may have been affected by more recent experiences. Thus, perceptions of LMX were based largely on respondent’s recollections, which may have been affected by current experiences. Additionally, student-advisor relationships, like most relationships, are likely to change over time. Finally, considering the sensitive nature of student-advisor relationships, it is possible that discussion of this topic may have impacted self-reports.

Future research using a larger sample is needed to test the generalizability of the findings of this study. Future research should also include the advisor’s perspective on the quality of the LMX in addition to the advisee’s. The LMX-Team Leader-Member Exchange Scale (LMX-SLX) used in the current study to assess LMX from the perspective
of the student, can be adapted to include the supervisor or a colleague as the referent. Future research should also include psychometric development of the specific instrument used for data collection in the current study, especially considering the instrument was adapted from two existing instruments and included additional questions written for the purposes of the current study. The instruments in the current study should also be used with other samples, such as doctoral students in other fields, such as counseling psychology and special education. In addition, it would be interesting to determine if relationships existed between LMX and other variables on the basis of whether the advisor was assigned to the advisor or if the advisee could choose an advisor. Lastly, future research should incorporate a longitudinal design to account for the changing nature of relationships over time.

In conclusion, we offer some general suggestions for both students and advisors to use to enhance the overall doctoral education experience. For example, students could be informed initially of the important factors to consider when choosing their advisor. In addition, faculty can be continually reminded of the importance of their role in ensuring a satisfactory doctoral student experience, including specific methods they can utilize to be more effective as advisors and mentors.

References


Author Note

Correspondence concerning this report should be addressed to James L. Soldner, Institute for Human and Rehabilitation Services, Assumption College, 500 Salisbury Street, Worcester, MA 01609