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Virtual relationships and real benefits: using e-mentoring to connect business students with practicing managers

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This article reports the results of our study of electronic mentoring (e-mentoring) in a population of business students. As career paths have become more fluid and less predictable, a growing number of educational and business organizations have implemented traditional and, more recently, e-mentoring programs. But practice is ahead of evaluation when it comes to e-mentoring. We attempted to fill this gap by looking more closely at strengths and weaknesses associated with this type of mentoring. Building on research in traditional mentoring and integrating literature in computer-mediated communication, education and management, we developed a model of e-mentoring's antecedents and outcomes. We tested our hypotheses using a sample of business students (protégés) who were mentored by practicing managers. It was found that perceived similarity in terms of attitudes and values is positively related to effective e-mentoring, while demographic similarity (gender, race) is not. Moreover, effective e-mentoring may lead to protégés' enhanced academic performance, professional network and job opportunities. We conclude with implications of our findings and a discussion of opportunities for future research.

Keywords: e-mentoring; mentor; protégé

Recent research confirms that professional careers are no longer linear and predictable; they are now polymorphous, boundaryless and technologically dependent (Peiperl, Arthur, Goffee, & Morris, 2000). These workplace trends have important implications for the use of mentoring to facilitate career development. A well developed body of research has described the numerous benefits protégés derive from successful mentoring relationships, including greater career satisfaction, faster rates of promotion and higher compensation, as well as increased confidence, self-awareness and organizational commitment (Allen, Eby, Poteet, Lentz, & Lima, 2004; Scandura, 1992). In the past, popular wisdom emphasized the importance of a face-to-face (FtF) community of professional relationships in producing maximum career success (Wellington, 2001). But changes in career patterns have opened the door to alternative mentoring approaches.

Given the millions of worldwide Internet users (Hof, 2005), in addition to an increasing reliance on technology for personal and professional connectivity, it is no surprise that individuals are utilizing email and computer-mediated communication (CMC) for relationship development (Sproull & Kiesler, 1999). Electronic mentoring (e-mentoring), a mutually

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beneficial relationship between a mentor and a protégé whereby new learning, career development and emotional support are provided via email and other electronic means (Ensher & Murphy, 2007), has exploded on the business scene (Ensher, Heun, & Blanchard, 2003; Single & Muller, 2001; Single & Single, 2005). Taking their cue from educational practitioners and researchers – pioneers in implementing e-mentoring in the early 1990s – these e-mentoring programs were borne out of efforts to address issues of social inequity, such as the limited opportunities for members of traditionally underrepresented groups (Single & Single, 2005). Contemporary organizations also use e-mentoring programs to remain competitive by recruiting and retaining diverse talent necessary for appealing to a wide-ranging customer base (Coy, 2005; Daniels, 2005).

Despite the growth of e-mentoring in business organizations, little is known about the efficacy of e-mentoring in the workplace. By contrast, rigorous empirical research on e-mentoring in the education arena has provided considerable insight (e.g. Cascio & Gasker, 2001; Friedman, Zibit, & Coote, 2004; Harris, Rotenberg, & O'Bryan, 1997; Kasprisin, Single, Single, & Muller, 2003; O'Neill & Harris, 2004–2005; Single, Muller, Cunningham, Single, & Carlsen, 2005). With our study we attempt to assess the usefulness of e-mentoring in the workplace by addressing the literature in which traditional mentoring has been studied (e.g. CMC, education, management) and empirically examining e-mentoring's predictors and outcomes in a business context.

Comparing electronic and traditional mentoring

Existing research demonstrates that in traditional or FtF mentoring, mentors provide instrumental, psychosocial or role-modeling support to facilitate protégés' career attainment and satisfaction (see Wanberg, Welsh, & Hezlett, 2003, for a review). E-mentoring – mentoring carried out almost exclusively via CMC – has been similarly conceptualized and found to provide protégés with tactical career advice (MentorNet, 2003; Miller, 1999). E-mentoring also facilitates the development of a professional network without the limitations of time, space, or geography (Ensher et al., 2003). In addition, the asynchronous nature of e-mentoring can facilitate more thoughtful interaction needed to address complex problems (Wade, Niederhauser, Cannon, & Long, 2001).

But the picture of e-mentoring's strengths is more mixed with respect to the issue of personal contact. Protégés in any context learn from their mentors by directly or indirectly observing their behaviors, discussing professional challenges and receiving performance-related feedback (Bell, 1996; Kram, 1985; Scandura, 1992). Because the observational component is difficult to replicate in a virtual context given the current constraints of technology and accessibility, protégés in e-mentoring relationships are less likely to receive the role modeling available in FtF settings. Role modeling is thus the function of mentoring that is *least* efficiently done in a virtual setting.

