E-mentoring: A Model and Review of the Literature

Andrea Rae Neely
University of Tennessee at Chattanooga, andrea-neely@utc.edu

John Cotton
Marquette University, john.cotton@marquette.edu

Anthony David Neely
Chattanooga

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Andrea Rae Neely

University of Tennessee at Chattanooga, USA

andrea-neely@utc.edu

John L. Cotton

Marquette University, USA

Anthony David Neely

Chattanooga, USA

Abstract:

With the growth of technology and greater use of virtual teams, organizations have increasingly begun to use e-mentoring for socializing, training, and developing individual employees via technology. Despite the growing importance of e-mentoring, relatively little research has examined its process or effectiveness. Therefore, we: 1) provide a framework for understanding the e-mentoring process, 2) review the e-mentoring literature, and 3) present hypotheses to generate additional research on e-mentoring. As technology develops, the use of e-mentoring and, thus, the need to better understand it will grow.

Keywords: e-HRM, E-mentoring, Mentoring, Human Resources Management, e-HRIS, Training.

1 Introduction

In the late 1990s and early 2000s, technological advancements (including widespread access to the Internet) brought about a surge in electronic human resource management (e-HRM) practices (Gueutal & Stone, 2005) that allowed organizations to capitalize on the Internet to facilitate HR processes for both internal (e.g., employees, managers) and external (e.g., applicants, benefit providers) stakeholders (Lengnick-Hall & Mortiz, 2003; Stone & Dulebohn, 2013). Electronic HRM refers to "the planning, implementation, and application of information technology for both networking and supporting at least two individual or collective actors in their shared performing of HR activities" (Strohmeier, 2007, p. 20). Electronic HRM has affected the way in which organizations recruit applicants, screen applications and resumes, provide current employees with feedback, and provide training and development, such as e-mentoring (Gueutal & Stone, 2005).

Human resource information systems (HRIS) enable e-HRM. These systems have evolved greatly in the past 15 years and allow organizations to collect, compile, analyze, and dispense information concerning human resources (Kavanagh, Thite, & Johnson, 2015). More specifically, HRIS that started out as simple mainframes to automate manual labor (e.g., payroll) are now Web and cloud-based systems that have revolutionized HRM including recruitment, selection, training, and compensation practices (Stone, Deadrick, Lukaszewski, & Johnson, 2015).

Although the transition to e-HRM influenced numerous HRM practices, it has had a dramatic impact on how organizations train and develop their employees (Stone & Dulebohn, 2013). Organizations invest in training and development because it can have an overall positive impact on employee job performance (Brown & Stizmann, 2011; Arthur, Bennett, Edens, & Bell, 2003), aid innovation, improve technical skills, increase consistency in performance, and enhance self-efficacy (Cascio, 2015). One aspect of training and development that technology has affected is e-mentoring. E-mentoring, also known as telementoring, cybermentoring, virtual mentoring, online mentoring, Internet mentoring, computer-mediated mentoring, and email mentoring (Adams & Crews, 2004; Ensher, Heun, & Blanchard, 2003; Knouse, 2001, Perren, 2003), is a process in which mentors help protégés via electronic channels of communication (Hamilton & Scandura, 2003). In other words, it has the same goals and outcomes of traditional mentoring but is performed via technology-mediated communication.

E-mentoring can reward protégés by expanding their social and professional network (Headlam-Wells, Gosland, & Craig, 2005; Whiting & de Janasz, 2004), their knowledge base, access to resources, and job opportunities (Higgins & Thomas, 2001; de Janasz, Ensher, & Huen, 2008). In addition, e-mentoring can increase interpersonal communication skills (Adams & Crews, 2004), written communication skills (Brown & Dexter, 2002; Fodeman, 2002; Haas, Tully, & Blair, 2002), and teamwork skills (Fodeman, 2002). When asked after participating in an e-mentoring program, protégés stated they gained personal and career development, greater clarity of career goals, and greater confidence (Headlam-Wells, Gosland, & Craig, 2006). E-mentoring relationships can also increase protégés' self-esteem and self-efficacy (Adams & Crews, 2004). In their study of underprivileged youth protégés and their e-mentors, DiRenzo, Weer, and Linnehan (2013) found that e-mentoring relationship quality was positively related to general and career-based self-efficacy, which, in turn, was positively related to enhanced career aspirations. E-mentoring relationships can also heighten protégés' self-awareness and increased reflective skills (i.e., awareness of one's strengths and weaknesses) (Headlam-Wells et al., 2006; Shrestha, May, Edirisingha, Burke, & Linsey, 2009).

