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A longitudinal look at electronic mentoring relationships

Lyndsey Marie Havill
University of Missouri-St. Louis, lyndsey.havill@gmail.com

A LONGITUDINAL LOOK AT ELECTRONIC MENTORING RELATIONSHIPS

by

LYNDSEY HAVILL
M.A., Psychology, University of Missouri-St. Louis, 2008
B.A., Psychology, Purdue University, 2005

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Advisory Committee

Stephanie Merritt, Ph.D.
Chairperson

Ekin Pellegrini, Ph.D

Alice Hall, Ph.D.

John Meriac, Ph.D.

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Abstract

Current advancements in information technology are increasingly impacting work relationships. Rapid technological changes have significant implications specifically for workplace mentoring because they may offer faster and more economical ways of building relationships. However, the e-mentoring literature is still evolving, and the extent to which e-mentoring parallels face-to-face mentoring is unknown. The purpose of this study was to investigate the development of mentoring functions over time and how the development varies depending on the amount and type of computer mediated communication. While career-support was greater at initial points in the relationship, psychosocial-support increased at a greater velocity for mentors. Bandwidth and percentage of face-to-face communication had no significant impact on mentoring functions. Result implications are discussed and directions for future research are proposed.

A Longitudinal Look at Electronic Mentoring Relationships

Corporations are quickly capitalizing upon the advantages of technology as it enables swifter communication and globalization in the workforce, allowing employees and organizations to reap the benefits of convenience. It seems that this relatively new arrangement of online relationship building will eventually become a prominent part of businesses worldwide as it helps bridge the gap between efficiency and staying connected.

Mentoring is becoming one of the avenues for practitioners to capitalize on the expediency of technology and online resources. Electronic mentoring (e-mentoring) may remove some of the hindrances that accompany traditional mentoring relationships. By allowing parties to communicate online, the mentor-mentee relationship may become faster, more flexible and alleviate some social bias that may arise when pairs would see each other face-to-face (Ensher, Heun, & Blanchard; 2003; Hamilton & Scandura, 2003). In addition, this electronic relationship removes geographic constraints, allowing global companies to take advantage of this boundless relationship. However, research has yet to examine how e-mentoring develops over time and whether it provides the same functions as traditional mentoring.

While e-mentoring has become a popular tool in many corporations (Francis, 2006), it still remains largely absent from research outlets. Because e-mentoring relies mostly on electronic communication, it is unclear to what extent it differs from traditional mentoring in both form and effectiveness. Like traditional mentoring relationships, e-mentoring relationships should develop over time. However, how these functions

develop may vary depending on the means through which the mentor and mentee communicate.

The purpose of this study was to investigate the development of mentoring functions over time and how the development varies depending on the amount and type of computer mediated communication (CMC). Specifically, we investigated the speed at which mentoring functions develop and the impact of communication media on the development of the mentoring relationship, thus providing insight into the electronic media best suited for mentoring relationships. We will begin by comprehensively reviewing the mentoring literature and then discuss how research on media richness (i.e., CMC) and nonverbal behavior provide a theoretical framework for studying this new form of mentoring.

Mentoring

Mentoring research stems back to qualitative studies conducted by Kram (1983, 1985) where she emphasized the progressive nature of the mentoring relationship. She proposed that this relationship is distinguishable from other developmental workplace relationships because of the less pronounced power status of the mentor and the increased emotional intensity of the relationship (Wanberg, Welsh, & Hezlett, 2003). This close bond may lead to beneficial outcomes for both the mentor and mentee. Research has suggested that mentoring programs are advantageous for companies to adopt because successful traditional mentoring has been linked to numerous positive outcomes. Some of these outcomes include higher income for the mentee (Dreher & Cox, 1996), promotion opportunities for both parties (Allen et al., 2004; Bozionelos, 2004;Scandura, 1992;) reduced mentee turnover (Viator & Scandura, 1991), and

greater career satisfaction and swifter socialization in mentees (Ostroff & Kozlowski, 1993). While these benefits largely impact mentee development, the mentors may also receive personal fulfillment from this relationship. By passing on their knowledge to the mentee, they may obtain gratification and pride in knowing that their skill set will be carried on to the next generation (Scandura, 1994).

While Kram investigated informal dyadic relationships, organizations have tried to mimic the benefits that have been associated with informal mentoring relationships by setting up formal mentoring programs. Baugh and Fagenson-Eland (2007) offer two main distinctions between these two types of mentoring programs: (1) formal mentoring relationships begin with the assistance of the organization whereas informal mentoring relationships emerge naturally based on the needs of the two parties (Allen, Day, & Lentz, 2005) and (2) formal relationships are shorter in duration (typically 1 year) and informal relationships will often continue beyond the mentoring relationship, eventually changing the nature and purpose of the relationship to friendship (Kram, 1983). Because many large organizations have multiple office buildings spanning multiple cities, these informal relationships may be less likely to emerge naturally between locations. Implementing formal mentoring programs that span across all locations allows companies to strengthen their mentor pool in quality and quantity, which in turn has the potential to better match pairs based on the mentee's needs. For the purposes of this study, formal relationships are investigated.

Mentoring Functions

Kram (1985) identified two main functions of mentoring: career development and psychosocial-support. Career-related functions focus on career development and may

include coaching, exposure/visibility, sponsorship, protection and providing challenging assignments. These functions are directly linked to the mentor's level of experience and expertise (Kram, 1985). On the other hand, psychosocial functions focus on the mentee's personal development through counseling, role-modeling, acceptance, confirmation and friendship. This social relationship gives the mentee a sense of competence, self-worth, professional and personal growth, and an opportunity for organizational socialization. In fact, psychosocial functions have been linked to enhanced socialization, improved role clarification, and lower turnover rates (Baugh, Lankau, & Scandura, 1996; Scandura & Viator, 1994; Ostroff & Kozlowski, 1993). As one would expect, not all of these functions exist evenly within every mentoring relationship. However, the more functions mentors adopt, the more advantageous this relationship will be to their mentees (Kram, 1985). As Higgins and Kram (2001) point out, much of the prior research on mentoring has described the effectiveness of a mentoring relationship by the amount of mentoring support provided. Research has yet to investigate how the quality of assistance may impact the effectiveness of the relationship.

While the two-dimensional categorization of mentoring has received empirical support (Ensher & Murphy, 1997; Tepper, Shaffer, & Tepper, 1996), it is important to acknowledge a more recent third dimension called role-modeling. Earlier researchers identified role-modeling as part of psychosocial functions (Kram, 1985); however, later studies empirically showed that it emerges as a distinct function in mentoring relationships (Burke, 1984; Scandura, 1992; Scandura & Ragins, 1993). Because

theory and factor analysis supports this three-factor structure we assert that a mentor may provide career-related, psychosocial, and role-modeling functions.

According to Ragins and Kram (2007), throughout the development of mentoring research, a few major insights have emerged. First, the previously mentioned functions have different antecedents and outcomes. For example, while psychosocial-support is related to the level of attachment between the mentor and mentee, the presence of career functions rely on the mentor's position and organizational influence (Kram, 1985). Furthermore, these two functions offer different mentee outcomes such that career functions are stronger predictors of mentee advancement and compensation while psychosocial functions predict relationship satisfaction (Allen et al., 2004; Wanberg et al., 2003). Both functions have been positively related to career satisfaction (Allen et al., 2004).

The second insight is different mentoring relationships provide psychosocial-support and career functions to varying degrees. In other words, no two relationships may offer the same level of functioning (Noe, 1988; Ragins & McFarlin, 1990; Scandura, 1992). While this insight is valid, researchers have yet to define these types of relationships and whether or not a relationship that only provides one of these functions still falls under the mentoring construct.

Third, career-support and psychosocial-support may vary depending on the phase of the relationship. Kram (1983) identified four phases of a mentoring relationship, namely: initiation, cultivation, separation, and redefinition. Early phases may only offer career-related support and it is not until the peak of the relationship (cultivation phase) that psychosocial behaviors and outcomes emerge (Kram, 1985).

Looking at mentoring longitudinally can help us understand when different functions emerge and under what type of conditions, however there has been limited longitudinal research on the development of mentoring relationships.

Mentoring Benefits

While investigating the utility of mentoring relationships, it is important to take into consideration the value of mentoring on the mentee's career success. Noe et al. (2002) describes both proximal and distal outcomes of mentoring for mentees. Proximal outcomes include construct-oriented benefits (career, psychosocial and role-modeling behaviors). These are benefits that are closely related to the function provided (e.g., positive feelings associated with friendship). Alternatively, distal outcomes include job attitudes and additional objective measures (e.g., salary). The current study focused primarily on proximal outcomes.

Mentee Benefits. As Allen et al. (1997) point out, the most consistent research finding is previous experience as a mentor and previous experience as a mentee relate to future mentoring intentions. Individuals with previous mentoring experience may see the benefits of these relationships because of their direct experience with this type of relationship (Kram, 1985). While this is the most consistent research finding, the majority of mentoring research has focused on career outcomes for mentee.

In a comprehensive meta-analysis by Allen and colleagues (2004) which included 43 individual studies, both objective and subjective mentee benefits were investigated. They found that mentored individuals reported higher compensation (weighted mean $r = .12$), and number of promotions (weighted mean $r = .21$).

Furthermore, mentored individuals were more committed to their career (weighted mean $r = .15$) and satisfied with their career (weighted mean $r = .21$).

Turnover and intentions to stay are other outcomes that have been investigated when looking at the benefits of having a mentoring relationship; however, the results are mixed. In a study by Provosto (2001), mentored Army nurses not only reported greater satisfaction, but they also reported higher intentions to stay with the Army. Contrary to this finding, research by Wallace (2001) found that having a mentor was not related to intentions to stay with the company. Some studies (e.g., Kram & Hall, 1989; Scandura & Siegel, 1995) have found that during either company downsizing or acquisition, mentoring programs can provide employees with skills necessary for adapting to the changing environment. Future research is needed to determine the conditions under which mentoring programs affect intentions to stay with an organization.

Besides the aforementioned outcomes, some research has also investigated personal learning (i.e., personal skill development) occurring in the short-term context. For example, research has found that individuals with mentors reported relational learning and this was negatively related to turnover (Lankau & Scandura, 2002). Additionally, this study demonstrated that role-modeling behaviors were positively related to personal skill development. Furthermore, qualitative data by Dymock (1999) showed evidence of task learning and personal development and concluded these relationships can provide both professional and personal growth. This evidence is encouraging considering that some mentoring relationships may not only be in the short-term, but may also be context specific.

Unfortunately, much of the mentoring research has been cross-sectional in nature, so casual links have not been established. Additionally, research may be confounded by that fact that high-performers more frequently enter mentoring relationships than low performers (Ragins & Kram, 2007). Because of this, these beneficial outcomes attributed to the mentoring process may be a consequence of mentee ability and not the mentoring relationship. This claim is supported by research that has found that "rising stars" are more likely to obtain mentors, and mentors select mentees based on their competency and potential (Allen, Poteet, & Burroughs, 1997; Singh, Tharenou, & Ragins, 2007). Interestingly, recent research has also found that mentee expectations also increase after entering a mentoring relationship. Specifically, their salary, career satisfaction, and advancement expectations increase at the onset of the relationship (Singh et al., 2007); which could also lead to increased outcomes. While research on mentoring outcomes is replete when examining mentee benefits, benefits for the mentor are still an emerging area in the literature.

Mentor Benefits. Little research has explored the extent to which mentoring relationships offer affirmative outcomes for mentors. Some research has found that mentors report improved job performance and career success, recognition, and a sense of personal fulfillment and satisfaction (Allen et al., 1997; Kram, 1985; Ragins & Scandura, 1999).

Additionally, mentors report positive job attitudes (i.e., organizational satisfaction and commitment) and have been shown to experience quicker promotion opportunities (Eby, Durley, Carr, & Ragins, 2006; Bozionelos, 2004). Finally, research by Eby and Lockwood (2005) found that when asking mentors about the personal benefits of

participating in a mentoring program, the most frequent responses were learning, developing a personal relationship, personal gratification, and enhanced managerial skills. Research still runs into cross-sectional limitations, and many of these outcomes may be easily explained by individual differences or reverse causality. As the mentoring literature continues to develop, it will be imperative that researchers investigate variables of interest over time.

Development of Relationships over Time

As previously stated, research has suggested (see Kram, 1983, 1985) that mentoring functions may vary depending on the phase of the relationship. Kram (1983) identified four phases of a mentoring relationship including initiation, cultivation, separation, and the redefinition phase. Kram asserts that some career functions may be provided in the initiation stage, but psychosocial functions may not emerge until the cultivation phase.

Research suggests (see Ragins & Scandura, 1997) the reason most relationships disband is because of physical separation. However, if the mentee and mentor decide to continue a relationship, the mentee will receive mostly psychosocial mentoring. Kram (1985) noted that the timing of each phase is unique to every relationship, and not all relationships will necessarily go through each of the four stages. While Kram offers a general cycle of mentoring relationships, this time frame was established around informal relationships and cycled over two years. Considering the present study examines a formal mentoring program within a finite amount of time, these phases will not be identified. The purpose of this study was to investigate when

mentoring functions emerge within an e-mentoring relationship, not the phases of the relationship.

As contemporary work arrangements evolve and change the dynamics of the mentoring relationship, we see mentoring expand as a construct. Other contemporary forms of mentoring have emerged into relationships where there is reciprocated accountability that expands beyond the dyad to work units, including peer mentoring (Kram & Isabella, 1995), multiple mentoring (Baugh & Scandura, 1999), network mentoring (Higgins & Kram, 2001) and team mentoring (Williams, 2000). In addition, new forms of mentoring have allowed relationships to develop through new modes of communication (e-mentoring) serving alternative functions (see Mezias & Scandura, 2005).