Paradoxically, the limited personal contact in an e-mentoring relationship can also be advantageous. Having an effective mentor can provide career benefits for anyone. But research shows that women and people of color have more difficulty establishing and maintaining effective mentoring relationships because of prejudice and the relative dearth of women and minorities at the upper levels of organizations (Clutterbuck & Ragins, 2003; Thomas, 2001). Because electronic communication lacks the visual cues that can lead to or reinforce bias and stereotypes based on demographic or status differences (Sproull & Kiesler, 1999; Turkle, 1995), initiating and maintaining a mentoring relationship electronically – as opposed to FtF – holds considerable promise for disadvantaged groups (Ensher et al., 2003; Hamilton & Scandura, 2003).

In the next section, we take a closer look at processes and outcomes of e-mentoring, and at how they differ from those of FtF mentoring.

Development of an e-mentoring model

Figure 1 presents an overview of the variables we consider most important based on our examination of the existing research related to FtF mentoring, e-mentoring and CMC. We draw from published conceptual papers on e-mentoring in management (e.g. Ensher et al., 2003; Hamilton & Scandura, 2003), CMC (e.g. Turkle, 1995; Walther, 1996) and education (e.g., Kasprisin et al., 2003; Muller & Barsion, 2003; Single & Muller, 2001) to formulate hypotheses related to the expected predictors and outcomes of e-mentoring.

E-mentoring predictors

Characteristics of mentor-protégé dyad

In a review of the FtF mentoring literature, Wanberg et al. (2003) identified mentor and protégé characteristics, such as demographic similarity and frequency of interaction, as key variables worthy of future study. Research by Thomas (1990) as well as by Ragins (2002) and her colleagues demonstrates that demographic similarity between mentors and protégés is relevant. However, this similarity seems most salient in the early stages of the relationship. For example, Ensher and Murphy (1997) found that student protégés assigned to professional same-race mentors reported greater satisfaction and instrumental support than protégés assigned to different-race mentors. Turban, Dougherty and Lee (2002) also examined the importance of gender and racial similarity among mentor-protégé dyads in an academic setting. They determined that protégés were more likely to have mentoring relationships with those similar in gender and race, even though gender and racial similarity did not influence the type or quantity of mentoring received. While students in gender-dissimilar relationships reported receiving less mentoring early in the relationship, these differences later dissipated.

Previous investigations have suggested that as mentors and protégés get to know each other, observable demographic characteristics become less germane, and diversity of attitudes, values, and goals becomes more salient to the relationship (Ensher & Murphy, 1997; Turban et al., 2002). Ensher, Grant-Vallone, and Marelich (2002) examined the effect of perceived attitudinal and demographic similarity among 144 professional and managerial mentors and protégés in spontaneously developed relationships. They found that while

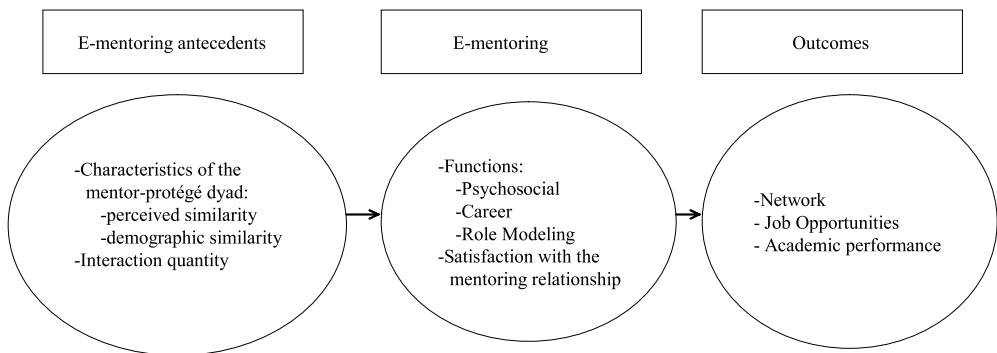


Figure 1. E-mentoring model.

perceived attitudinal similarity between mentors and protégés was a significant predictor of protégés' satisfaction and support received from their mentors, racial and gender similarity did not affect protégés' satisfaction or the degree of support they received from their mentor.

Taken together, these research findings suggest that the more that deep-level similarity (i.e. of values, attitudes, and goals) between mentors and protégés can be made evident and enhanced, the more beneficial the relationship will be for the protégés involved. The research also suggests that online mentoring relationships may have an advantage over FtF mentoring relationships because of the shift away from outward appearances to thoughts and feelings (Hamilton & Scandura, 2003; Toufexis, 1996). Because their relationships develop based more on commonality of interests and goals than on stereotypes and assumptions related to demography, participants may be more likely to self-disclose and thus build deeper relationships more quickly than in FtF settings (Joinson, 2001; Turkle, 1995). Hamilton and Scandura (2003) reinforce the notion that e-mentoring can be helpful in freeing mentors and protégés from the distortions of demographic cues. These findings led us to formulate hypothesis 1:

- H1: Perceived similarity (i.e. attitudes and values) will be positively related to protégés' assessment of e-mentoring effectiveness.

Hypothesis 2 reflects the fact that the medium for the mentoring relationship is electronic:

- H2: Perceived similarity will have a stronger relationship with protégés' assessment of e-mentoring effectiveness than will actual demographic similarity (race and gender).

