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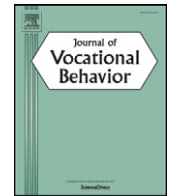
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Protégé career aspirations: The influence of formal e-mentor networks and family-based role models[☆]



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ABSTRACT

Using longitudinal data from a nine-month e-mentoring program, we analyzed the influence of formal e-mentor networks and family-based role models on increases in both psychosocial and career-related outcomes. Findings indicate that e-mentor network relationship quality positively influenced general- and career-based self-efficacy which, in turn, enhanced the objective career aspirations of underprivileged youth. Moreover, we address both the compensatory and complementary perspectives of social capital to assess the moderating influence that access to educational role models within the family has on this process. Implications of the findings and areas for future research are discussed.

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Mentoring has emerged as a significant area of interest over the last several decades, with research examining both formal and informal mentorships within the workplace, academic, and youth mentoring contexts (Allen, Eby, O'Brien, & Lentz, 2008). Numerous studies have identified a host of career-related benefits for protégés including increased salary and promotions as well as enhanced job and career satisfaction (Eby, Allen, Evans, Ng, & DuBois, 2008; Kammeyer-Mueller & Judge, 2008). Despite these advancements though, scholars have noted that studies of career attitudes have been conducted almost exclusively within workplace mentoring, thus far failing to address the influence of youth and academic mentoring on perceptions of career opportunities and expectations for career advancement (Eby et al., 2008). Consequently, we know little about the broader, more distal impact of youth and academic mentoring on career-related motivation and long-term career goals. This is important because adolescence and early adulthood are characterized by periods of identity development and the formation of occupational self-image (Erikson, 1963; Levinson, Darrow, Klein, Levinson, & McKee, 1978). As such, youth and academic mentoring may have profound influence on the trajectory of protégés' careers and lives by influencing the initial formations of career identity and ambition.

To address these gaps, this study examines the development of career aspirations among individuals in the formative stages of career exploration. *Career aspirations* represent an "individual's ideal career goals" and have been found to be a significant predictor of later occupational attainment (e.g. Holland & Lutz, 1967; Strong, 1953). Specifically, we focus on the development of career aspirations among late-stage high school students preparing for the impending transition to the workforce and/or college. As such, the preliminary aspirations formed during this period of transition are likely to have strong implications on the course of individuals' careers by providing the foundation for career direction and future career growth.

Moreover, because studies have shown that demographic factors such as race and socioeconomic status may act as a deterrent for youth to 'dream big' (Bigler, Averhart, & Liben, 2003; Howard et al., 2011), this study focuses on a formal mentoring program among public schools in which at least two-thirds of the school's student population falls below the federal poverty threshold. Although several career theories have suggested that socioeconomic status plays a role in shaping career aspirations (Gottfredson, 1981; Lent, Brown, & Hackett, 2000; Savickas, 2005), we have little understanding of the role that mentoring may play in

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developing the aspirations of youth from these under-represented groups. Previous research has suggested that mentoring relationships may be particularly important for these “at risk” groups because they often encounter many additional challenges beyond those faced by individuals from more advantaged backgrounds (Eby et al., 2008). As such, the primary contribution of this study is to examine the process through which formal mentoring can enhance the long-term objective career aspirations of at risk youth from low socioeconomic status.

In addition, preliminary research has suggested that youth mentorships may be more beneficial when accompanied by other resources and support (Kuperminc et al., 2005). In this vein, Adler and Kwon (2002) have suggested that social capital, including positive mentorships, can either substitute for or complement other resources that individuals possess. Of particular relevance to individuals from lower socioeconomic backgrounds may be the existence of positive family role models who can serve as a source of education- and career-related motivation, guidance, and support. Therefore, we contrast the degree to which positive mentorships either substitute for or complement educational and occupational role models at home.

Furthermore, this research was conducted across a nine-month formal mentoring program in which protégés developed multiple relationships with a “network” of mentors and communicated with their mentors entirely through electronic media (i.e., e-mentoring). This design enables this study to respond to three other distinct calls within the mentoring literature. First, although most research has focused on a single mentor-protégé dyad, scholars have suggested that “research will benefit from considering developmental relationships with multiple mentors simultaneously rather than concentrating on the behavior of a single influential individual” (Kammeyer-Mueller & Judge, 2008: p.279). Additionally, research has primarily focused on traditional face-to-face mentoring relationships (Cotton, Shen, & Livne-Tarandach, 2011). However, scholars have emphasized the need to investigate alternative sources, such as e-mentoring programs, given that newer generations of workers are increasingly tech-savvy and conventional relationships are becoming both less desirable and less common (Byrne, Dik, & Chiaburu, 2008; Ensher, Heun, & Blanchard, 2003; Headlam-Wells, Gosland, & Craig, 2006). Finally, a systematic review of mentoring research methods revealed an over-reliance on cross-sectional designs, leading Allen et al. (2008) to argue that “longitudinal research is sorely needed to examine the taken-for-granted assumptions about organizational mentoring” (p. 350).