Of course, professional growth is bi-directional: research has shown that mentors develop similar outcomes (e.g., self-efficacy, self-confidence) as those they mentor from participating in e-mentoring relationships (Adams & Crews, 2004). Mentors also find that that they can improve their support network and gain new knowledge and job-related assistance (Allen, Poteet, & Burroughs, 1997; Ensher, Grant-Vallone, & Marelich, 2003). According to Ragins and Scandura (1999), mentors feel a sense of satisfaction and fulfillment from helping younger, less experienced individuals. Often, mentors have reached their own career plateaus but can obtain satisfaction and usefulness by disseminating their skills and wisdom.

Given the continual development of technology and growth of bandwidth, opportunities for e-mentoring will surely increase. In addition, one can argue that the ability to successfully generate e-mentoring can be a competitive advantage for organizations in the same way as being able to create virtual teams (Bergiel, Bergiel, & Balsmeier, 2008). However, several questions arise: is this form of mentoring as effective as

face-to-face mentoring? What advantages and disadvantages does e-mentoring provide? What aspects of e-mentoring will influence its attractiveness for mentors and protégés and its efficacy? Does e-mentoring suggest different qualities might be important in mentors or protégés? How is the process of mentoring different with e-mentoring as compared to face-to-face mentoring?

With this paper, we contribute to the e-mentoring literature by 1) providing a useful framework to understand the e-mentoring process, 2) reviewing the e-mentoring literature, and 3) presenting hypotheses that drive the e-mentoring literature forward. Throughout the paper, we discuss the overall effectiveness of e-mentoring and include what we know and what we do not know about this process. Further, we present directions for future research and practice. However, before discussing e-mentoring, we provide some background on the study and practice of mentoring overall.

2   Mentoring

The term mentor comes from the Greek epic *The Odyssey* (Carruthers, 1993) in which the protagonist Odysseus entrusts his son's care and guidance to his wise old friend Mentor prior to leaving to fight in the Trojan War. Researchers have defined mentoring in many ways, but they generally define it as "as a process concerned with the informal diffusion of knowledge, social capital, and psychosocial support perceived by the recipient as relevant to his or her work, career, or professional development" (Bozeman & Feeney, 2007, p. 731). Mentoring entails informal communication between two parties: 1) one party who has greater relevant knowledge, wisdom, or experience (i.e., the mentor); and 2) one party who has less (i.e., the protégé) (Bozeman & Feeney, 2007). Mentoring differs from training predominantly in that mentoring tends to be more informal, is a one-on-one process, and can involve psychosocial and career support.

The most salient benefit of implementing any type of mentoring program is the professional growth of employees (Adams & Crews, 2004; Bierema & Hill, 2005; Boyd & Jackson, 2004; Hansman, 2002; Sevilla & Wells, 1999). Like traditional mentoring, e-mentoring programs developed out of the realization that early support can ease the socialization and enculturation of newer employees (Chao, 1988; Boyle & Boice, 1998; Single & Single, 2005). Other professional benefits that the literature identifies include the expansion of social and professional networks (Headlam-Wells, Gosland, & Craig, 2005), improved interpersonal communication skills (Adams & Crews, 2004), and better written communication skills (Brown & Dexter, 2002; Fodeman, 2002; Haas, Tully, & Blair, 2002).