E-Mentoring

When the primary means of communication is electronic, the mentoring relationship is considered e-mentoring (Hamilton & Scandura, 2003). An early definition of e-mentoring, as given by Hamilton and Scandura (2003), speaks to the differences between traditional mentoring and e-mentoring. They state:

> "The key distinction between electronic mentoring (e-mentoring) and traditional mentoring (t-mentoring) is reflected in the face-time between mentors and mentees. In traditional mentoring settings, the mentoring relationship is created and nurtured by frequent face-to-face contact…In e-mentoring, the mentor-mentee relationship may be created face-to-face or electronically, but continuation primarily takes place electronically (p. 388)"

Hamilton and Scandura (2003) further examine e-mentoring by positioning it along a continuum. They suggest that at one extreme, there is complete e-mentoring where 100% of the communication occurs via electronic means. At the opposite pole, some have argued traditional face-to-face mentoring is when no electronic communication exists between the mentee and mentor. A mentoring relationship can be considered e-mentoring when 75% or more of the relationship takes place through electronic means (Hamilton & Scandura, 2003).

In contrast to Hamilton and Scandura's (2003) definition, Ensher and colleagues (2003) suggest that there are three types of e-mentoring relationships, and they exist along a range in terms of the level and type of CMC usage. At one end, *CMC-only* exists when there is only electronic communication. As these researchers point out, email is often the only form of communication at this extreme. *CMC-primary* relationships are those relationships where the majority of communication is mediated electronically, but the relationship may be enhanced through face-to-face meetings or phone calls. Finally, *CMC-supplemental* relationships mirror traditional mentoring relationships where the majority of the relationship is done face-to-face, but may be augmented with emails and other forms of technology. Regardless of the definition, the key factor distinguishing traditional mentoring from e-mentoring is the relationship is primarily sustained through electronic means.

While traditional mentoring relationships develop via face-to-face and are usually terminated with the onset of geographical distance, e-mentoring relationships primarily sustain themselves through e-mail, instant messaging, phone, or the internet from any geographical location. Despite differences in physical proximity, research has found that

e-mentoring does not differ from traditional mentoring in its capabilities to provide career-support (Ensher, Huen & Blanchard, 2003). Ensher et al. (2003) stress that while e-mentoring relationships have the ability to foster friendship, electronic means of communication may create greater possibilities for miscommunication, concerns of privacy and confidentiality, and may also take a longer time to develop. Understanding how long it takes mentoring functions to develop electronically is a critical question to answer, as many organizations are implementing these programs within a finite amount of time.

In contrast to the possible aforementioned drawbacks, Ensher and colleagues (2003) proposed five major advantages of e-mentoring relationships: (1) greater access to mentors, (2) reduced costs of administering mentoring program and training, (3) equalization of status or perceptions of reduced salient differences, (4) decreased emphasis on demographics or other physical characteristics, and (5) a record of interactions. However, these proposed advantages have yet to be investigated and may not truly be effective (e.g., a record of interaction). Clutterbuck (2004) suggests that online communication may lead to a heavier focus on transactional exchanges rather than relationship building. While this may not necessarily be a bad thing, it raises the question of how much psychosocial-support can be provided in e-mentoring relationships and how quickly psychosocial-support functions can emerge.

E-Mentoring & Career-Related/Role-Modeling Functions. Kram's (1985) original definition of career-related mentoring functions included a variety of behaviors (e.g., coaching, exposure/visibility, challenging assignments, sponsorship). Some of

these functions may be lost in an e-mentoring context, or may be better suited for a specific communication medium (e.g., face-to-face) or under a specified amount of time.

While some career-related functions may be limited, research suggests that information exchanged in a virtual environment may be more direct, active, and goal oriented (Ramirez, Walther, Burgoon, & Sunnafrank, 2002). Because of this, mentors should be able to provide their mentees with knowledge acquisition and any additional functions that are direct, active, and goal oriented (e.g., coaching, skill acquisition, challenging assignments) in a short amount of time. However, it seems particularly unlikely for an e-mentor to expose their mentee to situations that occur in face-to-face meetings if their relationship is mostly electronic. With the rise of Skype and other virtual meeting spaces, some of these issues may be reduced, but probably not eliminated. Because the mentor will have a limited ability to provide visibility and exposure to the mentee, their capacity to provide sponsorship (i.e. actively nominating an individual for desirable lateral moves) and role-modeling behaviors may also be limited in the short-term.

As previously mentioned, Kram asserts that some career functions may be provided in the early stages of the relationship, and psychosocial functions may not emerge until later. Consistent with Kram's argument, and the fact that many of the career functions are direct, active, and goal oriented, it is proposed that career-support will emerge before any other functions.

Hypothesis 1. Career-support functions will emerge at the quickest rate (slope)

E-Mentoring, Role-modeling & Psychosocial Functions. As previously mentioned, Scandura (1992) proposed a third function of mentoring, namely role-modeling. Role-modeling largely stems from social learning theory, which proposes we learn from watching the reinforcement and punishment of other individuals (Bandura, 1977). As Lewin (1951) noted, the effectiveness of behavior modeling is a function of environment and people. In the context of mentoring, role-modeling enables mentees to learn from watching their mentor perform various behaviors. In a relationship that is mainly sustained through electronic means, the amount of opportunities to directly observe mentor's behaviors may be limited due to environmental constraints.

Research on training usefulness has found face-to-face behavior modeling is more useful than video-conferencing behavior modeling (Chen, Olfman, & Harris, 2005). Chen et al., (2005) also suggest when individuals are learning in a virtual environment, individuals may not be receptive to information with high social presence (e.g., video conferencing). Because of this, individuals exchanging information through electronic means may not be paying close attention to cues transmitting important information that warrant mimicry. Furthermore, research has shown mimicry occurs primarily among individuals who have a close bond with each other. In a study by Bernieri (1988), couples with greater rapport mimicked each other more frequently when interacting. It should be noted that mimicry and role-modeling have a key distinction. To mimic is to copy or imitate closely (especially in speech and gesture), whereas role-modeling goes beyond these behaviors and includes a learning opportunity for the mentee. Without the opportunity to observe, mimic, adopt, and learn, it could be difficult for this function to emerge quickly. Since e-mentoring relationships may limit the opportunity to observe,

model, and mimic, it is predicted that role-modeling will be the slowest function to emerge.

Hypothesis 2. Because role-modeling may require more direct interaction, it is predicted that this function will have the lowest rate of change (slope)

In traditional mentoring, the developmental nature of the mentoring relationship emerges because of face-to-face visual cues and geographic proximity (Kram, 1985). Emotional closeness in personal interactions may not develop as quickly or as strongly within the e-mentoring framework, especially in a short amount of time. One reason may be the minimal face-to-face exposure may also affect the mentoring relationship by restricting the amount of visual and verbal cues (e.g. body language, tone) exchanged between the mentee and mentor (Hamilton & Scandura, 2003), possibly limiting the amount of interpersonal interaction. Thus, individuals partaking in an e-mentoring relationship may have to rely on other unique techniques to create an "electronic chemistry."

Research has shown that traditional mentoring relationships characterized by high levels of psychosocial-support typically involve frequent communication and interaction (Fagenson-Eland, Marks & Amendola, 1997). Egland et al. (1997) found that the amount of time people spent together was the strongest predictor of relational satisfaction and interpersonal understanding when investigating 20 different nonverbal behaviors. Furthermore, Lankau and Scandura (2002) found that psychosocial-support was positively related to the number of hours spent per month with the mentor and the relationship duration.

As stated previously, psychosocial functions (e.g., friendship and acceptance) foster an emotional bond (Young & Perrewe, 2000), which may not be manifested as quickly in an e-mentoring context. As time passes, pairs will have had more interaction and thus more time to establish this bond.

Hypothesis 3. Psychosocial functions will emerge at a quicker rate (slope) than role-modeling, but not at as quickly as career-related support

Researchers are constantly expanding and modifying the definition of mentoring as organizations and work relationships are constantly changing. However, we may have reached a point where researchers are using the term mentoring too loosely without first identifying what functions these new relationships provide. By comparing the new forms of work relationships to the traditional definitions of mentoring (Kram, 1985), we will develop a more thorough understanding of what is gained through these relatively new mentoring arrangements maintained in a virtual workspace. However, many researchers have failed to consider that e-mentoring CMC comes in several forms. For example, the differences between face-to-face and CMC e-mentoring may be larger if certain technologies are used over others.

Media Richness Theory

Media Richness Theory proposes that the effects of media on behavior (e.g., ability to personalize messages) differ based on the range of verbal and nonverbal cues (i.e., bandwidth) provided (Daft & Lengel, 1984). Central to this theory is the argument that different types of media have varying potential in conveying both type and quantity of information in a specified time span (Burke & Chidambaram, 1999). With this, some

media may be better suited for particular types of tasks (Daft & Lengel, 1986) depending on the range of cues needed to have a successful interaction.

Bandwidth refers to the range of cues transmitted by the medium. For example, some media (e.g., email) have a limited range of both verbal and nonverbal cues transmitted within a given interaction, and thus have a lower bandwidth (see Daft, Lengel, and Trevino, 1987). Alternatively, when bandwidth is high (i.e., face-to-face interaction), there is a greater opportunity to transmit visual and nonverbal cues. As Rice and Love (1987) found, socioemotional communication is more difficult when using lower bandwidth media because there are fewer visual and nonverbal cues.

Temporal dislocation also determines the richness of the medium. That is, when communication is immediate, feedback allows each party to ask for clarification to ensure adequate message comprehension. When exchanges are asynchronous, information may be dislocated across space and time (Burke & Chidambaram, 1999), making the richness of the medium lower. Short et al. (1976) argue that some media have the ability to convey greater social presence than others. That is, the extent to which an individual feels the actual presence of the person with whom they are interacting. Because of asynchrony, perceptions of social presence may decrease and impact the interpretation of information and the relationship quality. A diagram by Chen, et al., (2005) (based on Fulk (1993) and Daft & Lengel (1986) illustrates a taxonomy of social presence and information richness for training mediums (see *Figure 1*).

Communication media are depicted in Figure 1, based on social presence and information richness within a virtual environment. This figure illustrates how face-to-face video conferencing is the richest form of electronic media and provides the most social

presence, followed by email and voicemail. Additional research by Daft et al. (1987) helps clarify information classifications.

Daft, Lengel, and Trevino (1987) provide a ranking of CMC forms from the least to most rich. The forms lowest in richness are unaddressed documents (e.g., flier, bulletin, report). Moving up from there in richness are addressed documents (e.g., note, email, memo, letter). Next is telephone which provides more equivocally rich and temporal information, thus providing more bandwidth. Finally, face-to-face interactions provide the richest information and thus the largest bandwidth, as they allow information to be clarified and adjusted in rapid and reciprocal succession.

Given that Media Richness Theory argues communication outcomes are determined by both bandwidth and feedback immediacy (temporal dislocation), it is important for e-mentoring researchers to investigate the moderation of communication medium on the development of mentoring functions. In Burke and Chidambaram's (1999) longitudinal examination, face-to-face groups found their medium to be warmer and more effective than groups not meeting face-to-face. While some forms of media may restrict certain information, research by Burke and Aytes (1998) suggests that when information is restricted due to the medium, different characteristics of communication emerge. Specifically, subjects using CMC started to use emoticons to transmit information differently. Whether these adapted communication mediums substitute for interaction is largely uninvestigated.

Nonverbal Behavior

Intimacy is conceptualized as an experience consisting of felt emotions and perceptions of understanding, or a relationship characterized by affection and trust

(Prager, 2000). Prager (2000) argues that ultimately intimacy is located within interaction. While intimacy may be formed within conversations, nonverbal communication is arguably "intimacy's primary vehicle" (Anderson, Guerrero, & Jones, 2006). In face-to-face interactions, nonverbal expressions of intimacy may include a range of behaviors including smiling, a forward lean, and affirming head nods. These behaviors reflect both positive affect and involvement (Anderson, Guerrero, & Jones, 2006).

While positive affect and involvement can also build intimacy, immediacy may be the missing piece. Appropriate temporal location aids in face-to-face relationships and is lacking from an email-only relationship. Nonverbal behavior is paired with our verbal expressions, lasting seconds, augmenting the message and providing abundant and timely information (Bavelas & Chovil, 2005). Initial levels of trust may be lacking with failure to receive responses (Jarvenpaa, Knoll, & Leidner, 1998), and consistent messaging may be a critical factor in building affection and relationship effectiveness (Walther & Bunz, 2005). As previously mentioned, research has also found that movement synchrony and mimicry are associated with rapport (see Bernieri 1988; Hess et al., 1999). Relationships using greater bandwidth (i.e., phone, face-to-face conversations) have greater time capture and more consistent messaging, thus increasing relationship building potential.

The expression of intimacy can be sustained through nonverbal behavior and verbal expressions. The vocal channel is a key media for transmitting important emotional information (Anderson, Guerrero, & Jones, 2006). Abrupt vocal cues are difficult to control, making voice a dependable indicator of emotion (Anderson, Guerrero,

& Jones, 2006). Prosadic cues (e.g., volume and pitch) may play a more important role than message content, and may be as important as facial cues in communicating emotion (Ekman & Friesen, 1969; Hummert, Mazloff, & Henry, 1999). Research by Planalp et al. (1996) found that participants relied most frequently on vocal cues, including loudness, speed of talking, and amount of talking when interpreting emotional expressions from others. As indicated by Knapp and Hall (2006), the voice can convey the presence of a smile. Interpreting emotions within e-mentoring relationships may be a key component in developing psychosocial functions, and may vary depending on the richness of the medium.

Hypothesis 4a. The bandwidth will have a direct impact on the perceived amount of psychosocial mentoring provided. Higher bandwidth relationships will have higher levels of psychosocial functioning.

Hypothesis 4b. Bandwidth will moderate the relationship between psychosocial functions and time, such that relationships with higher bandwidths will develop psychosocial functions at a quicker rate than relationships with lower bandwidths

As previously shown in *Figure 1*, face-to-face interaction provides the greatest social presence and the richest information. In a learning environment, face-to-face behavior modeling has been found to be rated higher than video-taped instruction on perceived usefulness (Chen et al., 2005). Furthermore, behavior modeling in situations with higher social presence (i.e., face-to-face) have a higher impact on knowledge transfer than situations with lower social presence (i.e., video conferencing) (Chen et al, 2005).

As previously mentioned, Media Richness Theory argues that different types of media have varying potential in conveying both type and quantity of information in a specified time span (Burke & Chidambaram, 1999). With this, some media may be better suited for particular types of tasks (Daft & Lengel, 1986) depending on the range of cues that are needed to have a successful interaction. Perceptions of role-modeling may be noticed more frequently in relationships with greater social presence and in situations with greater richness (i.e., bandwidth).