1. Theory and hypotheses

1.1. The influence of e-network relationship quality on general- and career-based self-efficacy

Relationship quality is an essential element in evaluating the success of mentoring programs (Allen, Eby, & Lentz, 2006) because it relates to both the effort put into the mentorship and its long-term sustainability (Huston & Burgess, 1979; Sprecher, 1992). Moreover, high-quality mentoring relationships have been found to help protégés develop career-related competencies and professional identity (Austin, 2002; Kram, 1985; Levinson et al., 1978).

Drawn from social-learning theory (Bandura, 1986), self-efficacy refers to one’s “conviction or confidence about his or her abilities to mobilize the motivation, cognitive resources, or courses of action needed to successfully execute a specific task within a given context” (Stajkovic & Luthans, 1998: 66). In essence, self-efficacy involves one’s belief in his or her ability to successfully accomplish a goal or perform an act. We incorporate two forms of self-efficacy in our study: general self-efficacy (GSE) and career-based self-efficacy (CSE).

One way in which self-efficacy can be developed is through social persuasion (Bandura, 1994). Social persuasion involves strengthening individuals’ beliefs that they have what it takes to succeed through the verbal persuasion of others. Within the e-mentoring context, a protégé may gain confidence through the encouragement of mentors who have successfully accomplished tasks or mastered skills with which the protégé may relate (Bandura, 1994). Through online communication, protégés will come to understand the knowledge, skills, and abilities of their mentors and gain insights and confidence regarding their own abilities as well.

We suggest that the extent of social persuasion that occurs is dependent upon the quality of the relationships that develop between the protégé and his or her network of mentors. High quality relationships foster self-disclosure (Wanberg, Welsh, & Kammeyer-Mueller, 2007), creating more open relationships and more positive behavioral and attitudinal changes (Baird & Kram, 1983; Godshalk & Sosik, 2000; Waters, 2004). As protégés and mentors share more of their thoughts and experiences, opportunities for social persuasion become both more prevalent and more effective. Conversely, low quality relationships may be characterized by “interpersonal incompetency,” or the inability to relate on a personal level, thereby minimizing learning experiences and hindering the effectiveness of the mentoring process (Eby, McManus, Simon, & Russell, 2000). Therefore, we propose that after controlling for pre-program efficacy levels:

Hypothesis 1. *E-mentor Network Relationship Quality positively influences a) General Self-Efficacy (GSE) and b) Career-based Self-Efficacy (CSE).*

Few studies have examined factors that may moderate mentoring relationships (Allen, Eby, Poteet, Lentz, & Lima, 2004). In response, this study offers a preliminary examination of the influence of mentoring relationships given the presence of additional developmental resources. Just as mentors may influence protégé self-efficacy through social persuasion, self-efficacy can also be enhanced through vicarious experience with role models (Bandura, 1994). Through modeling, individuals gain the belief that if the referent other can successfully accomplish a task or navigate a situation, so can the focal person (i.e. the protégé). Although mentors may, at times, serve as role models for their protégés, the extent to which this function is necessary and/or valuable may

depend on the presence of other positive figures whose thoughts and behaviors the protégé may also attempt to model. Given the well-established influence that education has on career growth and success (Ng, Eby, Sorensen, & Feldman, 2005), we suspect that educational role-models positively influence protégés' perceptions of their own capabilities and career potential. Therefore, we examine the nature of the relationship between e-mentor network relationship quality and general and career-based self-efficacy when other, family-based educational role models are available.

As noted previously, social capital, such as the value embedded in a network of mentors, can either substitute for or complement other resources at an individual's disposal (Adler & Kwon, 2002). A substitution perspective suggests that the effect of a quality mentor network is especially strong when protégés do not have adequate levels of other resources, such as educational role models, because the vicarious experiences provided by the mentorships substitute or compensate for the absence of available role models. That is, access to educational role models via the formal mentoring program may be particularly important for individuals who lack family-based educational role models that they can look up to and model themselves after. In contrast, a complementary perspective assumes that a quality mentor network has greater impact for individuals with access to other educational models. A complementary perspective therefore implies that the presence of a family-based role model offers synergistic effects that enable protégés to more fully capitalize on the vicarious learning and guidance provided by their mentors. Although there is some preliminary evidence in support of the complementary perspective with respect to various other resources (Kuperminc et al., 2005), we are unaware of research that specifically addresses the presence of family-based role models on these relationships. Because prevailing theory supports both perspectives, we offer the following two competing hypotheses:

Hypothesis 2. *Access to a family-based educational role model moderates the positive relationship between Network Relationship Quality and both GSE and CSE such that the relationship is stronger for protégés who have an educational role model in the family than for those who do not (complementary perspective).*

Hypothesis 3. *Access to a family-based educational role model moderates the positive relationship between Network Relationship Quality and both GSE and CSE such that the relationship is stronger for protégés who do not have an educational role model in the family than for those who do (substitution perspective).*

1.2. The influence of general- and career-based self-efficacy on career aspirations

The final paths in our model suggest that the general and career efficacies developed throughout the program will then translate into higher career aspirations. Given that this study is concerned with the mentoring-related benefits for individuals whose socioeconomic status is very near or below the poverty threshold, we focus specifically on the nominal, objective career aspirations that have the most direct impact on changing protégés' socioeconomic station. Although a full conceptualization of career aspirations will include an array of subjective indicators, we have chosen to take a more parsimonious approach because we suggest that these factors (e.g., income, status, prestige) likely represent the dominant values at the forefront of career-related concerns for disadvantaged youth.

Self-efficacy is a foundational element in the determination of work values and goals (Locke & Latham, 1990, 2002). Numerous studies have identified the positive effects of general self-efficacy and various task efficacies on work and career-related outcomes, including job performance and career success (Abele & Spurk, 2009; Locke, Frederick, Lee, & Bobko, 1984; Saks, 1995). Perhaps this is because individuals with high self-efficacy are less sensitive to negative feedback (Nease, Mudgett, & Quinones, 1999; VanYperen, 1998), and exhibit greater hope, optimism, and resilience in their careers (Luthans, Avolio, Avey, & Norman, 2007).

Given that self-efficacy is an important factor in individuals' work and career-related outcomes, it is likely to also influence individuals' outlook on future career possibilities. That is, protégé self-efficacy may positively influence perceptions regarding future career options and perceived control over employment outcomes (Saks & Cote, 2006). Thus, protégés with enhanced general and career-based self-efficacies may perceive greater control over their career pursuits and therefore have higher occupational aspirations than their less efficacious counterparts. In turn, these perceptions empower protégés to reassess their alternatives and strive for higher career goals, a notion consistent with evidence of an association between self-efficacy and enhanced career exploration (Turner & Lapan, 2005; Yang & Gysbers, 2007). Therefore, we suggest that protégés' will revise their preliminary career goals and strive for greater occupational heights as a result of the efficacy developed throughout the e-mentoring program.

Hypothesis 4. *a) GSE and b) CSE positively influence objective career aspirations at the end of the e-mentoring program.*

2. Method

2.1. Procedure and sample

Data for this study were collected as part of a larger, longitudinal research program the authors are participating in with icouldbe.org (ICB) (<http://www.icouldbe.org>). ICB is a not-for-profit organization that creates and manages on-line adult-youth mentoring programs. From its inception in 2000, ICB has matched adult mentors with over 10,000 students from schools

internationally. The mentors and youth follow a one (academic) year curriculum developed by ICB that focuses on building student self-esteem, student knowledge of basic financial principles and career exploration. All contact between the students and mentors is done exclusively online and is conducted anonymously through the use of screen names. Adults willing to mentor students are identified through corporate sponsors and volunteers who have learned about ICB primarily through Volunteer Match (<http://www.volunteermatch.org/>), an organization that matches volunteers with service opportunities that are consistent with the interests of the volunteers. All mentors go through a background and identity check and a four module mentor training program before interacting with students. Each mentor may be assigned up to five students. ICB also monitors all online interactions between the mentors and students, insuring that no addresses or real names are exchanged. Protégés interacted with up to three mentors throughout the program.

Students who participate in the mentoring program are enrolled in public schools and each school agrees that the program will be a mandatory component of a course during the school year. Teachers set aside class time each week for the students to interact with their mentors online and to progress through the curriculum.

The data for this study were collected from students enrolled in fifty high schools located in the western and northeastern regions of the US. Students enrolled in the programs were required to complete an online survey prior to starting the program and were asked to complete a second online survey at the completion of the program. Fourteen hundred seventy-one students started the program and completed surveys at time 1; six hundred eighty-seven completed surveys at time 2. While twenty-six students completed surveys at time 2, but not at time 1, a total of 661 students completed surveys at both time 1 and time 2. Program managers at ICB indicated that, based on their experience, the attrition rate was primarily due to students either dropping out of school or transferring to another institution. The program managers also indicated that attrition rates in this year were in line with other years. Since structural models were used to test the hypotheses, we eliminated all missing data, thus ensuring that the same data were used across all our analyses which reduced our final sample size in the analyses to 453 respondents. Of the 453 respondents in the final sample, 57.4% were Hispanic/Latino, 13% were African American, 14.9% Caucasian, 13.9% Asian American and .4% Native American; 55.2% were female.