Because employees have often become free agents who commit to careers instead of organizations, mentoring has become increasingly important (Bierema & Hill, 2005). Many studies have demonstrated the importance of mentoring for higher salaries, promotions, work performance, new career roles, career mobility, and enhanced skill development (Burke, Mckeen & Mckenna, 1994; Day & Allen, 2004; Douglas, 1997; Dreher & Cox, 1996; Ehrich & Hansford, 1999; Emmerick, Baugh & Euwema, 2005; Ensher & Murphy, 2011; Fagenson, 1989; Wood & Leck, 2008). Organizational outcomes improved by mentoring include job satisfaction and organizational commitment (Barker, Monks, & Buckley, 1999), advancement speed (Allen, Poteet, Eby, Lentz, & Lima, 2004; Eby, Allen, Evans, Ng, & DuBois, 2008; Underhill, 2006), employee retention, internal communication, and organizational culture (Douglas, 1997; Ehrich & Hansford, 1999; Ensher & Murphy, 2011; Perren, 2003).

Despite the considerable research on mentoring outcomes, mentoring processes are still somewhat of a black box (Chandler, Kram & Yip, 2011). Studies that have examined the process of mentoring have generally focused on career-oriented actions and psychosocial actions. For example, scales of mentoring actions have focused on career actions by mentors such as coaching, protecting the protégé, providing challenging assignments, and sponsoring and providing exposure for the protégé. In terms of psychosocial actions, scales assess how much a protégé perceives a mentor as a friend, a counselor, role model, and parent (Chao, Walz & Gardner, 1992; Noe, 1988; Ragins & McFarlin, 1990). All of these roles and actions tend to be interrelated, but they demonstrate the wide variety of directions in which mentoring relationships can proceed.

3   E-mentoring

E-mentoring is a new context where the mentoring process between the mentor and protégé operates through online processes. Although mentoring and e-mentoring essentially share the same process, we

discuss the variety of differences that an online context produces. We do so by discussing a model of the e-mentoring process and the research that relates to that model.

Traditional mentoring and e-mentoring primarily differ in the type of communication media they use. Traditional (i.e., face-to-face (F2F)) mentoring occurs in personal meetings where mentors and protégés are physically present and interact synchronously. However, e-mentoring uses technology-mediated communication. In discussing e-mentoring, one also needs to differentiate blended from virtual e-mentoring. With hybrid or blended mentoring, mentors and protégés use some combination of face-to-face interactions and online elements (e.g., email) with the possibility of both synchronous and asynchronous communication (Murphy, 2011). For example, Bang and Luft (2013) put forth a hybrid model in which participants interact via F2F activities (e.g., lunch meetings, focus groups, inquiry based workshops, technology training courses) and virtual activities (e.g., avatar-to-avatar meetings in Second Life, wiki-based text exchanges, streaming video) in order to expand the knowledge, skills, and abilities of novice elementary-level science teachers. Therefore, we can consider two forms of e-mentoring: blended or hybrid e-mentoring and virtual e-mentoring. In this paper, we primarily focus on virtual e-mentoring where technology *fully* mediates the relationship between the mentor and protégé.

4   A Model of E-mentoring

In Figure 1 (next page), we present a model of how e-mentoring operates. The framework begins with the context of the mentoring. We consider three dimensions in terms of context. As we mention above, first, e-mentoring can be completely virtual or a blend of face-to-face and virtual aspects. Second, e-mentoring can be informal in that a mentor and protégé find each other and the relationship grows organically, or the relationship can be arranged in a formal mentoring program. Third, different processes can match mentors and protégés.

In addition to the context, certain mentor and the protégé characteristics influence the mentoring relationship. These characteristics include the motivation for the mentoring relationship, individual differences such as gender and age, personality variables, and the degree of similarity between the mentor and protégé. Finally, there is the black box of the mentoring relationship itself. Here, we borrow from the literature on communication and virtual teams and incorporate issues of media richness and synchronicity.

4.1   E-mentoring Context

4.1.1   Virtual E-mentoring Versus Blended E-mentoring

Because the communication occurs virtually, e-mentoring can occur anywhere and at any time as long as mentors and protégés have Internet access (Bennett, Tsikalas, Hupert, Meade, & Honey, 1998; Bierma & Hill, 2005; Guy, 2002; Headlam-Wells et al., 2005; Kirk & Olinger, 2003), which allows for greater opportunities for mentor-protégé communication. As such, e-mentoring can also be more cost effective and increase the amount of time mentors spend with protégés (Johnson & Brown, Forthcoming; Salas, DeRouin, & Littrell, 2005). In addition, it increases the opportunities for mentor-protégé interaction and creates a boundary-less structure (Bierema & Merriam, 2002) compared to traditional F2F mentoring. More interaction can lead to greater mentoring success. DiRenzo, Linnehan, Shao, and Rosenberg (2010) found a positive relationship between the success of e-mentoring programs and the frequency of mentor-protégé interactions. Unfortunately, we lack rigorous empirical research on e-mentoring and its effectiveness (Ensher et al., 2003; Ensher, 2013; Ensher & Murphy, 2011).