Hypothesis 5a. The bandwidth will have a direct impact on the perceived amount of role-modeling provided. Relationships with higher bandwidths will have higher levels of role-modeling

Hypothesis 5b. Bandwidth will moderate the relationship between role-modeling behavior and time, such that relationships with higher bandwidths will develop role-modeling at a quicker rate than relationships with lower bandwidths.

Method

Design and Participants

Online surveys were distributed to 88 participants (44 mentors, 44 mentees) entering a new e-mentoring program at a large Midwest manufacturing organization. Participants were selected by the organization to participate in a pilot mentoring program because they were either graduates of the organization's internal development program or because they were part of a network for minority leaders. The surveys were administered on a monthly basis over the course of 7 months.

Five pairs dropped out of the study (2 mentees left company, 1 mentee left for FMLA, 2 dropped out and did not provide a reason), leaving a total of 39 pairs. The

pairs who dropped out of the study all dropped out in the first few months of the study and had not completed any survey data. Therefore, we were unable to check for differential attrition based on the predictor variables. A post-hoc power analysis was conducted using the software package GPower (Faul & Erdfelder 1992). The sample size of 78 was used for analyses because we did not aggregate to the pair level. The post-hoc analyses revealed the statistical power of .82 for this study. Thus, there was adequate power (i.e., power * .80) to detect a medium effect size ($f^2 = .15$).

E-mentoring Pairing & Program

For the purposes of this study, mentors and mentees were paired by the organization to pilot test their new e-mentoring program. The mentor and mentee pool was established through volunteers and nominations. Once this pool was created, the organization assigned pairs based on a variety of criteria (e.g., tenure, race, gender, experience, preferences, development needs), keeping in mind the overall program objectives of leadership development and growth. Of the 39 pairs, 17 were male/female pairs and 16 were composed of different races. Except for 3 pairs, all mentors were in a more senior position than their mentee. For the 3 pairs who were in equivalent positions, the mentor had significantly greater tenure. As for physical location, 10 pairs were not in the same city, 16 were in the same city and building, and 3 were in different buildings in the same city. Demographic information can be found in Table 1 and a pair-level demographic matrix is found in Table 2.

After the participants were paired, both the mentors and mentees attended a formal 4-hour mentoring workshop. The training included a general overview of mentoring (e.g., definitions, roles/responsibilities, stages of the relationship, etc.) and

was the pair's first formal meeting. Thus, the first meeting for each pair was always face-to-face. During this meeting, the participants also received general information on different communication styles and preferences, as well as information on giving and receiving feedback. Mentees also defined their mentoring objectives and shared them with their mentor.

When participants were asked how many current formal or informal mentoring relationships they have had, 23% of mentors and 33% of mentees indicated 0 relationships, while 31% of mentors and 13% of mentees indicated 5 or more relationships. On average, mentors had 3.5 previous mentoring relationships, whereas mentees had 2.74.

Measures

Because these data are longitudinal, a table depicting when each measure was administered can be found in Appendix A.

Mentoring Behavior. Castro and Scandura's 9-item measure (MFQ-9) of mentoring functions was used to indicate the extent of perceived mentoring provided at each time point (Castro & Scandura, 2004). Previous research has found psychometric support for the three-factor structure (career, psychosocial, role-modelng) of this measure (Scandura & Ragins, 1993), as well as evidence of convergent and discriminant validity (Castro & Scandura, 2004). Research by Pellegrini and Scandura (2005) found adequate coefficient alphas for career (.74), psychosocial (.80), and role-modeling (.71) scales for satisfied mentees. The alphas increased for dissatisfied mentees (.84, .88, and .83 respectively). Responses were given on a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree)*. Unlike previous research, mentors also

completed the scale at all time intervals to enable the measurement of within-pair agreement.

Media Richness and Interaction Frequency. Participants were asked to indicate the number of minutes spent meeting face-to-face, talking on the phone, the number of voice messages sent and received, and the number of emails sent and received (see Appendix B). Daft, Lengel, and Trevino's (1987) ranking of CMC richness was used to code the richness of each mode of communication. Given the nature of the mentoring relationships in the present study, no unaddressed documents were recorded. For the purposes of this study, three addressed communication modes (i.e., email, voicemail, phone, face-to-face) were measured on a continuum. Data were centered around the grand mean (i.e., 0 was the average communication richness across all participants), and bandwidth was measured as a point total based on weighting of the communication modes. Specifically, a mentor or mentee received 1 point for an email or voicemail, 2 points for a phone call, and 3 points for a face-to-face interaction. Thus, a higher score represented a higher average degree of media richness over the course of the month.

Additional Measures. Additional items were gathered by request of the organization (e.g., organizational satisfaction) and results from these measures can be found in Appendix C.

Procedure

Surveys were distributed electronically to all mentors and mentees on a monthly basis for 7 months (See Appendix A). Data were collected and stored through an online survey program owned by the organization. The surveys administered to the mentor

and the mentee measured the same overall constructs with varying question wording and instructions depending on the mentoring role. For example, one item asked, “How frequently do you email your mentee,” vs. “How frequently do you email your mentor.” Survey responses were kept confidential.

Results

Descriptive statistics, reliability coefficients, organizational variables, and correlations among the study variables were computed and are included below (See Table 3a, 3b and Appendix B). The dependent variables had no outliers.

On average, pairs met virtually (i.e., voicemail, phone, email) 72% of the total time across the 7 months. All but one pair spent at least 50% of their time communicating virtually (this pair met virtually 48% of the time). Because of this, we feel confident that the majority of relationships were predominantly electronic in nature and can be considered e-mentoring relationships (Hamilton & Scandura, 2003; Ensher et al., 2003). When looking at the duration of each interaction when pairs met face-to-face, on average they spent 61-90 minutes; when writing emails or talking on the phone they spent an average of 11-30 minutes; and 1-10 minutes when leaving voicemails.

Prior to the study, 92% of the mentors and 87% of the mentees indicated that they felt either comfortable or very comfortable with technology. Because the majority of participants felt comfortable with technology and because this variable did not correlate with any of my key variables, additional analyses involving comfort were not explored.

Analysis

Agreement. Given that the data were collected over a 7-month period, on average, there were 7 data points to measure mentoring functions for all participants.

Our hope was to find acceptable levels of agreement among mentors and mentees on the degree to which each mentoring function was provided. However, after checking for agreement, Level 1 (repeated measures) data were not aggregated to the pair level. This decision was made due to low rwg statistics (see Table 4) and inconclusive ICC statistics (i.e., negative and/or greater than 1). Mean squared within (MSW) and mean square between (MSB) statistics are used to calculate the portion of within pair and between pair variance in the ICC calculation, respectively and the relative variance is compared. ICC statistics were, in many cases, uninterruptable due to a large discrepancy between MSW and MSB, where in many cases the between-pair agreement was much greater than the agreement within pairs. Generally, researchers and practitioners aggregate within-group data if rwg is greater than .70 (see Zohar, 2000). In contrast, the average rwg statistics for our sample were .89 for career-support, .79 for psychosocial-support, and .84 for role-modeling. While the rwg statistics were sufficient, due to the low and uninterruptable ICC statistics, we decided to investigate the mentors and mentees separately.

Prior to this study, few studies have looked at the agreement between mentor and mentee on mentoring functions. When looking at the rwg statistics and basic descriptive data, it is interesting to note that there was low agreement between the mentor/mentee on the amount of mentoring provided/received. However, looking at the amount of agreement within pairs on the percentage of total time (across 7 months) spent communicating face-to-face versus electronically, the average rwg statistic (median rwg statistics based on 7 months) was .93. Thus, while pairs generally seemed to agree on the amount of time spent face-to-face vs. electronic, they did not agree on

how much mentoring was provided. Generally, mentors perceived that they provided higher amounts of psychosocial-support and lower amounts of role-modeling than perceived by the mentees. Thus, all analyses were run separately and all hypotheses were investigated for both mentors and mentees.

Construct Verification. Prior to hypothesis testing, confirmatory factor analysis (CFA) was conducted to ensure the mentoring construct had three distinct factors. That is, a three factor model (career-support, psychosocial-support, role-modeling) should fit the data best, with each measure's items loading only on the appropriate latent construct. This should have held true for every month the data was collected. LISREL (Jöreskorg & Sörbom, 2002) was used to conduct CFA analyses using maximum likelihood estimation. Mentors and mentees were combined in this analysis due to the low sample size.

A three-factor model was not supported by the data in any of the 7 months (see Table 5a). Modification indices showed inconsistent sources of the poor fit across the 7 months. However, many of the issues seemed to be related to the role-modeling items cross-loading on other factors. Interestingly, the cross-loadings were inconsistent across time. For example, item 9 loaded correctly on the role-modeling factor in month 4, on psychosocial-support for month 2, and on career-support for month 1. Inconsistent factor loadings were also found for items 7 and 8, both on the role-modeling measure. This led to the suspicion that the role-modeling factor was the source of the model misfit.

Therefore, we assessed model fit using the career-support and psychosocial-support factors only (see Table 5b).This two-factor structure fit the model better. The fit

was acceptable in months 1, 2, 5, and 7. In months 3, 4, and 6, all goodness-of-fit statistics were acceptable with the exception of RMSEA. We suspect that some of the inconsistency of the RMSEA may be related to small sample size (N = 78).

E-mentoring may create an environment where the three-factor structure does not hold true since the opportunities to observe role modeling behavior may be limited in an electronic format. However, due to the low sample size, role-modeling as a factor was still investigated. Impact and study limitations are reviewed in the discussion.

Introduction to Hypothesis Testing

Analyses were conducted using HLM (Raudenbush, Bryk, & Congdon, 2004). Because missing data are prohibited at level two, missing level two (i.e., between-person) data were imputed using multiple imputations in LISREL (Jöreskorg & Sörbom, 2002). Restricted Maximum Likelihood was used for analyses, as it leads to better estimates in small sample sizes (Hox, 2002). The main analysis model was a two-level regression model with multiple data points nested within individuals. The Level 1 (within-person) analysis is represented by the following equation: $Y = \beta_0 + \beta_i x_+ r_{ij.}$ In this regression equation, Y is the level of mentoring function, β_0 represents the intercept, $\beta_i x$ represents time and r_{ij} is the residual error term. This equation produces a line describing the rate at which each mentoring function developed linearly over the 7-month study.

Prior to hypothesis testing, null models were created for career-support, psychosocial-support and role-modeling for both mentors and mentees. In total, 6 null models were created. These null models tell us the relative amounts of within and between individual variance. If there is insufficient between-person variance, then

between-person predictors cannot be used. Tables 6a-6b present the parameter estimates and standard errors for the null models for both mentors and mentees.

First, we examined the mean levels of reported support. For mentors, the intercept-only model estimates the intercept of career-support as 5.54, psychosocial-support as 5.04 and role-modeling as 4.81. For mentees, the intercept-only model estimates the intercept of career-support as 5.57, psychosocial-support as 5.01 and role-modeling as 5.55. These numbers simply represent the average mentoring function across all individuals at the first point of measurement and were similar between mentors and mentees for career-support and psychosocial-support.

Next, the intraclass correlation (ICC) was calculated for each null model in order to assess the proportion of between-person variance present in the data. For mentors, the ICC for career-support was .64, for psychosocial-support .39 and for role-modeling was .60. Thus, 64% of the variance of career-support, 39% of the variance of psychosocial-support and 60% of the variance in role-modeling was explained between individuals. For mentees, 51% of the variance of career-support, 36% of the variance of psychosocial-support and 72% of the variance in role-modeling was explained between individuals. Based on these analyses, we concluded that there was sufficient evidence of between-person variance in mentoring functions for us to test our hypotheses.

Development of Mentoring Functions. Hypotheses 1 through 3 concerned the rate at which the mentoring functions develop in e-mentoring relationships. It was proposed that career-support would have the quickest rate followed by psychosocial and role-modeling respectively. The rate at which mentoring functions developed was examined at Level 1 in the HLM equation.

To probe for potential non-linearity in development, each participant's growth pattern was graphed and patterns were visually inspected. It was noted that the most common pattern observed was a cubic function; therefore, a cubic Level 1 growth function including Time, Time^2, Time^3 was created. In this function, the coefficient for Time (β_1) represents the linear increase or decrease of the mentoring function prior to the first curve in the function, where a positive coefficient denotes an increase in the function and negative coefficient denotes a decrease in the function. The Time^2 coefficient (β_2) reflects the shape of the first curve, where a positive coefficient indicates an upward curve (inverse U shaped) and a negative indicates a downward curve (U shaped). The Time^3 coefficient (β_3) indicates the shape of the second curve and coefficients are in the same direction as for Time^2. Therefore, the Level 1 equation is: $Y = \beta_o + \beta_1 (Time)_+ \beta_2 (Time^2) + \beta_3 (Time^3)_+ r_{ik.}$ Tables 7a, 7c, 8a, and 8c have a complete list of Level 1 coefficients for each mentoring function by group. Figures 2-3 display the average form of development across participants by mentoring function.

If linear development had been found, we would have tested for significant differences in the slope (β_1) coefficients between mentoring functions. However, because a cubic pattern was found, we tested the hypotheses in multiple ways. First, we tested for significant differences in the initial levels (the first measurement point) of the three mentoring functions using *t*-tests for mentors and mentees separately. Second, we tested for significant differences in the final measurement point of the two mentoring functions using *t*-tests. Finally, we investigated the relationship by looking at a graphical depiction of the relationship of the mentoring functions over time.

For mentors, the t-test revealed a significant difference at the first measurement point when comparing career-support ($M = 5.77$) and psychosocial-support ($M = 4.68$) ($t = 5.16$, $p \leq .01$). There was no significant difference when comparing psychosocial-support ($M = 4.68$) and role-modeling ($M = 4.55$) ($t = 0.82$, $p = 0.42$). For mentees, there was also a significant difference at the first measurement point when comparing career-support ($M = 5.95$) and psychosocial-support ($M = 4.84$) ($t = 5.04$, $p < .01$). The direction suggested that, consistent with our hypotheses, mentors and mentees perceived higher levels of career-support than psychosocial-support at the initial time point. For mentees, there was also a significant difference when comparing psychosocial-support ($M = 4.84$) and role-modeling ($M = 5.46$) ($t = -2.92$, $p < .01$). While significant, the effect was opposite proposed direction. Finally, there was a significant difference with mentees between career-support ($M = 5.95$) and role-modeling ($M = 5.46$) ($t = 3.64$, $p < .01$), suggesting that career-support was significant higher. This was also true for mentees ($t = 7.71$, $p < .01$) for career-support ($M = 5.77$) and role-modeling ($M = 4.54$).