Interaction quantity

While dyad similarity is relevant, so too is the need for frequent communication between the mentor and protégé to forge an effective relationship. Several FtF mentoring studies suggest that the quantity of interactions is important. Allen, Russell and Maetzke's (1997) examination of Master of Business Administration (MBA) students in a formal mentoring program showed a positive relationship between the amount of time spent with the mentor and protégés' satisfaction with the mentoring experience. Similarly, in Grant-Vallone and Ensher's (2000) study, graduate students involved in a peer mentoring program reported receiving significantly greater instrumental and psychosocial support when they had frequent contact with their mentor. Moreover, frequency of contact in traditional FtF mentoring relationships has been positively associated with mentor and protégé perceptions of business success (Waters, McCabe, Kiellerup & Kiellerup, 2002). CMC researchers also posit that frequent interaction between electronic partners will build and enhance the relationship (e.g. Walther, 1996). Online community studies have found that such environments – built around common interests – enable participants to obtain social support through frequent interaction with each other (Rheingold, 1993; Wellman & Gulia, 1999).

Large-scale e-mentoring programs have reported similar findings. The coordinator of the International Telementoring Program (Lewis, 2002) suggests that its recent technological improvements have facilitated increased communication between mentors and protégés, enhancing the perceived effectiveness and efficiency of the program. Successfully matched applicants at MentorNet¹ agree that frequent emails are needed to maintain effective communication (MentorNet, 2003). Frequent communication seems particularly important when protégés do not see their mentors FtF and thus cannot pick up on nonverbal cues. These findings led us to formulate hypothesis 3:

- H3: Protégés who interact more with their e-mentors will perceive their mentoring relationships as more effective and satisfying than those who interact less.

E-mentoring outcomes

Increased network and job opportunities

Participants in e-mentoring programs have indicated that this participation has expanded their network of professional contacts (Carter, 2002; Whiting & de Janasz, 2004). For example, the group known as Women of the National Aeronautics and Space Administration (NASA) has a primarily online mentoring program, but as protégés and mentors got to know each other, they decided to meet FtF (Ensher et al., 2003). This approach resulted in onsite visits where the protégés interacted not only with their own mentors but also with other NASA professionals, thus expanding their overall network of contacts. Having a professional network can increase one's knowledge base, access to resources, and ultimately job opportunities (Higgins & Thomas, 2001). In fact, 69% of participating MentorNet protégés mentioned that learning about their mentor's job and workplace was a key benefit for them. Similarly, business students who participated in an online mentoring assignment described an increase in general networking skills as an important personal and organizational benefit (Whiting & de Janasz, 2004). In 2004, Headlam-Wells reported that 28 women managers paired with women professionals via an e-mentoring program said they had expanded their professional network and experienced significant career development. These results allowed us to formulate hypotheses 4 and 5:

- H4: Protégés with more effective e-mentoring relationships will report a greater increase in the size of their professional network than will protégés with less effective e-mentoring relationships.
- H5: Protégés with more effective e-mentoring relationships will report a greater increase in job opportunities than will protégés with less effective e-mentoring relationships.

Academic performance

E-mentoring was pioneered in educational institutions, and not surprisingly, several studies demonstrate the positive impact of mentoring and e-mentoring on students' performance in educational settings. For example, Harris and her colleagues (1997) reported that K-12 students (and their teachers) communicating electronically with volunteer subject-matter experts in their Electronic Emissary Project did in fact improve their content expertise. Taechamaneestit (2000) concluded that the use of email to facilitate course-and-content discussions yielded better results than those obtained by students participating in traditional classroom discussions. The groups participating in email discussions demonstrated greater course-content knowledge – as measured by the final examination scores – than the group using traditional classroom discussion. Friedman et al. (2004), Lewis (2002) and Buckman and Lesesne (1999) likewise showed that student protégés improved their writing skills and ability to become more proactive learners as a result of their e-mentoring relationships.

While these studies suggest that e-mentoring improves academic performance, we uncovered few examples focusing on the use of e-mentoring between college students and working professionals (see Single et al., 2005, for a notable exception). None focused on the impact of e-mentoring on business students interacting with practicing managers. As O'Neill and Harris (2004–05) noted, workplace mentoring is designed to help protégés navigate the work setting. Unlike the K-12 student-to-student or student-to-expert studies reported here, when business professionals interact electronically with college students,

additional challenges emerge. Because the mentor and protégé work and learn in different settings, both have to consider the contextual perspective of the other (i.e. learning partner) before applying advice or insights in one's own context (O'Neill & Harris, 2004–05). Despite these challenges, we have made the prediction captured in hypothesis 6:

- H6: Protégés with more effective e-mentoring relationships will report a greater increase in their academic performance than will protégés with less effective e-mentoring relationships.