Further, e-mentoring can increase the pool of mentors and protégés. Because distance constrains face-to-face meetings, traditional mentoring relationships may have a limited resource pool (e.g., intra-organizational list, local list), whereas e-mentoring provides a larger external resource pool (Bierema & Hill, 2005). E-mentoring also provides increased flexibility because mentors and protégés may contact each other at any time, are not required to respond immediately, and can review the communication exchanges at any time (Headlam-Wells, 2004; Headlam-Wells et al., 2005).

In addition, e-mentoring can create more egalitarian relationships than traditional mentoring. Junior employees are often intimidated by older or higher ranking employees in their organization (Kasprisin, Single, Single, & Muller, 2003), which hampers traditional mentor relationships. However, e-mentoring decreases the power distance by opening up the potential mentor pool to those in other departments in an

organization and employees outside it. Without the hierarchical framework inside the organization in e-mentoring, protégés may be more likely to engage in e-mentoring relationships.

However, e-mentoring may be less likely to capture the attention of protégés than traditional mentoring relationships (Stone & Lukaszewski, 2009). Further, protégés may be less likely to understand information, have fewer opportunities to clarify, and be less receptive to information and advice that mentors provide through electronic media than in face-to-face communication (Stone & Lukaszewski, 2009).
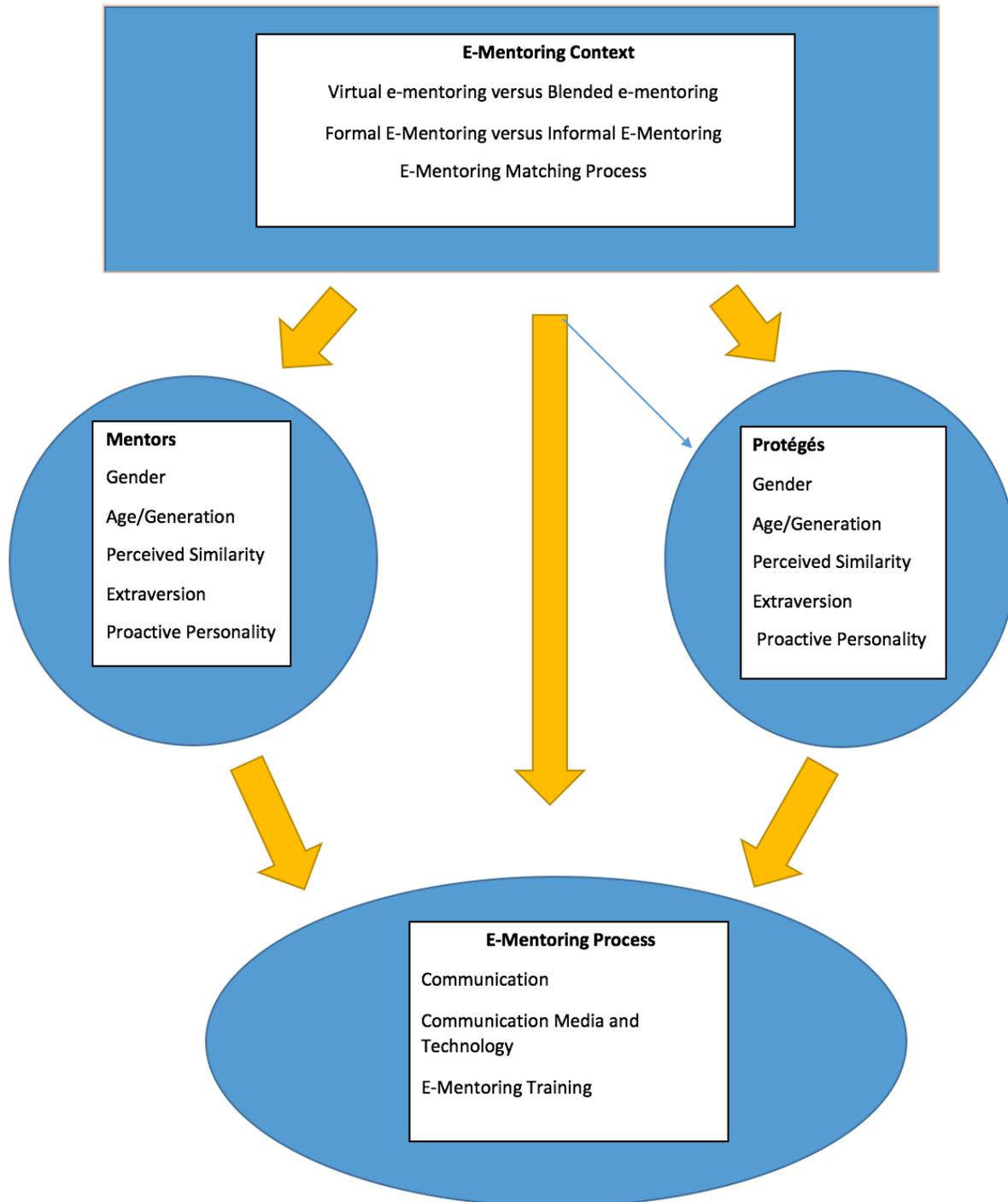
E-Mentoring Context