When investigating the final measurement point, mentees perceived significantly higher career-support ($M = 5.54$) than psychosocial-support ($M = 5.08$) ($t = 2.60$, $p = .02$). The same was true for mentors: the t-test revealed a significant difference at the final measurement point when comparing career-support ($M = 5.82$) and psychosocial-support ($M = 5.36$) ($t = 2.31$, $p = .03$). When comparing psychosocial-support (Mentee; $M = 5.08$: Mentor; $M = 5.36$) to role-modeling (Mentee; $M = 5.56$: Mentor; $M = 5.16$) there were marginal significant differences for mentees ($t = -1.98$, $p = .06$) and no significant differences for mentors ($t = 0.98$, $p = .34$). The marginally significant

differences were in the opposite direction as hypothesized such that mentees perceived higher levels of role-modeling than psychosocial-support at the final measurement point. Finally, while there was no significant difference in the final measurement point for mentees when looking at career-support and role-modeling, there was a significant difference for mentors ($t = 0.98$, $p < .01$) when comparing career-support ($M = 5.82$) to role-modeling ($M = 5.16$). Based on the above findings, we concluded that for mentors, career-support was provided to a greater extent than psychosocial-support and role-modeling at initial and final measurement points. For mentees, career-support was provided at a greater extent than psychosocial-support at both measurement points while it was only greater than role-modeling at time 1. There were no significant differences between psychosocial-support and role-modeling except for mentees at the initial time point, but it was opposite to our hypotheses.

Finally, after careful review of the graphical depiction of the graphs, you can clearly see a decrease in career-support and an increase in psychosocial and role-modeling over time (see Figures 2 and 3). Taking into consideration all of the above evidence, we concluded no support for Hypotheses 1-3.

Effects of Bandwidth. Hypotheses 4a and 4b proposed that bandwidth would have a direct impact on the perceived amount of psychosocial mentoring provided (i.e., higher bandwidth would yield higher perceptions of psychosocial-support) and that bandwidth would significantly influence the development of psychosocial-support (in other words, bandwidth would interact with time point and relationships with higher bandwidths would develop psychosocial functions at a quicker rate).

Recall that our bandwidth measure was calculated by assigning weights to the various communication media. A mentor or mentee received 1 point for emailing or voicemail, 2 points for a phone call, and 3 points for a face-to-face interaction. Thus, a higher score represented a higher degree of media richness over the course of the month. Participants' bandwidth scores ranged from 5 to 33 and were calculated for every month as well as for the overall time period of the study (monthly bandwidth scores were averaged to calculate the overall bandwidth score).

To test Hypothesis 4a (whether there was a relationship between bandwidth and the perceived amount of psychosocial mentoring), bandwidth was operationalized as a within-person measure. Thus, this analysis concerned the extent to which higher bandwidths in a given month were significantly associated with higher perceptions of psychosocial-support in the same month. To test Hypothesis 4a, bandwidth was added to the Level 1 equation, and the significance of its coefficient was assessed for psychosocial-support.

For both mentors and mentees, bandwidth failed to significantly associate with psychosocial-support (see Tables 7d & 8d), failing to support Hypothesis 4a. Thus, the bandwidth of communications in a given month had no significant association with how much psychosocial-support was perceived within that month. While the association of bandwidth with career-support was not formally hypothesized, it is interesting to note that for mentees only, bandwidth had a significant relationship with career-support, β_{40}=.07 ($p \leq .01$) (see Table 8b). Specifically, the amount of perceived career-support in a given month would increase with higher bandwidth for mentees.

Hypothesis 4b proposed that mentoring pairs with higher bandwidths develop psychosocial functions at a quicker rate than pairs using lower bandwidths. Because we did not aggregate to the pair level, we tested this hypothesis separately for mentors and mentees. In order to test this hypothesis, it was necessary to make bandwidth a level-2 (between-person) variable. Thus, average bandwidth across the 7 months was computed for each of the 39 mentors and mentees and used as a level 2 variable. In this analysis, Level 1 included Time, Time^2, and Time^3; Level 2 included mean bandwidth (grand mean centered). This centering procedure indicates that a score of zero reflects the average amount of bandwidth across persons in the sample. Thus, in our test of Hypothesis 4b we ask whether a person's average bandwidth across the 7 months (relative to other people's average) is significantly associated with how quickly the person's perceptions of mentoring functions developed over time.

For mentors, mean bandwidth was significantly related to average initial levels of perceived psychological-support (γ_{01} = .11, p = .01), such that greater bandwidth was associated with greater psychosocial-support. Marginally significant interactions were found between mean bandwidth and time (γs = -.10 - .02, ps = .08-.10). The direction of these relationships suggests that mentors with higher average bandwidths perceived that their psychosocial-support levels were more stable over time than those with lower average bandwidths. For mentees, mean bandwidth had no significant relationships with perceived psychosocial-support. We thus concluded that for mentors and mentees, Hypothesis 4b was not supported (see Tables 9b & 9d).

Hypotheses 5a and 5b proposed that bandwidth would have a direct impact on the perceived amount of role-modeling provided (i.e., higher bandwidth would yield

higher perceptions of role-modeling) and that bandwidth would significantly influence the development of role-modeling (in other words, bandwidth would interact with time point and relationships with higher bandwidths would develop role-modeling functions at a quicker rate).

For mentors, bandwidth failed to significantly associate with role modeling (see Table 10a), failing to support Hypothesis 5a for mentors. For mentees, the relationship approached significance, β_{40}=.02 (p = .07), suggesting that the greater the bandwidth, the more perceived role-modeling in a given month (see Table 10b). This provides partial support for Hypothesis 5a for mentees.

Hypothesis 5b proposed that mentoring pairs with higher bandwidths develop role-modeling functions at a quicker rate than pairs using lower bandwidths. Similar to Hypothesis 4b, it was necessary to make bandwidth a level-2 (between-person) variable. Thus, average bandwidth across the 7 months was computed for each of the 39 mentors and mentees and used as a level 2 variable. In this analysis, Level 1 included Time, Time^2, and Time^3; Level 2 included mean bandwidth (grand mean centered). For both mentors and mentees, there were no significant relationships between mean bandwidth and role-modeling, (see Tables 10c and 10d), failing to support hypothesis 5b.

While not formal hypotheses, we saw that for mentors, average bandwidth was significantly related to the intercept of career-support (γ_{01} = .09, p < .01), indicating a significant association between overall bandwidth and average levels of career-support at the initial time point. No significant interactions were found (γ_{11}-γ_{31} = -.02 - .01, ps = .73-.78), failing to support the notion that bandwidth would be significantly associated

with development of perceived career-support. Further, mean bandwidth had no significant relationships with mentees' perceived career-support. Overall, contrary to our expectations, bandwidth had no significant relationships with the rate of development for either psychosocial-support or career-support, suggesting that perhaps the richness of the communication media used may be less influential in perceived mentoring success than expected.

Cross-Level Analyses: Effects of Communication Style. Two additional cross-level questions were examined to further assess the impact of communication type and frequency on the development of mentoring functions. First, does the percentage of face-to-face communication in the mentoring relationship affect the speed at which mentoring functions develop? This question asked whether face-to-face communication provides any benefit over electronic forms of communication. Second, does the total amount of interaction in which a mentoring pair engages affect the speed at which mentoring functions develop? This question asked whether the total amount of interactions (both electronic and face-to-face combined) had significant effects on perceived mentoring.

To examine these questions, percentage of face-to-face communication and total interactions were assessed as between-person variables and entered into the Level 2 equations. Effects of these variables on β_0 would suggest the percentage of face-to-face communication or total number of interactions significantly affected the initial amount of perceived mentoring provided. Significant effects on the coefficients β_1- β_3 would indicate the percentage of face-to-face communication or total number of interactions

significantly affected the development of the mentoring function over the 7-month period.

Prior to analyses, percentage of face-to-face interaction and the total number of interactions were grand mean centered, meaning that the explanatory variable(s) were centered around the overall mean across all mentors or mentees. Specifically, this tells us the level of mentoring function at the average level of interaction across pairs (i.e., % of face-to-face interaction and total interactions) (see Tables 11a-12c).

For mentors, no significant interactions involving percentage of face-to-face communication were found, suggesting that a greater reliance on face-to-face mentoring did not significantly relate to the development of mentoring functions across time (βs = -.01 to .04, *p*s < .10). The same was true for the total number of interactions (βs = -.01 to .01, *p*s < .10). However, for mentors, there was a direct effect on career-support (β s = .02 to .04, p = .03) and psychosocial-support (βs = .02 to .04, p = .02) at time 1. For mentees, there was a direct effect of total interactions on role-modeling, β_{02} = .02, p =.05. No other significant direct effects or interactions were found between time and percentage of face to face communication (βs = -.02 to .01, *p*s < .10) or the total number of interactions (βs = .00, *p*s < .10).

In summary, it seems that neither mentors nor mentees perceived face-to-face mentoring to have significant benefits over electronic mentoring in terms of the mentoring functions provided. However, the number total interactions had an impact on mentors' and mentees' perceptions of mentoring functions. There may be a perception that frequent mentoring provides significantly more mentoring.

Additional Analyses. Additional analyses were conducted to investigate whether the amount of time the pair knew each other prior to entering the mentoring relationship predicted the level of mentoring perceived to be provided. Although there was agreement on the amount of time the pair knew each other prior to the program, analyses were run separately due to differences in perceived amount of mentoring provided. While no significant results were found for mentees, there was an impact on the time the pair knew each other prior to the mentoring relationship for mentors. Specifically, the amount of perceived psychosocial-support provided was impacted by the length of the relationship prior the formal mentoring relationship, γ_{40}=.61 (p = .04). The longer the mentor had known their respective mentee, the higher the amount of perceived given psychosocial-support. This was also true for role-modeling, γ_{40}=.44 (p = .04). Results can be seen in Table 13 and implications are reviewed further in the discussion.

Discussion

The present research made a preliminary step in developing an understanding of e-mentoring relationships and the impact that communication medium has on perceptions of mentoring functions. From a theoretical standpoint, this is one of the first longitudinal studies on e-mentoring, and the current study provided an additional step forward in investigating these electronic relationships over time. This study was also one of the first to investigate pair-level agreement of the mentor and mentee on the amount of mentoring provided/received. Since previous literature had not explicitly examined the assumption of agreement in mentors' and mentees' perceptions, the results of this study are a significant contribution to the mentoring literature since we

found significant differences in perceptions of the amount of career and psychosocial support provided/received in a given time period. Future researchers and practitioners should consider both the mentor and mentee's perceptions when investigating mentoring relationships.

General Summary

We expected the three-factor mentoring construct to emerge in e-mentoring relationships, as it had in past work on traditional mentoring relationships (Burke, 1984; Scandura, 1992; Scandura & Ragins, 1993). However, we found that the role-modeling items loaded inconsistently on the latent factors over time. In other words, we found a lack of configural invariance across time (Vandenberg & Lance, 2000). Furthermore, when the role-modeling items were dropped, we found support for the factor loadings of the items on the other two factors, namely career-support and psychosocial-support. This finding may imply that the construct of e-mentoring may need to be defined differently than the mentoring construct in a more traditional face-to-face setting. When mentors and mentees operate in the same environment there are many opportunities to observe and connect; even when it's not a formal meeting (e.g., business briefings, presentations, engagement with team, client interactions). E-mentoring relationships may not offer the same amount of possibility to interact and thus may not provide as much role-modeling. Alternatively, some of the items in the scale used for role-modeling (e.g., my protégé tries to model their behavior after me) refer to "modeling" behavior, it could be participants felt that this type of behavior only leant itself to face-to-face interactions. That being said, our sample size was extremely small to run a CFA so implications may be limited.

Prior to this study, few studies had looked at the agreement between mentors and mentees on mentoring functions, and often the focus of the literature has been from the perspective of the mentee only. The current study found that while pairs generally agreed on the amount of time spent face-to-face vs. electronic communication, there was less agreement on how much mentoring was provided. Additionally, it was found that mentors and mentees had high agreement on career-support and psychosocial-support at the first time point, but their perceptions diverged as time progressed. Because of these findings, we can assume that mentors and mentees perceived the mentoring relationship differently. This finding is an important contribution from both a theoretical and a practical standpoint, as it illustrates the importance of assessing the perspectives of the mentors as well as the mentees, and longitudinally to see how the relationship changes over time.

Furthermore, we found that a cubic function best described the development of the mentoring functions across our 7 month time frame. This suggests that perceptions of mentoring functions seem to rise and fall over time, rather than proceeding in a linear fashion. Because there is limited longitudinal research on both traditional and electronic mentoring, the shape of mentoring functions over time is rarely discussed or assumed to be linear. This is interesting from both a theoretical and a practical standpoint. From a theoretical standpoint, mentoring findings may depend heavily on the timing of the research with respect to the phase of the relationship. Future research will benefit from using multiple time points. From a practical point of view, it's important both mentors and mentees have realistic expectations about the relationship and understand that the amount of interaction and mentoring will not be the same over time. Setting these

expectations early in the mentoring relationship may reduce the chances of faulty or elevated expectations.

Functions over Time

For career-support, both mentors and mentees perceived a relatively high level at Time 1 (Mentors = 5.77, Mentees = 5.95). In addition, for both mentors and mentees, a significant cubic pattern was evident in which the perceived level of career-support decreased initially, recovered, and then decreased again at the end of 7 months. In contrast, the opposite pattern was found for psychosocial-support. Psychosocial-support was perceived moderately at Time 1 (Mentors = 4.68, Mentees = 4.84). It increased initially, then decreased, then rose again at the end of 7 months. Thus it seems that both mentors and mentees perceived career-support and psychosocial-support as following opposite cubic patterns over the course of the 7 month study. It is possible that participants perceived a tradeoff between career-support and psychosocial-support such that as one increased, the other decreased. Given the goal-oriented nature of career-support, it seems plausible that perceptions of psychosocial-support (emphasizing acceptance and friendship) may be lower at times when the pair's mentoring discussions are focused on more transactional, action-oriented career-support topics. Role-modeling was relatively high at Time 1 (Mentors = 4.47, Mentees = 4.84), especially for mentees. It could because the mentors in these relationships were more senior and know by the mentees prior to the relationship that they had opportunity previously to observe their behavior outside the formal relationship. Additional research is needed to examine whether there is indeed a tradeoff of the two mentoring functions over time depending on the context of the mentoring relationship.