In sum, despite the explosion of e-mentoring programs in the business arena, empirical research investigating this new and important phenomenon is lacking. Commercial, academic and government organizations invest considerable resources in formal mentoring programs and, most recently, in the development of e-mentoring programs (Rickard, 2004). However, we know little about the processes and outcomes related to e-mentoring beyond descriptive statistics collected about participant reactions to and satisfaction with e-mentoring programs (e.g. Knapczyk, Hew, Frey, & Wall-Marencik, 2005; Single et al., 2005). Our study is unique in three ways: (1) we replicate and extend FtF mentoring research and test its applicability in a new, virtual setting; and (2) we draw from business, CMC and education literatures to formulate our hypotheses, suggesting that this literature can be a rich source for others interested in learning more about e-mentoring. Most importantly, (3) we present a conceptual model that examines not only whether e-mentoring works but also what antecedents determine its effectiveness and related protégé outcomes.

Methodology

Sample

The participants in our study were graduate and undergraduate business students² from two mid-sized universities on the east and west coasts of the United States. These students participated in a required online mentoring assignment (described in Whiting & de Janasz, 2004) in one of their business school courses, and upon completion of the assignment, were offered course or extra credit to respond to an online survey based on their e-mentoring experience.

For this assignment, students were required to identify a practicing manager (ideally with 10 or more years of experience, 10 or more direct reports, and budgetary responsibilities), explain and obtain the manager's commitment to participate in an electronic mentoring assignment, and correspond electronically (via email) with the manager on course-related concepts of greatest interest to the student (see Whiting & de Janasz, 2004, for more information about the assignment and requirements). A key goal of this assignment was to augment class materials by having the student electronically discuss class concepts with a practicing manager (Whiting & de Janasz, 2004). By posing questions to their mentors, students were able to glean valuable information about how course concepts (e.g. human resources, leadership, international management) played out in the workplace, how such concepts were affected by contextual factors (e.g. industry, background of the mentor), and how course-related skills and abilities influenced managers' success. Students were required to submit an analysis and critique of the mentors' answers (see Whiting & de Janasz, 2004, for a sample).

Of the total of 223 students enrolled in several classes in these universities, 183 participated, yielding a response rate of 82.1%. Those who responded were not significantly different from the total population and were primarily male (54.1%), single (92.3%) and

21.5 years old ($SD = 4.4$). The respondents were 70.5% Caucasian, 11.5% Asian, 8.7% Hispanic and 9.3% all other categories, and 53.4% worked at least 15 hours per week while engaged in their studies.

Measures

To examine the process of e-mentoring more closely, we assessed the model in two stages: variables likely to affect e-mentoring (dyad similarity and interaction quantity) and outcomes expected to be affected by e-mentoring and its antecedents. In both stages, the same control variables were used; however, e-mentoring was alternatively modeled as a dependent and independent variable. Existing, validated measures – where available – were used or modified; several new measures were developed and tested as well.

Dependent variables

E-mentoring was operationalized using two sets of measures: mentoring functions and satisfaction with the mentoring relationship. E-mentoring was considered effective relative to the degree of mentoring support (career, psychosocial, and role modeling) received by the protégé; effectiveness was also determined by protégés' assessment of their satisfaction with the mentoring relationship. Respondents indicated the degree to which they agreed with the statements using a five-point Likert scale, with higher scores indicating greater agreement. We used Scandura's (1992) mentoring functions (a total of 13 items comprising three functions), modifying the language to reflect electronic as opposed to FtF mentors. The five-item career support variable (e.g. 'my e-mentor provides advice on career progress') had a mean value of 3.40 and a reliability of .83. Psychosocial support was measured with five items (e.g. 'my e-mentor provides support and encouragement'); we obtained a mean value of 3.49 and a Cronbach alpha of .90. Three items assessed role modeling (e.g. 'I try to model my behavior after my e-mentor'); the mean and reliability were 3.83 and .69, respectively. Finally, we assessed satisfaction with the mentoring relationship with five slightly modified items from Young and Perrewé (2000) (e.g. 'overall, I am satisfied with my e-mentoring relationship'). The overall mean of this measure was 3.99, and the reliability was .91.

In the second stage of analysis, e-mentoring measures were among the independent variables modeled as predictors of three outcome variables, which we created for this research based on our belief that processes and outcomes of e-mentoring differ in several important respects from traditional mentoring. The *increased network* variable was created to tap into participants' perceptions of changes in the size and quality of their network as a result of their e-mentoring experience. The four items (e.g. 'this e-mentoring experience has resulted in an overall improvement in the quality of my network') were measured with a five-point Likert scale and demonstrated a reliability of .89. The mean and standard deviation were 3.62 and .84, respectively. A second outcome variable was created to assess participants' perception of the increase in *job opportunities* as a result of the e-mentoring relationship. The three items (e.g. 'as a result of this experience, I feel I now have access to potential job opportunities inside my e-mentor's organization') had a mean of 3.35 and Cronbach alpha of .89. Finally, we developed three items to assess students' perceptions of how their e-mentoring experience affected *academic performance* in their current class, as well as the application of the concepts to future work settings. Respondents indicated the degree to which they agreed with the items (e.g. 'by discussing course concepts with my e-mentor, I feel more confident in my ability to apply this

knowledge in my current or future workplace'), yielding a mean and Cronbach alpha of 4.00 and .83, respectively.