2.1.1. Measures

2.1.1.1. Program outcome. Objective career aspirations was measured with one objective question in which respondents were asked to indicate, “Ten years from now, what type of job do you want to be doing (try to be as specific as you can)?” Respondents were given an open textbox in which to provide a qualitative response. To quantify the occupational responses into an objective measure, The Nam–Powers–Boyd Occupational Status Scale for the year 2000 was utilized. The Nam–Powers–Boyd Occupational Status Scale (Nam & Boyd, 2004) is a widely cited measure of occupational status based on education and income information obtained from the US Census Bureau. The scale represents a level of living for persons employed in particular occupations with scores ranging from 1 (lowest level of living) to 100 (highest level of living). Examples of higher ranked occupations include dentist (100), physician (100), and lawyer (99); lower ranked occupations include dishwasher (1), food preparation worker (3), and maid and housekeeping cleaner (7). Mid-range occupations include travel agent (56), first line supervisor/manager of retail sales workers (60), and bookkeeping, accounting, and auditing clerk (48). The measure has been used throughout the social sciences as a dependent variable of occupational status (Powers & Seltzer, 1998; Powers, Seltzer, & Shi, 1998).

Respondents’ pre- and post-program career aspirations were categorized according to the Nam–Powers–Boyd Occupational Scale by three independent reviewers. Inter-rater reliability was calculated based on the three reviewers at .72. Variance in the coding primarily resulted from necessary inferences made by reviewers regarding job specialization when more general responses were provided. For instance, a respondent stated “I want to be a teacher,” which one reviewer categorized and scored as “Secondary school teachers” (86), while the other two reviewers categorized and scored as “Elementary and middle school teachers” (83). Another example was “I want to be working in a medical position while continuing toward a higher degree,” which was rated as “Medical assistants and other healthcare support occupations” (42), “Miscellaneous health technologists and technicians” (60), and “Health diagnosing and treating practitioner support technicians” (49) respectively. The average of the three scores was taken with the post-career aspirations score included as the dependent variable in the analyses and the pre-program score used as a control.

2.1.1.2. Antecedent. E-mentor network relationship quality. Since protégés developed relationships with up to three mentors, they were asked to answer ten items for each mentor regarding the quality of each protégé–mentor relationship. To overcome the non-independence of the data as a result of combining responses for multiple mentors, the mean score for each of the ten-items was calculated across mentors. As will be discussed later, the ten items were then used to create five parcels that were subsequently used to represent the latent variable, E-mentor network relationship quality. However, to ascertain reliability of the overall measure, we calculated the alpha coefficient of the ten items averaged across mentors ($\alpha = .94$, time 2). Sample items included: “In thinking about your interactions with this e-mentor, please respond to the following for the e-mentor that you have had ongoing contact with:” ‘Was there when I needed him/her’, ‘Showed an interest in my feelings’ and ‘I felt good about my experiences with this e-mentor’. Responses were made on a five point scale, 1 = Not at all to 5 = To a very large extent.

2.1.1.3. Mediators. General self-efficacy. We used 9 of the 10 items in the General Self-Efficacy scale whose psychometric properties have been well established across studies (Scholz, Gutiérrez-Doña, Sud, & Schwarzer, 2002). Sample items include: “I am certain I can accomplish my goals”, “I can always manage to solve difficult problems if I try hard enough.” Responses were made on a 4

point response scale, 1 = Not true at all, 2 = Hardly true, 3 = Moderately true, 4 = Exactly true. The measure showed strong reliability $\alpha = .88$ (at time 1, used as a control) and $\alpha = .94$ (at time 2).

Career-based self-efficacy: In addition to fostering the participant's general self-efficacy, an overall objective of the program was to enhance student career development competencies. Working with the ICB program staff, five items were created to measure career-based self-efficacy. A sample item includes 'I am good at interviewing for a job.' and 'I can write a professional resume that would get me a job'. Responses were made on a ten point scale, 1 = Strongly disagree, 5 = Somewhat agree, 10 = Strongly agree. Alpha coefficient indicated strong internal reliability, $\alpha = .87$ (at time 1, used as a control) and $\alpha = .93$ (at time 2).

2.1.1.4. Moderator. Educational role model: In order to ascertain whether respondents had access to family members who had a college education, we asked, "Do any members of your immediate family (parents, brothers or sisters) have a 2 or 4 year college degree?" Respondents answered either Yes or No (0 = No, 1 = Yes).