Additional analyses revealed that the longer the mentor had known the mentee prior to the relationship, the higher the amount of psychosocial-support and role-modeling the mentors thought they were providing. Mentors may be overestimating the amount of support they provided because of their relationship prior to the formal mentoring relationship. Alternatively, mentors may feel more comfortable providing support to a mentee they had known for a long period of time and had therefore already established the friendship and supportive aspects of the relationship, whereas mentors who did not previously know their mentee may perceive they are providing less psychosocial-support if those aspects of the relationship are not yet established.

Mentoring & Bandwidth (Level 1)

Mentors perceived no significant within-month relationship between the bandwidth used and the amount of career-support they provided ($\beta_4 = .02$, $p = .16$). However, the association was significant for mentees ($\beta_1 = .07$, $p < .01$). Mentees perceived higher levels of career-support in months where communication had been at a higher bandwidth. Thus, bandwidth may be perceived as more meaningful for mentees than for mentors in terms of perceived career-support. This may imply that mentors feel they can provide career-support regardless of bandwidth, but mentees' perceptions of career-support is only evident when both the frequency and richness is higher.

However, for perceived psychosocial-support, the results were non-significant for both mentors ($\beta_4 = -.00$, $p = .82$) and mentees ($\beta_1 = .01$, $p = .67$). Thus, monthly changes in bandwidth used were not significantly associated with perceived

psychosocial-support. In other words, mentors and mentees did not seem to find higher bandwidth as more important for providing psychosocial-support.

For role-modeling, there was a significant relationship for mentees ($\beta_4 = 0.02$, $p = .07$), but not mentors ($\beta_4 = 0.01$, $p = .51$). Similar to career-support, mentees perceived higher levels of role-modeling in months where communication had been at a higher bandwidth. This provides support for the importance of having more than an email-only relationship.

Overall Bandwidth (Level 2)

For career-support, mentors' overall bandwidth (across the 7 months) was significantly associated with Time 1 career-support, but it did not significantly associate with the degree of career-support that was perceived over time. No significant relationships were found for mentees. This is interesting because this is opposite of the previous findings where mentors perceived no relationship between bandwidth used that month and career-support where mentees did. It seems that mentors may look more at the totality of the relationship when determining how much career-support is provided where mentees do the opposite. Mentees perceived higher amounts of career-support when the monthly bandwidth was higher.

For psychosocial-support, mentors' overall bandwidth was also significantly associated with Time 1 support ($\gamma_{01} = .12$, $p < .01$) and marginally interacted with the three time variables ($\gamma_S = -.06, .03$, and $-.01$, ps $< .10$). The direction of the marginal interactions suggests that mentors with greater mean bandwidth perceived marginally less fluctuation in the degree of psychosocial-support provided over time. In other

words, their perceptions of support were marginally more stable than those with lower mean bandwidths. Again, no significant relationships exited for mentees.

For role-modeling, there were no significant relationships at Level 2 for mentors or for mentees. In other words, bandwidth had no impact on perceptions of role-modeling over time. When comparing this to our Level 1 findings, it's interesting to note that for mentees it's less about the bandwidth over time and more about what is provided in a specific month. Practically, this is an important finding because it shows a lot can be achieved within one month and the developmental nature of a mentoring function isn't dependent on previous month interactions.

Practically, e-mentoring relationships (even with low bandwidth) still seem to be effective in promoting mentoring. Regardless of what type of communication media is used – these three mentoring functions are still perceived to develop the same way. Interestingly though, bandwidth impacts the perceptions of how much career-support and psychosocial-support is provided. For mentees, in a given month bandwidth had a significant impact on career-support and role-modeling while for mentors, the impact bandwidth had on career and psychosocial support was more holistic. Mentees have the "what have you done for me lately" mentality whereas mentors see the relationship much more longitudinally. Setting up relationship and meeting expectations up early in the relationship will help set realistic expectations for both the mentor and mentee.

Cross-Level Analysis

In order to test whether mentors and mentees who met face-to-face more often perceived higher degrees of support, we controlled for the total number of interactions experienced. Thus, we felt more confident concluding that any differences found could

be associated with the percentage of face-to-face communication as opposed to total number of interactions.

For mentors' career-support, no significant effects of percentage of face-to-face communication were identified. Thus, it seems that face-to-face communication was not significantly associated with mentors' perceptions of their ability to provide career-support. The same was true of mentees: percentage of face-to-face communication was not significantly associated with the degree of career-support perceived by mentees.

A similar pattern was found for psychosocial-support. Percent face-to-face communication was not significantly associated with perceived psychosocial-support for either mentors or mentees. A marginally significant effect was found for mentees' perceptions of psychosocial-support late in the study period (γ_{32}= -.002, p = .06). The direction of this relationship suggested that mentees with higher percentages of face-to-face communication perceived marginally lower degrees of psychosocial-support in the late months of the study. This is counter-intuitive and future research should investigate whether this relationship is dependent on the mentoring satisfaction levels of the mentees.

For mentor's role-modeling, no significant effects of percentage of face-to-face communication were identified. Thus, it seems that face-to-face communication was not significantly associated with mentors' perceptions of their ability to provide role-modeling. The same was true of mentees with regards to percentage of face-to-face communication. However, for total interactions, there was a significant direct relationship between the amount of role-modeling provided in a given month (β_{02} = .02,

p =.05). In a given month, mentees felt that the more they interacted, regardless of bandwidth, the more role-modeling was provided. It could be that the more frequent a mentee interactions with their mentor the more opportunities they have for observation.

Altogether, these results fail to support that meeting face-to-face more frequently adds any additional benefit to the mentoring relationship. Percentage of face-to-face communication was not significantly associated with higher degrees of career or psychosocial support for either mentors or mentees. However, any potential effects of face-to-face versus electronic communication on perceived role modeling could not be determined in this study due to the psychometric issues we encountered with the role modeling measure.

Limitations

The current study is not without potential limitations. First, typical to survey research, all measures were based on self-report data. Thus, our measurements reflect participants' perceptions of their mentoring relationships, which may diverge from the realities of those relationships. While every attempt was made to ensure individuals felt that their responses were anonymous, future research should utilize more objective data. For example, tracking emails, phone calls and other communication touch points will help ensure accurate data. However, while we could not validate the self-report measures, as previously mentioned there was relatively good agreement between the pairs on the amount of time they spent communicating via face-to-face versus electronically.

Second, as with most organizational research, the study lacked from having a true experimental design. Ideally, we would have wanted to control the communication

media (e-mentoring group vs. face-to-face group) and assign pairs to different scenarios. Knowing the "perfect blend" of communication media would help organizations provide the necessary resources (e.g., Skype, funds for face-to-face communication, etc.) to sustain the type of intended relationship. Furthermore, having more variance in relationship type (e.g., continuum from pure face-to-face to pure electronic) would help researchers identify any potential tipping point where the three-factor mentoring model may become invalid, as found in the current study.

Finally, our sample size was relatively small. While we had adequate power when looking at individuals as oppose to pairs, we did not have an adequate sample to run a proper CFA to tease apart issues with role-modeling items. Future research should replicate the findings with more pairs and in a different organizational context. As these results were conducted in a single organization within a single mentoring program various findings may emerge thus impacting the Generalizability of our study. While future research is mentioned in detail below, it is important to mention here that company culture, organizational climate and other "company specific" factors may play a moderating role in our results. Future research should investigate what, if any, factors impact these results.

Future Research

While we have provided some general ideas for future research, we have outlined below more specific recommendations based on the findings of the current study. First, researchers should continue to investigate additional types of CMC communication, including Skype and other forms of richer communication. Because this study solely looked at traditional forms of communication (i.e., email, voicemail, face-to-

face) it is not clear how e-mentoring would vary with other, less traditional, communication channels. These types of tools are becoming more common in large corporations and may help mimic face-to-face interactions and act as a replacement to more traditional face-to-face conversations and increase the potential for role-modeling to emerge.

Another interesting question for future researchers is why mentors and mentees have different perceptions of the amount of career and psychosocial support provided and why is there a potential tradeoff between perceived career and psychosocial support such as while one increases the other decreases. Despite perception differences and the potential tradeoff between functions, relationships were still able to maintain mentoring quality with low bandwidth. Looking at additional moderators related to the opportunity for pairs to interact could potentially tease apart differences between pairs and individuals. Future research should dive deeper into perception differences and investigate what strategies are used by the pairs to maintain impactful relationships.

Third, because we notice initially high perceptions of the amount of mentoring provided, future research should further investigate whether high initial perceptions might reflect a “honeymoon effect” and provide insight to organizations on how they can capitalize on or control this effect through the use of realistic previews and expectation setting. These results could also be a result of the study design as all first meetings were conducted during face-to-face for training. However, knowing that expectations may be higher in the first few months may help organizations set specific policies around both topics and meeting frequency and duration during the initial periods of the

relationship. As mentoring relationships go through specific phases, expectations are likely to change as well, as seen from initial research by Kram (1985).

Fourth, the current study looked solely at mentoring functions and did not investigate overall mentor and mentee benefits from mentoring. Researchers should investigate whether traditional mentoring benefits (e.g., number of mentee promotions, compensation) generalize to electronic contexts. Furthermore, employees' satisfaction with e-mentoring programs will be an important thing to investigate. The majority of participants in our current study were very comfortable with technology, but we could expect to see generational differences with e-mentoring satisfaction depending on what technology is used to support/enhance the relationship. While the organization may like some of the benefits that come with e-mentoring (e.g., increased number of available mentors, cost), participants may prefer a more face-to-face relationship. If these relationships are truly beneficial and enjoyable, we would expect informal e-mentoring relationships to emerge. As companies expand their internal social network (e.g., Yammer), will informal e-mentoring relationships exist? We have seen in online dating and other social networks (e.g., facebook, linkedin) strangers have both professional and personally relationship develop. It is feasible to think then that e-mentoring could emerge with the proper tools.

Finally, and most importantly, further research should continue to investigate the construct definition of e-mentoring and whether or not our traditional definition of mentoring holds true for e-mentoring. Future researchers may conduct an invariance study in which they examine more closely the properties of measures between traditional and electronic mentoring contexts. They may additionally examine invariance

over time; our study failed to find acceptable fit for the mentoring measure across time points. Could it be that the items in our mentoring scale for role-modeling are confounded by the fact that they require “seeing” your mentor? Until we have a formal operational definition of e-mentoring, varying results will continue to emerge between researchers.

Conclusions

This study helped provide insight into how the mentoring functions develop over time in an e-mentoring context and how the medium of communication impacts these relationships. These findings will help practitioners ensure their e-mentoring programs have proper communication modes and that relationships that are primarily electronic can be set up for success. As shown in this study, e-mentoring may be a practical way for employees to coach and mentor each other when geographical proximity is not an option.

As discussed, e-mentoring is an important topic for future researchers. As we begin to identify the construct, it will better able us to make predictions about its application in the work environment. Currently, researchers assume that e-mentoring is yet another form of traditional mentoring, but these claims remain unsubstantiated and the results of the current study show substantial differences. This will be a critical point to be reconciled in future research. Companies will continue to expand globally, and electronic means of communication will continue to be an essential component for every day work functioning. The benefits from e-mentoring could be crucial for these organizations, but how to do so currently remains largely uninvestigated.

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Table 1

Descriptive Statistics: By Mentoring Role

		Mentor		*Mentee*	
Source	Participants	*N*	*%*	*N*	*%*
Gender	Male	17	43.6%	25	64.1%
	Female	22	56.4%	13	33.3%
	Missing	0	0.0%	1	2.6%
Race	Caucasian	22	56.4%	32	82.1%
	African American	16	41.0%	4	10.3%
	Native American	1	1.3%	0	0.0%
	Other	0	0.0%	1	2.6%
	Missing	0	0.0%	2	5.1%
Tenure	1-5 years	4	10.2%	2	5.1%
	6-10 years	14	35.9%	3	7.7%
	11-15 years	3	7.7%	7	17.9%
	16 – 20 years	4	10.2%	4	10.2%
	21 – 25 years	7	17.9%	8	20.5%
	26+ years	5	12.8%	12	30.7%
	Missing	2	5.1%	3	7.7%
Position	Non-supervisor	17	43.6%	1	2.6%
	First-line manager	17	43.6%	3	7.7%
	Second-line manager	5	12.8%	17	43.6%
	Senior Leader	0	0.0%	18	46.2%