Independent variables

Two sets of variables were included as potential predictors of effective e-mentoring: mentor-protégé similarity and frequency of interaction. *Perceived similarity* was measured using a six-item modified version of the measure developed by Ensher and her colleagues (2002). The mean and reliability of this measure were 3.53 and .83, respectively. *Actual demographic similarity* was assessed by creating two variables to compare the gender and ethnicity of the protégé and mentor. Mentor/protégé gender was created as a dichotomous variable, where '1' represents a same-gender pair and '0' represents a cross-gendered pair; 57.7% of the respondents were in same-gender pairs. The same type of variable was created for mentor/protégé ethnicity; 67.2% of the respondents were in same-ethnicity pairs.³

Participants were asked how often they typically interacted with their mentor via email, phone, and written communication. Based on their responses, *frequency of interaction* with mentors was classified as low (up to 3.5 hours/month) (26.9%), moderate (4 to 7 hours/month) (52.7%), and high (at least 7.5 hours/month) (20.3%).⁴

Control variables

Previous relationship with mentor. Participants were asked whether they were already acquainted with the person selected to be their e-mentor, because familiarity can be an asset. Building on a current relationship – albeit in a different context – is likely to positively affect the quality of a mentoring relationship; this can be inferred from the research suggesting that informal or spontaneously developed pairings result in greater job satisfaction than those that are formally created (e.g. Ragins & Cotton, 1999; Ragins, Cotton, & Miller, 2000). Of the sample, 59.7% already knew their mentor prior to initiating the e-mentoring relationship (coded as 1); 40.3% did not (coded as 0).

Organizational level of mentor. In general, the higher the position of the mentor, the greater the mentor's visibility and connections, as well as the protégé's expectation for career support (Koberg, Boss, Chappell, & Ringer, 1994). Nearly 20% of the e-mentors were CEOs or business owners, 35.5% were upper-level managers (manage other managers), 24.7% were low- to mid-level supervisors, and 14% were professional/non-supervisors.

Protégé employment status. Since our respondents were students, we suspected that those employed at least part-time while enrolled would have a better sense of organizational life and the role mentors might play in it and would therefore have a more successful e-mentoring relationship. To control for these differences, we asked participants how many hours per week they typically worked. Of those who responded to this question (72.7% of the sample), 24.1% did not work, 22.5% worked 1 to 14 hours per week, 27.8% worked 15 to 25 hours per week and 25.6% worked at least 30 hours per week.

Results

We provide the means, standard deviations, correlations, and alphas for the study variables in Table 1. We conducted regression analyses to test our hypotheses in two phases; the

Table 1. Descriptive and correlational statistics among key study variables (reliabilities where computed are in **bold** on the diagonal).

	Mean	s.d.	Protégé gender F=1/M=2	Hours worked per week	Knew person before e-mentor	Inter-action quantity	Perceived similarity	M/P sex
Protégé hours worked per week: Recorded ^a	18.12	16.82	-.055					
Knew person before e-mentor yes=1/no=0	.59	.49	-.230**	-.041				
Interaction quantity in hrs. per month: Recorded ^b	5.52	6.33	-.121	-.041	.067			
Perceived similarity	3.53	.95	-.159*	-.013	.270***	.176*	.83	
Mentor/Prot. sex; same=1/not=0	.58	.50	-.444***	.018	.129 [^]	.080	.062	
M/P ethnicity; same=1/not=0	.67	.47	-.128 [^]	-.124	.311***	-.015	.253***	-.001
Career devel-opment fn.	3.40	.94	-.073	-.050	.168*	.192**	.462***	.012
Psychosocial support fn.	3.49	1.01	-.159*	-.051	.361***	.256***	.521***	.070
Role modeling fn.	3.83	.71	-.011	-.136	.159*	.129 [^]	.520***	.017
Mentor r'ship satisfaction	3.99	.86	-.003	-.066	.190**	.112	.459***	.013
Increased network	3.62	.84	-.021	.027	.027	.007	.224**	-.091
Improved academic performance	4.00	.69	.107	.046	-.066	.020	.250***	-.017
Increased job opportunities	3.35	.99	.002	.045	.159*	.185*	.374***	.023

Table 1. (Continued).

	M/P ethni-city	Career-development function	Psycho-social support function	Role modeling function	Mentor'ship effec	Increased network	Improved academic perform	Increased job opportunities
Protégé hours worked per week: Recorded ^a								
Knew person before e-mentor yes=1/no=0								
Interaction quantity in hrs. per month: Recorded ^b								
Perceived similarity								
Mentor/Prot. sex; same=1/not=0								
M/P ethnicity; same=1/not=0								
Career devel-opment fn.	.039	.83						
Psychosocial support fn.	.140 [^]	.699***	.90					
Role modeling fn.	.101	.579***	.567***	.69				
Mentor r'ship satisfaction	.132 [^]	.631***	.610***	.658***	.91			
Increased network	.105	.475***	.352***	.390***	.482***	.89		
Improved academic performance	.066	.353***	.286***	.439***	.503***	.484***	.83	
Increased job opportunities	-.002	.611***	.491***	.453***	.456***	.560***	.458***	.89

^a Responses were recoded to smooth out variation: **0** (0 hours; 24.1% of sample), **1** (5-14 hours/week; 22.5%), **2** (15-25 hours/week; 27.8%), **3** (30+ hours/week; 25.6%).