2.1.1.5. Controls. (1) Race, (2) Gender, (3) Pre-program general self-efficacy and career-based self-efficacy, (4) Pre-program career aspirations, and (5) number of mentors in network were controlled during analysis. Since race of the student was measured using five categories, four dummy variables (coded 1 = Yes, 0 = No) were created for racial categories of (1) Asian/Pacific Islander, (2) Black/African American, (3) Hispanic/Latino and (4) Native American/Alaskan Native. As such, White/Caucasian is used as the referent group in the analyses. A dummy variable was also used to measure the gender of the respondent (1 = Male, 0 = Female). Finally, since protégés had the opportunity to develop relationships with up to three mentors, but not all took for advantage of the opportunity, we conducted a one-way ANOVA to determine if there were differences in relationship quality with respect to the size of the network. As anticipated, results indicated significant differences in ($F(452) = 209.16$ $p < .001$). Therefore, we controlled for the number of mentors with which each protégé interacted.

2.1.2. Analyses

We used structural equation modeling with AMOS 18 (Arbuckle, 2005) to examine the fit of our measurement and structural models to the data and to test our hypotheses. We tested the measurement model using confirmatory factor analysis of the relationships between the indicators and their respective latent variables. We then tested a structural model which examined the effects shown in Fig. 1 and allowed us to test our Hypotheses. The fit statistics included (a) chi-square goodness-of-fit statistic, (b) CFI (Bentler, 1990), and (c) RMSEA (Browne & Cudeck, 1993).

2.1.2.1. Indicators. We used latent variable structural equation modeling to test our hypothesized model. For e-mentor network relationship quality and general self-efficacy, we followed the procedure suggested by Mathieu and Farr (1991) to create parcels (i.e., averages of several scale items) as indicators of the latent variables. Five parcels were created based on the ten and nine-items representing relationship quality and general self-efficacy, respectively. Averages of the items based on their factor loadings were created with items with the lowest, highest, and middle factor loadings combined to form the first indicator. Items with the next lowest, highest and middle factor loadings were combined to form the second indicator, and so on until all of the items were used. Since GSE had an odd number of items, the left-over item was used as the fifth indicator. For CSE, we used each of the five items as individual indicators. Observed variables were used for both family-based educational role model and career aspirations.

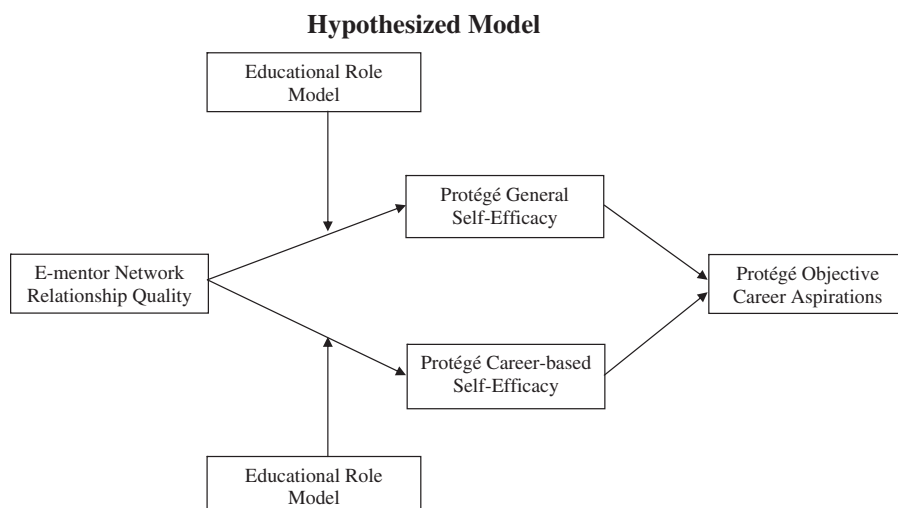


Fig. 1. Controlling for: Race, Gender, Number of mentors, Pre-program GSE, Pre-program CSE, Pre-program career aspirations.

In order to create the interaction term for relationship quality X educational role model, we followed the procedure suggested Marsh, Wen, and Hau (2004). We created a new latent interaction variable with five parcels. These parcels were created by multiplying each of the five relationship quality indicators by the observed variable, educational role model. This new latent interaction variable, along with the observed moderator variable, was then added to a structural model.

3. Results

Table 1 shows the means, standard deviations and correlations of the model variables.