Table 2

Descriptive Statistics: By Mentoring Pair

Pair #	*Mentor*				*Mentee*				*Pair Information*	
	Gender	Race	Tenure	Position	Gender	Race	Tenure	Position	Loc	Knew Prior
1	M	W	22	LT	F	AA	22	NS	SCB	No
2	M	W	11	LT	F	W	25	1LM	DC	
3	M	AA	8	LT	F	AA	10	NS	SCB	2-5yrs
4	M	W	22	2LM	F	W	4	2LM	SCDB	
5	F	W	24	2LM	F	AA	24	NS	DC	No
6	F	AA	20	NS	M	AA	24	1LM	DC	No
7	M		22	2LM	M	W	17	2LM	SCB	No
8	F	W	11	LT	F	AA	25	1LM	SCB	2-5yrs
9	F	W	23	2LM	M	W	18	NS	SCDB	>5
10	M	W	30	2LM	M	W	8	2LM	DC	No
11			12	LT	M	AA	9	NS	SCB	<1
12	F	W	17.5	1LM	F	AA	16	NS	SCB	No
13	F	AA	28	1LM	F	A	1	NS	SCB	<1
14	M	W		LT	M	W	24	NS	DC	No
15	M	AA	24	LT	M	W	2.5	1LM	SCB	No
16	M	W	28	LT	M	W	24	1LM	DC	>5
17	M	W	15	2LM	F	W	9	NS	DC	>5
18	M	W	29	LT	F	AA	12	1LM	DC	No
19	F	W	24	2LM	F	AA	10	1LM	SCB	
20	F	W	20	2LM	F	W	6.5	1LM	DC	No
21	M	W	37	LT	M	W	2.5	NS	SCB	<1
22	M	W	25	LT	M	AA	27	2LM	DC	2-5yrs
23	M	Other	20	2LM	M	W	34	1LM	SCDB	
24	M	W	26	LT	F	AA	9	NS	DC	No
25	M	W	10	2LM	F	AA	9	NS	DC	No
26	F	W	34	LT	F	W	17	NS	DC	>5yrs
27	M	W	11	LT	F	AA	8	1LM	SCB	
28	M	W	34	LT	F	AA	26	1LM	DC	
29	M	W		2LM	F	W	7	1LM	DC	No
30	M	W		LT	F	W	12	1LM	SCB	No
31	F	W	13	2LM	F	AA	10	NS	DC	No
32	M	W	5	2LM	M	W		2LM	DC	No
33	F	W	15	2LM	M	W	10	1st Line	SCB	No
34	F	W	2	LT	F	W	28	1LM	SCB	No
35	M	W	26	LT	M	W		1LM	DC	>5yrs
36	F	W	26	2LM	M	W	8	NS	SCB	>5yrs
37	M	W	27	2LM	M	W	11	1LM	DC	No
38	M	W	28	2LM	F	AA	32	NS	DC	2-5yrs
39	M	W	9	1LM	M	W	6	NS	SCB	No

Note. W = White, AA = African American, A = Asian, NA = Native American

LT = Leadership Team, NS = Non-Supervisory, 1LM = 1st Line Manager, 2LM = 2nd Line Manager

DC= Different City, SC = Same City, SCB = Same City Same Building, SCDB = Same City Different Building

Table 3a

Descriptive Statistics: Mentoring Functions; Reported By Mentors

	Career-Support			Psychosocial			Role-Modeling		
Month	*α*	*M*	*SD*	*α*	*M*	*SD*	*α*	*M*	*SD*
1	0.81	5.75	0.71	0.70	4.70	1.12	0.75	4.50	0.72
2	0.81	4.98	1.23	0.75	5.63	0.76	0.79	4.81	0.74
3	0.80	5.55	0.89	0.80	4.93	1.16	0.89	4.69	0.99
4	0.82	5.78	0.71	0.85	5.05	1.34	0.76	4.95	0.74
5	0.91	5.80	0.57	0.89	5.19	0.94	0.84	5.13	0.79
6	0.92	5.53	0.89	0.77	5.17	0.95	0.79	4.99	0.81
7	0.96	5.81	0.69	0.82	5.41	1.06	0.94	5.09	0.74

Table 3b

Descriptive Statistics: Mentoring Functions; Reported By Mentees

	Career-support			Psychosocial			Role-Modeling		
Month	*α*	*M*	*SD*	*α*	*M*	*SD*	*α*	*M*	*SD*
1	0.64	5.97	0.84	0.61	4.81	1.19	0.61	5.49	0.89
2	0.76	4.97	1.17	0.74	5.74	1.00	0.74	5.61	1.01
3	0.78	5.72	0.94	0.79	5.01	1.33	0.89	5.58	1.07
4	0.75	5.70	0.99	0.84	5.03	1.31	0.82	5.67	0.83
5	0.54	5.81	1.23	0.60	5.22	1.41	0.87	5.67	0.96
6	0.83	5.52	1.14	0.72	4.83	1.35	0.89	5.65	0.92
7	0.83	5.57	1.32	0.86	5.04	1.36	0.82	5.62	1.14

Table 4

RWG Statistics

Month	Mentoring Function Item								
	1	2	3	4	5	6	7	8	9
Mo 1	0.88	0.88	0.88	0.50	0.88	0.88	0.88	0.50	0.88
Mo 2	0.88	0.88	0.88	0.50	0.88	0.88	0.88	0.50	0.88
Mo 3	0.88	0.88	0.88	0.50	0.88	0.88	0.88	0.88	0.88
Mo 4	1.00	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Mo 5	1.00	0.88	0.88	0.69	0.88	0.88	0.88	0.88	0.88
Mo 6	0.88	0.88	0.88	0.50	0.88	0.88	0.88	0.88	0.88
Mo 7	1.00	0.88	0.88	0.69	0.88	1.00	0.88	0.88	0.88

Table 5a

CFA Statistics: Three-Factor Model

Model	$\chi 2$	*df*	*p*	$\chi 2/df$	RMSEA	CFI	NNFI
Month1	49.00	24	0.00	2.04	0.09	0.91	-0.08
Month2	90.56	24	0.00	3.77	0.19	0.87	0.80
Month3	79.53	24	0.00	3.31	0.17	0.92	0.87
Month4	78.25	24	0.00	3.26	0.17	0.92	0.87
Month5	79.05	24	0.00	3.29	0.17	0.93	0.89
Month6	82.96	24	0.00	3.46	0.18	0.88	0.82
Month7	52.49	24	0.00	2.19	0.12	0.95	0.93

Table 5b

CFA Statistics: Two-Factor Model

Model	χ2	*df*	*p*	χ2/*df*	RMSEA	CFI	NNFI
Month1	11.5	8	0.18	1.44	0.06	0.96	0.93
Month2	11.11	8	0.20	1.39	0.07	0.98	0.97
Month3	15.70	8	0.05	1.96	0.11	0.97	0.94
Month4	19.82	8	0.01	2.48	0.13	0.96	0.92
Month5	7.08	8	0.53	0.89	0.00	1.00	1.01
Month6	20.21	8	0.00	2.53	0.13	0.96	0.93
Month7	7.31	8	0.50	0.91	0.00	1.00	1.00

Table 6a

Null Models: Mentors

	Career-Support			Psychosocial			Role-Modeling		
Fixed	*Coeff*	*SE*	*p*	*Coeff*	*SE*	*p*	*Coeff*	*SE*	*p*
Intercept	5.54	0.10	0.00	5.04	0.15	0.00	4.81	0.11	0.00
Random	*SD*	*Var*		*SD*	*Var*		*SD*	*Var*	
σ^2 *e*	0.53	0.28		0.87	0.75		0.64	0.42	
σ^2 *u0*	0.72	0.52		0.69	0.47		0.52	0.27	

Note. Coeff = coefficient, SE= standard error, Var = variance component, σ^2 e = residual error at 1st level, σ^2 u0 = residual error at 2nd level

Table 6b

Null Models: Mentees

	Career-Support			Psychosocial			Role-Modeling		
Fixed	*Coeff*	*SE*	*p*	*Coeff*	*SE*	*p*	*Coeff*	*SE*	*p*
intercept	5.57	0.13	.00	5.01	0.17	0.00	5.55	0.14	0.00
Random	*SD*	*Var*		*SD*	*Var*		*SD*	*Var*	
σ^2 *e*	0.77	0.60		1.02	1.04		0.83	0.69	
σ^2 *u0*	0.79	0.63		0.76	0.58		0.52	0.27	

Note. Coeff = coefficient, SE= standard error, Var = variance component, σ^2 e = residual error at 1st level, σ^2 u0 = residual error at 2nd level

Table 7a

Level 1 Career-Support: Mentors

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	5.61	0.11	38	0.00
Time(β_{10})	-0.48	0.19	215	0.01
Time^2(β_{20})	0.21	0.09	215	0.01
Time^3(β_{30})	-0.02	0.01	215	0.02

Table 7b

Level 1 Career-Support & Monthly Bandwidth: Mentors

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	5.58	0.11	38	0.00
Time(β_{10})	-0.44	0.19	214	0.02
Time^2(β_{20})	0.20	0.09	214	0.03
Time^3(β_{30})	-0.02	0.01	214	0.04
Bandwidth (pts)	0.02	0.02	214	0.16

Table 7c

Level 1 Psychosocial-Support: Mentors

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	4.81	0.16	38	0.00
Time(β_{10})	0.48	0.17	215	0.01
Time^2(β_{20})	-0.20	0.07	215	0.01
Time^3(β_{30})	0.02	0.01	215	0.00

Table 7d

Level 1 Psychosocial-Support & Monthly Bandwidth: Mentors

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	4.81	0.17	38	0.00
Time(β_{10})	0.47	0.17	214	0.01
Time^2(β_{20})	-0.20	0.07	214	0.01
Time^3(β_{30})	0.02	0.01	214	0.00
Bandwidth (pts)	0.00	0.01	214	0.82

Table 8a

Level 1 Career-Support: Mentees

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	5.81	0.12	38	0.00
Time(β_{10})	-0.57	0.16	218	0.01
Time^2(β_{20})	0.24	0.07	218	0.01
Time^3(β_{30})	-0.03	0.01	218	0.01

Table 8b

Level 1 Career-Support & Monthly Bandwidth: Mentees

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	5.73	0.13	38	0.00
Time(β_{10})	-0.53	0.18	217	0.00
Time^2(β_{20})	0.22	0.07	217	0.00
Time^3(β_{30})	-0.02	0.01	217	0.00
Bandwidth (pts)	.069	.02	217	0.00

Table 8c

Level 1 Psychosocial-Support: Mentees

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	4.92	0.17	38	0.00
Time(β_{10})	0.57	0.18	218	0.00
Time^2(β_{20})	-0.25	0.07	218	0.00
Time^3(β_{30})	0.03	0.01	218	0.01

Table 8d

Level 1 Psychosocial-Support & Monthly Bandwidth: Mentees

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	4.91	0.17	38	0.00
Time(β_{10})	0.57	0.18	217	0.00
Time^2(β_{20})	-0.25	0.07	217	0.00
Time^3(β_{30})	0.03	0.01	217	0.01
Bandwidth (pts)	0.01	0.02	217	0.67

Table 9a

Level Two Mean Bandwidth Career-Support: Mentees

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	5.81	0.12	37	0.00
Mean Bandwidth (γ_{01})	0.04	0.04	37	0.29
Time slope β_1				
Time(γ_{10})	-0.57	0.16	214	0.00
Mean Bandwidth (γ_{11})	0.02	0.04	214	0.64
Time slope^2 β_2				
Time^2(γ_{20})	0.24	0.07	214	0.00
Mean Bandwidth (γ_{21})	0.00	0.01	214	0.93
Time slope^3 β_3				
Time^3(γ_{30})	-0.03	0.01	214	0.00
Mean Bandwidth (γ_{31})	0.00	0.00	214	0.97

Table 9b

Level Two Mean Bandwidth Psychosocial-Support: Mentees

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	4.91	0.17	37	0.00
Mean Bandwidth (γ_{01})	0.08	0.06	37	0.22
Time slope β_1				
Time(γ_{10})	0.58	0.17	214	0.00
Mean Bandwidth (γ_{11})	0.00	0.06	214	0.97
Time slope^2 β_2				
Time^2(γ_{20})	-0.26	0.07	214	0.00
Mean Bandwidth (γ_{21})	0.01	0.02	214	0.59
Time slope^3 β_3				
Time^3(γ_{30})	0.03	0.01	214	0.00
Mean Bandwidth (γ_{31})	0.00	0.00	214	0.51

Table 9c

Level Two Mean Bandwidth Career-Support: Mentors

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	5.61	0.97	37	0.00
Mean Bandwidth (γ_{01})	0.09	0.03	37	0.00
Time slope β_1				
Time(γ_{10})	-0.48	0.19	211	0.02
Mean Bandwidth (γ_{11})	-0.02	0.06	211	0.78
Time slope^2 β_2				
Time^2(γ_{20})	0.21	0.09	211	0.02
Mean Bandwidth (γ_{21})	0.01	0.03	211	0.70
Time slope^3 β_3				
Time^3(γ_{30})	-0.02	0.01	211	0.02
Mean Bandwidth (γ_{31})	0.00	0.00	211	0.73

Table 9d

Level Two Mean Bandwidth Psychosocial-Support: Mentors

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	4.80	0.15	37	0.00
Mean Bandwidth (γ_{01})	0.11	0.04	37	0.01
Time slope β_1				
Time(γ_{10})	0.50	0.17	211	0.01
Mean Bandwidth (γ_{11})	-0.10	0.04	211	0.10
Time slope^2 β_2				
Time^2(γ_{20})	-0.22	0.07	211	0.00
Mean Bandwidth (γ_{21})	0.02	0.02	211	0.10
Time slope^3 β_3				
Time^3(γ_{30})	0.03	0.01	211	0.00
Mean Bandwidth (γ_{31})	0.00	0.00	211	0.08

Table 10a

Level 1 Role-Modeling & Monthly Bandwidth: Mentors

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	4.48	0.13	38	0.00
Time(β_{10})	0.17	0.13	217	0.17
Time^2(β_{20})	0.00	0.01	217	0.88
Time^3(β_{30})	0.00	0.01	217	0.86
Bandwidth (pts)	0.01	0.01	217	0.51

Table 10b

Level 1 Role-Modeling & Monthly Bandwidth: Mentees

	Coefficient	*SE*	*df*	*p*
Direct Effect(β_{00})	5.55	0.13	38	0.00
Time(β_{10})	0.03	0.05	218	0.46
Time^2(β_{20})	-0.06	0.04	218	0.12
Time^3(β_{30})	-0.03	0.05	218	0.55
Bandwidth (pts)	0.02	0.01	218	0.07

Table 10c

Level Two Mean Bandwidth Role-Modeling: Mentors

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	4.81	0.12	37	0.00
Mean Bandwidth (γ_{01})	0.03	0.03	37	0.37
Time slope β_1				
Time(γ_{10})	0.00	0.05	211	0.86
Mean Bandwidth (γ_{11})	0.00	0.02	211	0.96
Time slope^2 β_2				
Time^2(γ_{20})	0.00	0.01	211	0.88
Mean Bandwidth (γ_{21})	0.00	0.00	211	0.96
Time slope^3 β_3				
Time^3(γ_{30})	0.17	0.10	211	0.18
Mean Bandwidth (γ_{31})	0.01	0.04	211	0.78

Table 10d

Level Two Mean Bandwidth Role-Modeling: Mentees

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	5.55	0.13	37	0.00
Mean Bandwidth (γ_{01})	0.02	0.01	37	0.06
Time slope β_1				
Time(γ_{10})	0.03	0.04	214	0.49
Mean Bandwidth (γ_{11})	0.00	0.00	214	0.51
Time slope^2 β_2				
Time^2(γ_{20})	-0.06	0.04	214	0.13
Mean Bandwidth (γ_{21})	0.00	0.00	214	0.44
Time slope^3 β_3				
Time^3(γ_{30})	0.03	0.01	214	0.59
Mean Bandwidth (γ_{31})	0.00	0.00	214	0.84

Table 11a

Career-Support & Total Interactions & Face-to-Face %: Mentors

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	3.70	0.74	36	0.00
Total Interactions(γ_{01})	0.02	0.01	36	0.03
F-to-F %(γ_{02})	0.02	0.02	36	0.34
Time slope β_1				
Time(γ_{10})	0.65	1.47	207	0.97
Total Interactions(γ_{11})	-0.01	0.01	207	0.71
F-to-F %(γ_{12})	-0.01	0.03	207	0.78
Time slope^2 β_2				
Time^2(γ_{20})	-0.14	0.65	207	0.83
Total Interactions(γ_{21})	0.00	0.01	207	0.63
F-to-F %(γ_{22})	0.01	0.01	207	0.62
Time slope^3 β_3				
Time^3(γ_{30})	0.02	0.07	207	0.74
Total Interactions(γ_{31})	0.00	0.00	207	0.57
F-to-F %(γ_{32})	0.00	0.00	207	0.54

Note: "F-to-F %" denotes the percentage of interactions that were conducted face-to-face as opposed to electronically.