^b Responses were recoded to address nonnormal distribution: **1** (≤ 3.5 hours/month; 26.9% of sample), **2** (4-7 hours/month; 52.7%), **3** (7.5+ hours/month; 20.3%).

*** Correlation significant at the .001 level. ** Correlation significant at the .01 level. * Correlation significant at the .05 level. ^ Correlation significant at the .10 level.

results are available in Tables 2 and 3. To test hypotheses 1–3, we regressed effective e-mentoring (four variables that comprise the functions of and satisfaction with the mentor relationship) on the various predictor variables (mentor/protégé similarity and interaction quantity). Controlling for organizational level of the mentor, protégé hours worked per week and whether the protégé had a previous relationship with the mentor prior to the assignment, we found each of the four regression equations to be significant (r^2 ranges from .260 to .383; F ranges from 6.18 to 10.89, $p < .001$).

As predicted by hypothesis 1, perceived similarity was positively related to all four e-mentoring variables ($p < .001$). In support of hypothesis 2, effective e-mentoring was more

Table 2. Regression results of first stage of analysis: standardized beta coefficients shown.¹

Independent variables	Dependent variables			
	Career development	Psychosocial support	Role modeling	Satisfaction with mentor relationship
Previous r'ship w/mentor	.153 [^]	.258***	.034	.117
Org'l level of mentor	-.102	-.122 [^]	.037	-.114
Protégé hours worked/week	-.043	-.029	-.129 [^]	-.046
Mentor/protégé gender (1=same/0=not)	-.120	-.050	-.030	-.129
Mentor/protégé ethnicity (1=same/0=not)	-.162 [^]	-.072	-.041	-.007
Perceived similarity	.437***	.497***	.509***	.434***
Interaction quantity	.205*	.173*	.082	.156 [^]
R-squared	.273	.383	.296	.260
F	6.584***	10.888***	7.379***	6.177***

Note: Beta coefficients significant as shown: *** $p \leq .001$ level; ** $p \leq .01$ level; * $p \leq .05$ level; [^] $p \leq .10$ level.

Table 3. Regression results of second stage of analysis: standardized beta coefficients shown.

Independent variables	Dependent variables		
	Increased network	Increased job opportunities	Improved academic performance
Previous r'ship w/mentor	-.014	.003	-.110
Org'l level of mentor	-.116	.056	.086
Interaction quantity	-.027	.072	.039
Protégé hours worked/week	.069	.096	.103
Perceived similarity	.032	.078	.052
Career-development function	.376***	.532***	.097
Psychosocial support function	-.112	-.079	-.132
Role modeling function	.133	.119	.282*
Satisfaction with mentor relationship	.230*	.082	.366**
R-squared	.344	.409	.372
F	7.046***	10.978***	7.972***

strongly related to perceived similarity than to actual demographic similarity between the mentor and protégé (i.e. whether the pair is matched in terms of gender or ethnicity). In fact, actual similarity was unrelated to all of the e-mentoring variables. These findings seem to affirm that in the absence of visual cues of surface-level similarity, protégés are more attuned to and affected by the deeper characteristics (e.g. attitudes and values) shared with their mentors (Knouse, 2001; Toufexis, 1996).

Hypothesis 3 predicted that the more frequently protégés interact with their mentors, the more effective the relationship will be. As can be seen from Table 2, this hypothesis received partial support. Interaction quantity is positively related to two of the three mentoring functions: instrumental and psychosocial support. While only marginally significant, interaction quantity is positively related to satisfaction with the mentor relationship.

The next set of hypotheses (4–6) examined the outcomes of effective e-mentoring. To test these hypotheses, we regressed the outcome variables we developed specifically for this study on the control and dyad characteristic variables. As Table 3 shows, the three equations were all significant, with r^2 ranging from .34 to .41 and F ranging from 7.05 to 10.98 ($p < .01$). Hypotheses 4 and 5, reflecting our expectation that effective e-mentoring would be positively related to increased network and job opportunities, received partial support. Career development and satisfaction with the mentor relationship were positively related to students' perception of an increase in their professional network, while psychosocial support and role modeling were not. Career development was positively related to increased job opportunities; however, none of the other e-mentoring effectiveness variables were related to increased job opportunities.

Hypothesis 6 received partial support. Given the objectives of the online mentor assignment (see Whiting & de Janasz, 2004), we expected business students to report enhanced academic performance, such as improved understanding resulting from their electronic mentoring relationship with a business professional. Role modeling and satisfaction with the mentor relationship were significant predictors of improved academic performance ($p < .05$); however, career development and psychosocial support were not.