3.1. Measurement model

The measurement model fit the data well. Although the chi-square for the model was significant, the other fit statistics met acceptable criteria (χ^2 (246), $N = 453$) = 940.99, $p < .001$; ($\chi^2/df = 3.83$, CFI = .92, RMSEA = .07). The standardized regression weights for the indicators ranged from .59 to .96 and all of the relationships between the indicators and their respective latent variables were statistically significant ($p < .001$).

3.2. Structural model

Results indicate that our structural model fits the data well, χ^2 (362, $N = 453$) = 937.34, $p < .001$; ($\chi^2/df = 2.59$, CFI = .94, RMSEA = .06). The path coefficients among the study variables are shown in Fig. 2.

The findings provide support for Hypotheses 1a and 1b, which predicted positive relationships between the quality of the mentor–protégé relationships within the network and (a) general self-efficacy and (b) career self-efficacy (GSE: $\beta = .24$, $p < .01$; CSE: $\beta = .32$, $p < .01$). Results indicate that the interaction of e-mentor network relationship quality with educational role model significantly predicted both general and career-based self-efficacy (GSE: $\beta = .09$, $p < .05$; CSE: $\beta = .10$, $p < .05$). Given discrepancies in interaction methodologies within the SEM literature, we ran additional analyses for the moderating hypotheses. Results using regression with SPSS were consistent with the results reported in this manuscript. An examination of the plots (Figs. 3 and 4) and results of simple-slope tests (Cohen, Cohen, West, & Aiken, 2003) indicate support for Hypothesis 2. Specifically, the relationship between e-mentor network relationship quality and general self-efficacy was significant only for individuals with an educational role model in the family ($t = 3.38$, $p < .001$); the relationship was not significant for those without an educational role model ($t = .82$, *ns*). Although the relationship between e-mentor network relationship quality and career-based self-efficacy was significant for both those with an educational role model ($t = 5.92$, $p < .001$) and those without ($t = 2.81$, $p < .01$), the relationship was stronger for those with an educational role model in the family. Thus, results support a complementary perspective and therefore, Hypothesis 3 reflecting the substitution/compensatory perspective was not supported.

Hypothesis 4a, which predicted that protégé general self-efficacy would be positively related to career aspirations when controlling for protégé aspirations at the start of the program, was supported ($\beta = .10$, $p < .05$), as was Hypothesis 4b, which predicted that protégé career-based self-efficacy would be positively related to career aspirations when controlling for career aspirations at the start of the program ($\beta = .13$, $p < .01$).

4. Discussion

This study examined the impact of a formal e-mentoring program on the career aspirations of at risk youth. In so doing, we utilized a longitudinal research design to examine the influence of an important facet of the mentor–protégé relationship – network relationship quality – on protégé self-efficacy and, in turn, on post-program career aspirations. Moreover, we examined the role that family-based role models may play on protégés' psychosocial outcomes. As such, the study addressed the need to study career attitudes in youth mentoring (Eby et al., 2008), as well as responded to calls to explore alternative forms of mentoring beyond traditional face-to-face relationships (Byrne et al., 2008; DiRenzo, Linnehan, Shao, & Rosenberg, 2010; Eby, 1997; Ensher et al., 2003), understand the influence of mentor networks (Cotton et al., 2011; Kammeyer-Mueller & Judge, 2008), and implement longitudinal designs in mentoring research (Allen et al., 2004, 2008; Kammeyer-Mueller & Judge, 2008).

Table 1

Means, standard deviations, and partial correlations for all variables.^a

Variable	M	SD	1.	2.	3.	4.
1. E-mentor network relationship quality	2.82	1.02				
2. Post-program general self-efficacy	7.45	1.70	.13**			
3. Post-program career-based self-efficacy	6.42	2.48	.27**	.38**		
4. Family-based educational role model	.38	.49	.04	-.05	-.01	
5. Post-program objective career aspirations	78.92	18.67	.08	.14**	.14**	-.03

^a $N = 453$. The partial correlations in this table controlled for race, gender, total number of mentors, pre-program career self-efficacy, pre-program general self-efficacy, and pre-program career aspirations.

* $p < .05$.