Table 11b

Psychosocial-Support & & Total Interactions & Face-to-Face %: Mentors

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	3.91	0.86	36	0.00
Total Interactions(γ_{01})	0.02	0.01	36	0.02
F-to-F %(γ_{02})	-0.03	0.02	36	0.19
Time slope β_1				
Time(γ_{10})	0.24	1.29	207	0.85
Total Interactions(γ_{11})	-0.01	0.01	207	0.20
F-to-F %(γ_{12})	0.04	0.04	207	0.25
Time slope^2 β_2				
Time^2(γ_{20})	-0.33	0.59	207	0.58
Total Interactions(γ_{21})	0.01	0.00	207	0.15
F-to-F %(γ_{22})	-0.01	0.02	207	0.45
Time slope^3 β_3				
Time^3(γ_{30})	0.05	0.06	207	0.45
Total Interactions(γ_{31})	0.00	0.00	207	0.12
F-to-F %(γ_{32})	0.00	0.00	207	0.53

Note: "F-to-F %" denotes the percentage of interactions that were conducted face-to-face as opposed to electronically.

Table 11c

Role-Modeling & Total Interactions & Face-to-Face %: Mentors

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	4.81	0.10	36	0.00
Total Interactions(γ_{01})	0.01	0.01	36	0.47
F-to-F %(γ_{02})	0.00	0.17	36	0.74
Time slope β_1				
Time(γ_{10})	0.00	0.54	207	0.87
Total Interactions(γ_{11})	0.00	0.00	207	0.88
F-to-F %(γ_{12})	0.00	0.01	207	0.67
Time slope^2 β_2				
Time^2(γ_{20})	0.00	0.01	207	0.88
Total Interactions(γ_{21})	0.00	0.00	207	0.98
F-to-F %(γ_{22})	0.00	0.00	207	0.94
Time slope^3 β_3				
Time^3(γ_{30})	0.17	0.13	207	0.18
Total Interactions(γ_{31})	0.00	0.00	207	0.71
F-to-F %(γ_{32})	-0.01	0.01	207	0.32

Note: "F-to-F %" denotes the percentage of interactions that were conducted face-to-face as opposed to electronically.

Table 12a

Career-Support & Total Interactions & Face-to-Face %: Mentees

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	4.80	0.78	36	0.00
Total Interactions(γ_{01})	0.01	0.01	36	0.36
F-to-F %(γ_{02})	0.02	0.02	36	0.40
Time slope β_1				
Time(γ_{10})	-0.46	0.82	210	0.57
Total Interactions(γ_{11})	0.01	0.01	210	0.50
F-to-F %(γ_{12})	-0.02	0.18	210	0.25
Time slope^2 β_2				
Time^2(γ_{20})	0.28	0.33	210	0.93
Total Interactions(γ_{21})	0.00	0.00	210	0.88
F-to-F %(γ_{22})	0.01	0.01	210	0.25
Time slope^3 β_3				
Time^3(γ_{30})	-0.02	0.04	210	0.78
Total Interactions(γ_{31})	0.00	0.00	210	0.78
F-to-F %(γ_{32})	0.00	0.00	210	0.34

Note: "F-to-F %" denotes the percentage of interactions that were conducted face-to-face as opposed to electronically.

Table 12b

Psychosocial-Support & Total Interactions & Face-to-Face %: Mentees

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	3.73	1.48	36	0.02
Total Interactions(γ_{01})	0.02	0.02	36	0.28
F-to-F %(γ_{02})	0.00	0.04	36	0.91
Time slope β_1				
Time(γ_{10})	1.12	0.82	210	0.34
Total Interactions(γ_{11})	0.00	0.02	210	0.90
F-to-F %(γ_{12})	-0.03	0.02	210	0.26
Time slope^2 β_2				
Time^2(γ_{20})	-0.82	0.50	210	0.10
Total Interactions(γ_{21})	0.00	0.01	210	0.64
F-to-F %(γ_{22})	0.01	0.01	210	0.10
Time slope^3 β_3				
Time^3(γ_{30})	0.09	0.05	210	0.06
Total Interactions(γ_{31})	0.00	0.00	210	0.55
F-to-F %(γ_{32})	0.00	0.00	210	0.06

Note: "F-to-F %" denotes the percentage of interactions that were conducted face-to-face as opposed to electronically.

Table 12c

Role-Modeling & Total Interactions & Face-to-Face %: Mentees

	Coefficient	*SE*	*df*	*p*
Intercept 1 β_0				
Direct Effect(γ_{00})	5.55	0.13	36	0.00
Total Interactions(γ_{01})	0.02	0.01	36	0.05
F-to-F %(γ_{02})	0.02	0.02	36	0.36
Time slope β_1				
Time(γ_{10})	0.02	0.05	210	0.55
Total Interactions(γ_{11})	0.00	0.00	210	0.41
F-to-F %(γ_{12})	0.00	0.01	210	0.65
Time slope^2 β_2				
Time^2(γ_{20})	-0.06	0.04	210	0.13
Total Interactions(γ_{21})	0.00	0.00	210	0.45
F-to-F %(γ_{22})	0.00	0.01	210	0.79
Time slope^3 β_3				
Time^3(γ_{30})	-0.02	0.05	210	0.65
Total Interactions(γ_{31})	0.00	0.00	210	0.78
F-to-F %(γ_{32})	0.00	0.01	210	0.77

Note: "F-to-F %" denotes the percentage of interactions that were conducted face-to-face as opposed to electronically.

Table 13
Time Known Each Other: Mentors

	Coefficient	*SE*	*df*	*p*
Psychosocial-Support				
Intercept 1 β_0				
Direct Effect(γ_{00})	4.82	0.18	38	0.00
Time β_1				
Time Known(γ_{01})	0.62	0.29	217	0.04
Role-Modeling				
Intercept 1 β_0				
Direct Effect(γ_{00})	4.65	0.13	38	0.00
Time β_1				
Time Known(γ_{01})	0.44	0.22	217	0.04

Note. Coeff = coefficient, SE= standard error, Var Comp = variance component.

Figure 1

Richness		Low	High
	High	Asynchronous conferencing (discussion boards, net chatting)	Face-to-face / video conferencing
	Low	Download lecture slides	Webcasting, Messaging System (email, voicemail)

Social Presence

Figure 2

Mentoring Over Time: Mentors

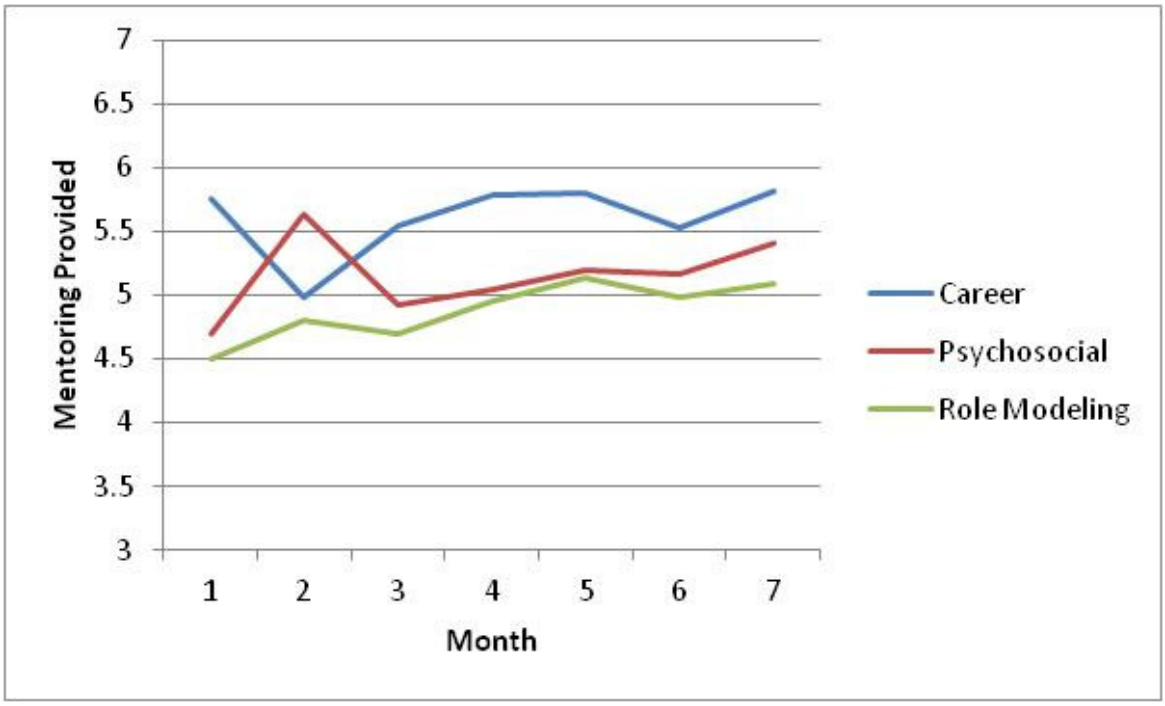
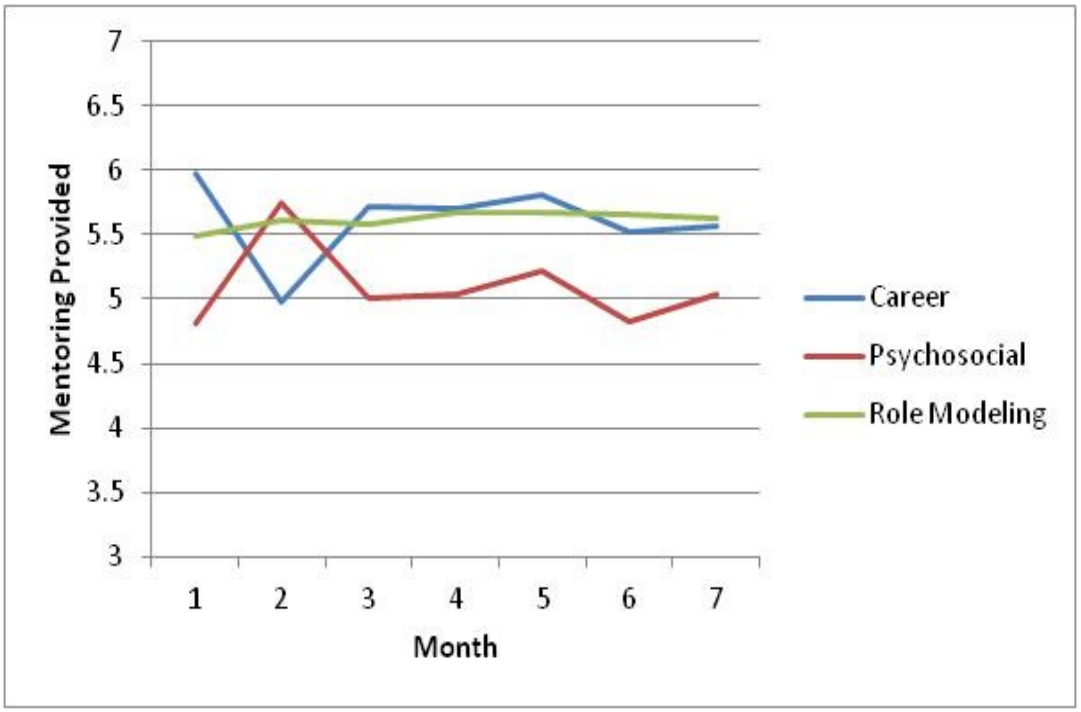


Figure 3

Mentoring Over Time: Mentees



Appendix A

PRE	• Demographics
	• Communication Perception
	• Additional Organizational Measures
MONTHLY	• Media Richness/Interaction Frequency
	• Mentoring Function Questionnaire
3 & 6 MONTHS	• Additional Organizational Measures

Appendix B

Media Richness/Interaction

How many times (occurrence) and for how long (total minutes of all occurrences) did you have contact with your mentor/protégé in the last month using the following mediums? Please indicate the **TOTALS** – including voice mails that you left AND that the other person left.