Discussion

The results of our study support existing research on traditional mentoring and offer new insights with respect to online mentoring relationships. One of the most interesting findings relates to the importance of mentor/protégé similarity in successful mentoring relationships. While those in traditional mentoring relationships receive many benefits, research by Ragins and her colleagues (e.g. Ragins, 1989; Ragins & Cotton, 1993, 1999) suggests that those in cross-gender or cross-ethnic FtF pairs face serious challenges. Our finding, that perceived similarity is a strong predictor of e-mentoring effectiveness while actual similarity is not,⁵ suggests that the use of electronic means to establish mentoring relationships reduces the salience of observable differences in favor of value similarity even in early-stage relationships such as the ones in this study. This finding is in contrast to an implication of the FtF mentoring literature: that demographic differences can initially impede mentors and protégés' positive impressions, although this effect may dissipate over time. Therefore, e-mentoring may be especially helpful for minority and women protégés.

How often protégés interact with their mentors affects both the quantity and quality of e-mentoring. Our findings demonstrate that the more interaction protégés had with their mentors, the more psychosocial and career support they received. In addition, the data suggest ($p = .06$) that interaction is directly related to satisfaction with the mentor relationship. On average, student respondents interacted with their mentors 5.5 hours per month; 73.1% of

the respondents interacted with their mentors at least four hours per month. In organizations where management is considering implementing an e-mentoring program, the benefits to participants easily outweigh the relatively minimal investment (an hour or more a week), as compared to FtF mentoring, which can require time-consuming arrangements as well as the actual travel time for the participants.

In terms of the relationship between e-mentoring effectiveness (modeled as e-mentoring received and satisfaction with the relationship) and expected outcomes, many of our findings were consistent with our predictions. Several subsets of these e-mentoring effectiveness/e-mentoring outcomes relationships reached significance. Taking our cue from FtF mentoring research, we predicted that e-mentoring would result in increased professional network and job opportunities. Recall that the career development function of mentoring relates to mentors' advice or actions that help a protégé realize career success. These measures address mentors' support with decisions related to the protégés' careers, as well as increased visibility within an organization and access to others and their networks within or beyond an organization. Not surprisingly, the career development function was positively related to both increased network and increased job opportunities, suggesting that, even in a virtual relationship, a mentor can help protégés realize relevant career-related benefits. Interestingly, satisfaction with the mentor relationship was also positively related to having an increased professional network. Presumably, when the e-mentoring relationship is successful and satisfying, both parties can benefit from the expansion of networks the new relationship brings. Conversely, when the relationship is unsatisfactory, the parties will be less motivated to associate with members of their partners' network. This interpretation reinforces the prevailing wisdom that mentoring is a mutually beneficial relationship (Wellington, 2001).

Given our student population, we were interested in whether participating in an e-mentoring relationship with a practicing manager resulted in improved academic performance (e.g. understanding and applying course-related concepts augmented through mentor discussions). Our findings – that role modeling and satisfaction with the mentor relationship were positively related to improved academic performance, while instrumental and psychosocial support were not – can be interpreted as follows.

Asking mentors about their career paths and organizational concepts enabled protégés to experience vicariously the world of work and gain an increased understanding of course-related concepts. This translates into increased academic performance, and by extension, future job performance. In addition, it is possible that student protégés place more stock in the validity of their mentor's advice and insights the more they see the relationship as effective or satisfying. This interpretation, combined with the lack of significant findings related to instrumental or psychosocial support, suggests that these business student protégés differentiate between academic and career-related development. Performing well academically may be seen as internally controlled and not influenced by career or emotional support.

Based on these findings, we suggest that future research, in particular a finer-grained analysis of the three functions of mentoring and relevant outcomes, is warranted. Cultivating multiple mentor relationships is critical in the current environment, and protégés need to assess their career needs and identify different mentors to help them meet these needs (de Janasz, Sullivan, & Whiting, 2003; Higgins & Kram, 2001). Accordingly, these different types of mentor relationships will yield different outcomes. New workforce entrants might consider a phased-in approach to mentor relationship development. Early on, protégés could seek mentors who provide psychosocial support in order to enhance their comfort and efficacy with mentoring. With this boost in confidence, the protégé might

identify one or more mentors who could provide instrumental or role-modeling support to facilitate career development and success. Thus, a seasoned protégé will be more capable of building and benefiting from mentor relationships than one who lacks experience in this role.

Limitations and future research

While our research model (Figure 1) posits a directional relationship between predictors and outcomes of e-mentoring, the cross-sectional data limits our ability to draw conclusions about the causality of the variables studied. We suggest that researchers address this limitation in the future by including both a pretest and a posttest of several study variables. In addition, although half of our students worked at least part-time, we are not yet able to generalize to populations of full-time employees. We hope our work motivates mentoring researchers to build on our process model and conduct comprehensive assessments of organization- and industry-wide e-mentoring programs.