** $p < .01$.

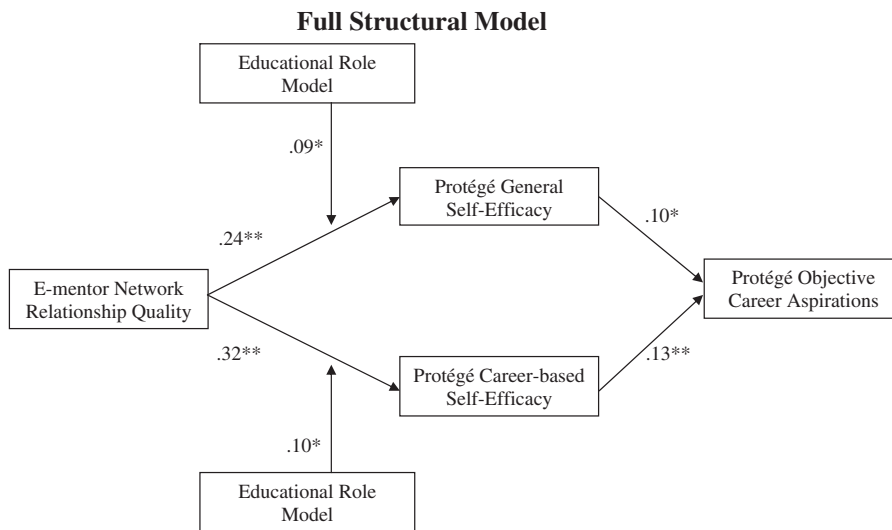


Fig. 2. Controlling for: Race, gender, Number of mentors, Pre-program GSE, Pre-program CSE, Pre-program career aspirations. $*p < .05$. $**p < .01$.

Results indicated that protégés who participated in high quality relationships with their network of e-mentors experienced enhanced general and career-based self-efficacy at the conclusion of the program. These findings are consistent with prior research that has found mentoring relationships to be beneficial in building and strengthening important psychosocial outcomes (Allen et al., 2004; Chan & Ho, 2008; DiRenzo et al., 2010; Kram, 1985; Smith-Jentsch, Scielzo, Yarbrough, & Rosopa, 2008; Waters, McCabe, Kiellerup, & Kiellerup, 2002). Our findings are particularly enlightening given that we were able to control for protégés' pre-program levels of GSE and CSE due to the longitudinal nature of the data. In addition, because much of the previous research focusing on characteristics of the mentoring relationship has explored factors that contribute to, rather than outcomes that result from, high quality relationships (e.g., Allen et al., 2006; Eby et al., 2008), future research should continue to address the beneficial outcomes associated with positive attributes of mentor–protégé relationships. Moreover, because research has merely scratched the surface of what can be learned regarding mentor networks, interesting research might address various other characteristics of the mentor network (e.g., network diversity) as well as how individuals develop and cultivate mentor networks over time.

Additionally, this study offers insight into the nature and value of mentorships in conjunction with additional protégé resources. Consistent with Adler and Kwon (2002) we suggested that the resources derived from one's mentor network would serve to either compensate for a lack of, or complement the value of family-based educational role models. Our findings support a complementary perspective as the positive relationship between e-mentor network relationship quality and both GSE and CSE was stronger for protégés that also had access to an educational role model in the family. In particular we found that although mentor networks aided the development of CSE for both groups, the relationship was weaker for individuals without access to a role model, and there was practically no effect on GSE for this group. This finding suggests that while the formal mentoring program was successful at advancing a targeted context-specific self-efficacy (i.e. career-based), broader notions of general competence and esteem may be best derived from more informal sources. With this in mind, we wonder whether this complementary role holds true across other resources as well. For instance, might mentor networks serve compensatory or complementary roles for education, motivation, financial, or other

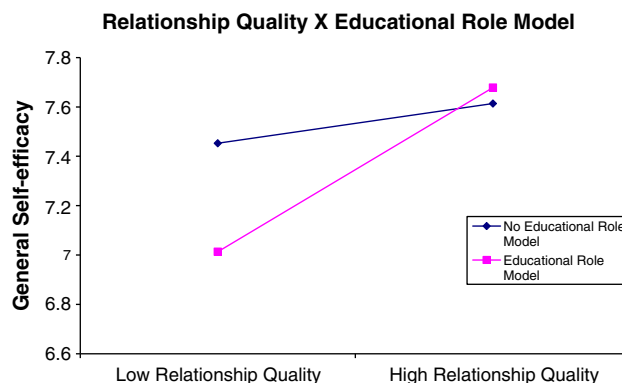


Fig. 3. Interaction of mentor–protégé relationship quality and educational role model on general self-efficacy.

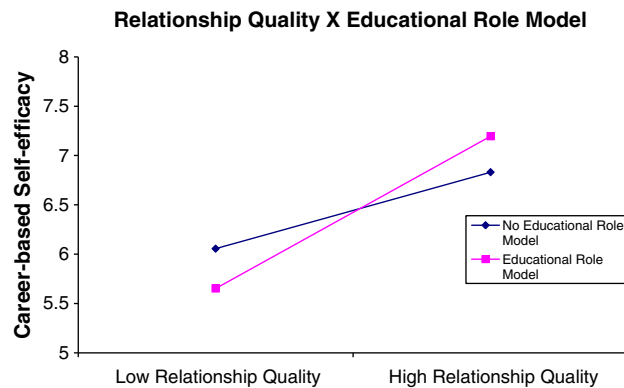


Fig. 4. Interaction of mentor–protégé relationship quality and educational role model on career-based self-efficacy.

additional resources arising within or available to the protégé? Moreover, might the role of mentor networks and/or the influence of educational role models differ for protégés from more advantaged socioeconomic backgrounds? Or, might different types of role models be of more or less value across varying contexts (e.g., high vs. low socioeconomic, and youth vs. workplace). These and similar questions provide intriguing avenues for continued research.