Phone

A) 1
B) 2
C) 3
D) 4
E) 5
F) 6
G) OTHER _____ (type in)
H) NONE

A) 1-10minutes
B) 11-30minutes
C) 31-60minutes
D) 61-90minutes
E) 91-120 minutes
F) 121-180 minutes
G) OTHER _____ (type in)
H) NONE

Face-to-face

A) 1
B) 2
C) 3
D) 4
E) 5
F) 6
G) OTHER _____ (type in)
H) NONE

A) 1-10minutes
B) 11-30minutes
C) 31-60minutes
D) 61-90minutes
E) 91-120 minutes
F) 121-180 minutes
G) OTHER _____ (type in)
H) NONE

Voice Message

A) 1
B) 2
C) 3
D) 4
E) 5
F) 6
G) OTHER _____ (type in)
H) NONE

A) 1-10minutes
B) 11-30minutes
C) 31-60minutes
D) 61-90minutes
E) 91-120 minutes
F) 121-180 minutes
G) OTHER _____ (type in)
H) NONE

Email

A) 1
B) 2
C) 3
D) 4

A) 1-10minutes
B) 11-30minutes
C) 31-60minutes
D) 61-90minutes

E) 5
F) 6
G) OTHER _____ (type in)
H) NONE

E) 91-120 minutes
F) 121-180 minutes
G) OTHER _____ (type in)
H) NONE

Appendix C

Job Attitudes: Mentor

	Month 1			Month 2			Month 3		
	α	*M*	*SD*	*α*	*M*	*SD*	*α*	*M*	*SD*
Org Commit	0.81	5.29	0.75	0.88	5.26	0.84	0.88	5.22	0.81
Org Climate	0.85	5.82	0.58	0.89	5.68	0.71	0.84	5.62	0.67
Job Sat	0.91	6.13	0.71	0.83	5.97	0.81	0.84	6.06	0.78

Note. Org Commit = Organizational Commitment, Org Climate= Organizational Climate, Job Sat = Job Satisfaction

Job Attitudes: Mentee

	Month 1			Month 2			Month 3		
	α	*M*	*SD*	*α*	*M*	*SD*	*α*	*M*	*SD*
Org Commit	0.93	4.96	1.27	0.94	5.19	1.19	0.93	5.21	1.18
Org Climate	0.92	5.32	1.03	0.88	5.49	0.91	0.88	5.48	0.91
Job Sat	0.85	5.94	0.82	0.89	5.84	0.80	0.91	5.85	0.85

Note. Org Commit = Organizational Commitment, Org Climate= Organizational Climate, Job Sat = Job Satisfaction

Organizational Variables

	Month Three				Month Six			
	Mentor		Mentee		Mentor		Mentee	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Network	2.34	0.94	2.92	1.05	2.66	0.97	2.91	0.98
Interpersonal	2.58	0.81	3.17	1.03	2.88	0.79	3.12	0.96
Confidence	2.65	0.95	3.06	1.07	2.75	1.08	3.36	1.03
Leadership	2.58	0.99	3.00	1.10	2.81	1.00	3.00	1.12
Knowledge	2.58	0.92	3.33	1.20	2.84	1.11	3.33	0.99
Problem Solving	2.26	1.00	2.67	1.12	2.44	1.01	2.91	1.31
Functional	1.94	1.06	2.47	1.06	2.25	1.08	2.33	1.02
Challenging	2.19	1.11	2.58	1.18	2.35	1.14	2.64	1.27
Supervisor Support	2.16	1.04	2.78	1.24	2.42	1.06	3.12	1.14
Coworker Support	2.35	1.11	2.50	1.13	2.52	1.09	2.72	1.08
Personal Responsibility	2.45	0.99	3.03	1.30	2.84	1.08	3.31	1.12
Career Development	2.35	1.05	3.17	1.00	2.53	0.98	3.24	1.23
% Improvement in Productivity/Effectiveness	1.37	0.74	3.28	2.29	1.63	0.89	3.31	1.86
Skills I'm Gaining Are Relevant to My Work	5.32	1.38	6.44	1.00	5.41	1.19	6.41	1.16
I Can Apply Skills to My Role	5.35	1.38	6.36	1.02	5.56	1.11	6.12	1.19
More Effective in Role	4.97	1.35	5.94	1.15	5.19	1.18	5.91	1.23
Overall Satisfaction	5.68	1.42	6.39	0.96	5.72	1.17	6.15	1.33

Note[1]. Participants were asked to what extent they have experienced improvement in the following areas, due to their mentoring relationship (Network, Interpersonal Effectiveness, Confidence Leadership, Knowledge of the organization, Problem solving, Functional/technical skills, Challenge in job assignments, Supervisory support, Co-worker support, Personal responsibility/empowerment, Career development).

Correlations between Mentoring Functions and Job Attitudes

			Month 1			Month 2			Month 3			Month 4			Month 5		
			CS	**PS**	**RM**	**CS**	**PS**	**RM**	**CS**	**PS**	**RM**	**CS**	**PS**	**RM**	**CS**	**PS**	**RM**
Month 1	**CS**	R	--														
		N	72														
	PS	R	.16	--													
		N	72	73													
	RM	R	**.40****	**.38****	--												
		N	72	73	73												
Month 2	**CS**	R	.22	**.73****	**.42****	--											
		N	62	62	62	65											
	PS	R	**.72****	**.41****	**.45****	**.45****	--										
		N	63	63	63	65	66										
	RM	R	**.42****	**.41****	**.77****	**.52****	**.64****	--									
		N	63	63	63	65	66	66									
Month 3	**CS**	R	**.63****	**.37****	**.46****	**.35****	**.69****	**.55****	--								
		N	65	66	66	57	58	58	67								
	PS	R	**.28****	**.68****	**.46****	**.81****	**.61****	**.47****	**.56****	--							
		N	65	66	66	57	58	58	67	67							
	RM	R	**.40****	**.42****	**.84****	**.48****	**.59****	**.80****	**.60****	**.59****	--						
		N	65	65	65	57	58	58	66	66	66						
Month 4	**CS**	R	**.62****	**.36****	**.34****	**.46****	**.74****	**.51****	**.64****	**.45****	**.37****	--					
		N	56	57	57	49	50	50	52	52	51	59					
	PS	R	.09	**.74****	**.31***	**.79****	**.45****	**.42****	**.27****	**.77****	**.38****	**.51****	--				
		N	55	56	56	49	50	50	51	51	50	58	58				
	RM	R	**.30***	**.57****	**.71****	**.52****	**.53****	**.80****	**.42****	**.51****	**.71****	**.49****	**.57****	--			
		N	56	57	57	49	50	50	52	52	51	59	58	59			
Month 5	**CS**	R	**.60****	**.48****	**.46****	**.42****	**.81****	**.56****	**.68****	**.51****	**.52****	**.73****	**.52****	**.50****	--		
		N	54	55	55	49	49	49	52	52	51	47	46	47	59		
	PS	R	**.35****	**.71****	**.37****	**.70****	**.61****	**.43****	**.45****	**.69****	**.53****	**.47****	**.68****	**.43****	**.66****	--	
		N	54	55	55	49	49	49	52	52	51	47	46	47	59	59	
	RM	R	**.38****	**.57****	**.67****	**.46****	**.67****	**.65****	**.48****	**.57****	**.77****	**.38****	**.40****	**.71****	**.65****	**.61****	--
		N	54	55	55	49	49	49	52	52	51	47	46	47	59	59	59

* p < .05, ** p < .01 *Note:* CS=Career-Support; PS=Psychosocial-Support; RM=Role Modeling; Commit=Organizational Commitment; Clim=Organizational Climate; Sat=Job Satisfaction

(correlations continued)

			Month 1			Month 2			Month 3			Month 4			Month 5		
			CS	**PS**	**RM**	**CS**	**PS**	**RM**	**CS**	**PS**	**RM**	**CS**	**PS**	**RM**	**CS**	**PS**	**RM**
Month 6	**CS**	R	**.41****	**.27***	.18	.17	**.49****	**.28***	**.45****	**.27***	**.26***	**.53****	**.35****	**.36****	**.60****	**.43****	**.47****
		N	62	63	63	55	56	56	58	58	57	51	50	51	53	53	53
	PS	R	.08	**.67****	.24	**.68****	**.45****	**.27***	**.37****	**.68****	**.36****	**.48****	**.76****	**.40****	**.47****	**.72****	**.48****
		N	62	63	63	55	56	56	58	58	57	51	50	51	53	53	53
	RM	R	**.30***	**.45****	**.69****	**.48****	**.47****	**.64****	**.46****	**.51****	**.73****	**.28***	**.44****	**.74****	**.53****	**.42****	**.71****
		N	62	63	63	55	56	56	58	58	57	51	50	51	53	53	53
Month 7	**CS**	R	**.43****	**.42****	.23	**.32****	**.55****	**.36****	**.57****	**.34***	**.37****	**.71****	**.57****	**.39****	**.64****	**.60****	**.46****
		N	51	51	51	49	49	49	47	47	47	41	40	41	43	43	43
	PS	R	.21	**.77****	**.27***	**.74****	**.42****	**.40****	**.54****	**.78****	**.41****	**.60****	**.81****	**.45****	**.50****	**.80****	**.50****
		N	51	51	51	49	49	49	47	47	47	41	40	41	43	43	43
	RM	R	**.35****	**.41****	**.62****	**.39****	**.58****	**.69****	**.62****	**.45****	**.70****	**.52****	**.56****	**.79****	**.71****	**.54****	**.78****
		N	51	51	51	49	49	49	47	47	47	41	40	41	43	43	43
Month 1	**Commit**	R	**.50****	**.24***	.22	**.32****	**.45****	**.34****	**.58****	**.38****	**.35****	**.53****	**.27***	**.28***	**.48****	**.38****	**.28***
		N	70	71	71	63	64	64	65	65	64	57	56	57	58	58	58
	Clim	R	**.25***	**.25***	.15	**.26***	**.34****	.23	**.55****	**.34****	**.36****	**.37****	**.26***	.24	**.45****	**.37****	**.37****
		N	69	70	70	64	65	65	64	64	63	56	55	56	56	56	56
	Sat	R	**.27***	.14	.21	.12	**.25***	.11	**.48****	**.28***	**.39****	.16	.00	.20	**.31***	.21	.21
		N	69	70	70	63	64	64	64	64	63	55	54	55	55	55	55
Month 3	**Commit**	R	**.43****	.16	**.31****	**.28***	**.44****	**.40****	**.52****	**.34****	**.43****	**.41****	**.30***	**.37****	**.50****	**.38****	**.42****
		N	62	63	63	54	55	55	63	63	62	50	49	50	50	50	50
	Clim	R	**.28***	**.25***	.15	.22	**.36****	.24	**.47****	**.26***	**.31***	**.40****	.23	**.26***	**.51****	**.42****	**.37****
		N	61	62	62	54	55	55	62	62	61	50	49	50	48	48	48
	Sat	R	**.29***	.08	.18	.09	**.26***	.16	**.50****	.21	**.34***	**.28***	.05	.18	**.50****	**.29**	**.28***
		N	64	64	64	57	58	58	64	64	64	50	49	50	50	50	50
Month 6	**Commit**	R	.24	**.29****	.23	.21	.23	.16	**.33****	**.35****	.25	**.34***	**.35***	**.46****	**.44****	**.40****	**.40****
		N	59	60	60	53	54	54	55	55	54	48	47	48	51	51	51
	Clim	R	.25	.19	.20	.07	**.26***	.19	**.28***	.20	.25	**.34***	.20	.25	**.34***	**.31***	.27
		N	57	57	57	50	51	51	52	52	52	47	46	47	50	50	50
	Sat	R	.09	.07	.11	.00	.15	.01	.22	.16	**.26***	.24	.03	.18	**.38****	**.31***	**.29***
		N	62	63	63	55	56	56	58	58	57	51	50	51	53	53	53

* p < .05, ** p < .01 *Note:* CS=Career-Support; PS=Psychosocial-Support; RM=Role Modeling; Commit=Organizational Commitment; Clim=Organizational Climate; Sat=Job Satisfaction

(correlations continued)

			Month 6			Month 7			Month 1			Month 3			Month 6		
			CS	**PS**	**RM**	**CS**	**PS**	**RM**	**Commit**	**Clim**	**Sat**	**Commit**	**Clim**	**Sat**	**Commit**	**Clim**	**Sat**
Month 6	**CS**	R	--														
		N	67														
	PS	R	**.55****	--													
		N	67	67													
	RM	R	**.49****	**.47****	--												
		N	67	67	67												
Month 7	**CS**	R	**.77****	**.60****	**.39****	--											
		N	49	49	49	53											
	PS	R	**.44****	**.87****	**.43****	**.65****	--										
		N	49	49	49	53	53										
	RM	R	**.41****	**.36****	**.74****	**.62****	**.44****	--									
		N	49	49	49	53	53	53									
Month 1	**Commit**	R	**.46****	**.40****	**.35****	**.65****	**.46****	**.34***	--								
		N	65	**	65	51	51	51	76								
	Clim	R	**.37****	**.38****	**.31***	**.64****	**.60****	**.43****	**.68****	--							
		N	64	64	64	50	50	50	73	75							
	Sat	R	.22	.22	**.35****	.20	.25	.15	**.59****	**.74****	--						
		N	64	64	64	50	50	50	72	72	74						
Month 3	**Commit**	R	**.48****	**.38****	**.39****	**.66****	**.52****	**.52****	**.82****	**.75****	**.58****	--					
		N	55	55	55	46	46	46	62	61	61	64					
	Clim	R	**.44****	**.31***	**.29***	**.63****	**.53****	**.38****	**.65****	**.91****	**.75****	**.74****	--				
		N	54	54	54	44	44	44	61	61	60	62	63				
	Sat	R	.18	.15	.21	**.44****	**.31***	**.29***	**.55****	**.74****	**.82****	**.67****	**.81****	--			
		N	56	56	56	47	47	47	63	62	62	62	61	65			
Month 6	**Commit**	R	**.49****	**.43****	**.47****	**.46****	**.46****	.28	**.60****	**.70****	**.56****	**.80****	**.70****	**.60****	--		
		N	63	63	63	47	47	47	62	62	61	52	51	53	64		
	Clim	R	**.38****	**.38****	**.27***	**.51****	**.34***	.27	**.61****	**.81****	**.57****	**.73****	**.88****	**.64****	**.74****	--	
		N	60	60	60	45	45	45	60	58	58	49	49	51	59	61	
	Sat	R	**.25***	**.26***	.15	**.36****	.24	.17	**.32****	**.62****	**.67****	**.60****	**.81****	**.83****	**.54****	**.69****	--
		N	67	67	67	49	49	49	65	64	64	55	54	56	63	60	67

* p < 0.05, ** p < 0.01 *Note:* CS=Career-Support; PS=Psychosocial-Support; RM=Role Modeling; Commit=Organizational Commitment; Clim=Organizational Climate; Sat=Job Satisfaction