Another limitation of this study concerns the duration and intensity of the mentoring relationship assessed by protégés. Kram (1985) determined that formal relationships last between six months and a year, while informal relationships last three to six years. Respondents were students enrolled in business courses that lasted no more than four months. While some students maintained a relationship with their mentor beyond the course's duration, many did not. FtF mentoring relationships do vary in duration and intensity (see Higgins & Kram, 2001), and e-mentor relationships may vary along these lines as well. Mentoring researchers might delineate the points on the continuum of e-mentoring relationships (i.e. based on how much communication occurs online versus on the telephone or in person) (Ensher et al., 2003) to examine more closely the relationship between these levels and e-mentoring predictors and outcomes.

Because e-mentoring represents a different context and medium from traditional mentoring, it is important to understand what constructs and measures can be directly applied from FtF mentoring and what must be created anew. Modifying measures designed to assess FtF mentoring relationship effectiveness to better reflect the electronic medium resulted in some significant findings; however, items developed specifically for e-mentoring may be needed. For example, whereas the reliabilities of the instrumental and psychosocial mentoring functions were .83 and .90, respectively, the reliability of the role-modeling function was only .69. Emulating one's mentor may be too difficult for an e-protégé; this measure may need to be re-evaluated in future e-mentoring research.

Our study has the potential to make an important contribution to the empirical understanding of the antecedents and outcomes associated with effective e-mentoring of business students. However, the results beg a number of significant questions for future e-mentoring researchers, particularly in areas related to focus, measurement, and perspective. In this study we focused solely on the positive aspects of e-mentoring, though Ensher et al. (2003) and Hamilton and Scandura (2003) both highlight a number of unique caveats and challenges related to e-mentoring. There is also an excellent body of literature on dysfunctional FtF mentoring relationships (Eby, McManus, Simon, & Russell, 2000; Scandura, 1998) that e-mentoring researchers would be well advised to draw from to better understand the context might magnify or diminish the potential for dysfunction to permeate FtF or electronic mentoring relationships.

In terms of measurement, we relied on protégés' self-reported perceptions of their mentor's effectiveness and related outcomes of academic performance, increased network and job opportunities. Researchers would probably find it advisable to triangulate

protégés' perceptions with more objective indices as well as with data gathered from the mentor. For example, for the career development function of mentor effectiveness, data could be gathered regarding number of internship placements, job offers and referrals made. For a variable such as academic performance, one could examine a student's actual grade in a course.

Consistent with trends in the mentoring research, we focused exclusively on the perspective of the protégés and the benefits they receive. Scholars could make an important contribution by also examining mentors' motives for getting involved in e-mentoring, as well as benefits they derive from the relationship. Anecdotal evidence from e-mentoring programs such as MentorNet suggests that e-mentors gain many of the same rewards from mentoring online as their FtF counterparts, including a fresh perspective and a sense of generativity (e.g. Philip & Hendry, 2000; Ragins & Scandura, 1999; Whiting & de Janasz, 2004). An ideal future study would be one that compares an e-mentoring program with an FtF mentoring program.

Finally, the students involved in this e-mentoring experience received instructions as to mechanics and requirements of the online mentoring assignment and then carried out their e-mentoring relationship without any intervention from the instructor (except in extreme cases). Another promising area of future research concerns direct facilitation, wherein a third party keeps tabs on the mentor/protégé interaction and provides advice and assistance throughout the process (Harris et al., 1997). Whether direct facilitation (primarily used in K-12 e-mentoring programs) would have increased the positive effects of e-mentoring on the outcomes tested in this study is unknown but worthy of future study.

In short, this study offers important implications for managers and organizational leaders. E-mentoring compares favorably to traditional mentoring for several reasons. Employees or students who feel they could benefit from a mentoring relationship but who are uncomfortable approaching a potential mentor in person may find it easier to initiate contact online. Moreover, those who might normally (or traditionally) be marginalized due to their demographic characteristics or status may find e-mentoring particularly helpful. Protégés can use e-mentoring to build an even larger and more diverse network of mentors who vary in organizational membership and personal characteristics, giving them an expanded perspective outside their own referent group. Finally, mentors and protégés alike may find that e-mentoring can improve even marginal relationships that ordinarily might wither away. These findings lead us to recommend the inclusion of e-mentors along with face-to-face mentors in individuals' constellation of mentoring relationships.

Notes

1. MentorNet pairs undergraduate and graduate female students with professionals in science, technology, engineering, and math (see MentorNet, 2003 and Single & Muller, 2001, for more information).
2. Of the total, all of the undergraduate students ($n = 162$) were full-time students, while 17 of the 21 graduate students were full-time employees/part-time students.
3. Of these 123 same-ethnicity pairs, only seven represented minority-minority (i.e. nonwhite) pairs. A recent trend in community and education mentoring takes a closer look at the breakdown of same-ethnicity pairings as it relates to overall effectiveness of the mentoring relationship. Our small number of minority-minority mentor/protégé pairs renders this type of analysis impossible.
4. Given the non-normal distribution of this variable, we felt that utilizing frequency as a continuous variable would be less accurate than creating a dichotomous measure.

5. Recall that one third of our mentor/protégé pairs were cross-ethnic pairs and 42% were cross-gender pairs.

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