Our research also suggests a number of additional opportunities for future research within the e-context. For instance, future research should explore individual level differences that may impact the development of quality relationships when protégés interact with their mentors online. DiRenzo et al. (2010) found that protégés' familiarity and proficiency with the internet predicted their level of interaction with mentors. It is likely that other capabilities or characteristics may influence not only behavior, but also perceptions of the mentor or mentoring process as well. Perhaps dispositional variables such as personality characteristics may impact mentoring relationships. Might personality impact the protégé's ability to build effective relationships with unknown mentors in an online environment? It would seem that elements of the Big 5 (e.g., extraversion, openness) may play a role in the development of online relationships and trust. Similarly, it seems that various orientations, such as a protean career orientation (Hall, 2002) or learning goal orientation (Dweck & Leggett, 1988) might also drive some protégés to more eagerly seek advice from their mentors and/or adapt to a lack of face-to-face communication. Demographic variables have long provided insight into mentoring relationships and outcomes (Ragins, 1997; Ragins & Cotton, 1999), yet little is known regarding their influence in online relationships as well. For example, future research should explore race and gender differences within the e-mentoring context. It is plausible that cross-racial or cross-gender effects may be offset by an online text-based environment. Or, as suggested by recent research, perhaps gender differences exist within online relationships through differences in perceptions and use of online media (Postmes & Spears, 2002; Thayer & Ray, 2006; Whitty & Gavin, 2001). As research involving e-relationships continues to progress, we suggest that future research continue to address the influence of individual-level characteristics to further clarify their role in the e-mentoring context.

Finally, future research should examine the impact of mentoring on career-related outcomes beyond those that are typically addressed. An important contribution of this study has been to further our understanding of how protégé career aspirations may be influenced as a result of quality mentorships. Findings from this study are consistent with our expectations that enhanced GSE and CSE, resulting from participation in the e-mentoring program, would lead to increases in protégé career aspirations. This finding is particularly salient given that we controlled for pre-program aspirations as well. Moreover, using the Nam–Powers–Boyd Occupational Status Scale, we were able to quantify individual career goals to show the impact of mentoring processes on an objective measure of career aspirations. Given that much of the mentoring research relies on attitudinal data (Allen et al., 2008), the use of an objective measure of career aspirations provides additional validity to the argument that mentoring provides important career-related benefits, particularly with regard to the occupational goals of disadvantaged youth. We believe that additional research regarding the development of both objective and subjective career values and goals is a particularly promising area for the study of mentoring at the early stages of career exploration and growth.

Finally, considering the impact that career growth and goals can have on individual well-being, it would seem that the benefits of mentoring relationships may extend beyond the job and career context. Work–life balance has been a prominent notion in both the literature (Greenhaus & Allen, 2011) and the mainstream media. How might mentoring relationships enable individuals to lead more constructive and balanced lives? In line with this study, how might mentoring shape youth protégés' subjective notions of career success with respect to values and long-term goals for balance? Although mentoring research has predominantly focused on outcomes particularly relevant to the career context, scholars should begin to consider the influence that mentoring relationships can have on other areas of protégés' lives.

4.1. Study limitations

Although the findings provide support for our model of e-mentoring, some limitations to the study should be noted. This study utilized a sample of student protégés in a formal CMC-only mentoring process. Although addressing e-mentorships specifically

within the emerging and technologically-inclined segment of next generation workers represents a compelling contribution of this study, expanding our model to organizational employees would extend the generalizability of our findings and our assertions regarding the positive benefits of e-mentoring processes on career development. Moreover, further tests might employ a comparative analysis between formal and informal electronic mentoring programs to see if the relationships illustrated in our model are also present in less structured mentoring relationships.

4.2. Conclusions

In sum, our findings indicate that protégé career aspirations increased as a result of the mentoring process and specifically as a result of the increases in both general and career-based self-efficacy. Controlling for pre-program levels of each, our model indicates a process in which e-mentor network relationship quality leads to increases in GSE and CSE, which in turn enhance protégés' post-program career aspirations. These findings suggest that the impact of mentoring can have impressive and lasting effects on protégés that can positively alter career identity and greatly enhance career-related motivation and ambition.

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