Virtual e-mentoring versus Blended e-mentoring

Formal E-Mentoring versus Informal E-Mentoring

E-Mentoring Matching Process

Mentors

Gender

Age/Generation

Perceived Similarity

Extraversion

Proactive Personality

Protégés

Gender

Age/Generation

Perceived Similarity

Extraversion

Proactive Personality

E-Mentoring Process

Communication

Communication Media and Technology

E-Mentoring Training

Figure 1. A Model of E-mentoring

Compared to traditional mentoring relationships, in e-mentoring, protégés can find it difficult to observe and replicate their mentors' behaviors due to the constraints of technology and accessibility. Thus, role modeling is the function of mentoring that is least effective in an e-mentoring relationship (de Janasz et al., 2008). In other words, computer-mediated communication supplements, but may not replace, all elements of face-to-face interactions (Lamb & Aldous, 2014).

Thus, we propose the following hypotheses:

H1: Because of their greater ease of communication, virtual e-mentoring programs lead to larger pools of potential mentors and protégés than blended e-mentoring programs.

H2: Because of their psychological distance, virtual e-mentoring relationships have more egalitarian and less hierarchical interactions than blended e-mentoring relationships.

H3: Because of their less rich interactions, e-mentoring relationships are more effective if some face-to-face interaction can occur at the beginning of the relationship.

4.2   Formal and Informal Mentoring Structures

Formal mentoring is a mentoring process that organizations sanction and manage in order to socialize new members, facilitate new relationships, and increase access to mentors (Eby & Lockwood, 2005; Morzinski, Simpson, Bower, & Diehr, 1994). Informal mentoring is an ad hoc spontaneous process that the individuals involved initiate for their personal benefit (Eby & Lockwood, 2005; LaVant, Anderson & Tiggs, 1997). Research in face-to-face mentoring has determined that formal mentoring is more effective than no mentoring at all, but formal mentoring is typically not as effective as informal mentoring (Allen, Eby, & Lentz, 2006; Chao et al., 1992; Ragins & Cotton, 1999; Wanberg, Kammeyer-Mueller, & Marchese, 2006). We contend that, similar to face-to-face mentoring, informal e-mentoring will be more likely to lead to career development efforts and psychosocial support from the mentor than mentors in formal programs. Additionally, we suggest that formal e-mentoring is better than no e-mentoring at all, especially in regards to younger employees' career-related outcomes. Thus, we propose the following hypotheses:

H4: Informal e-mentoring programs are more effective for career development and psychosocial support than formal e-mentoring programs.

H5: Formal e-mentoring programs are more effective for career-related outcomes (e.g., interpersonal skills, networking skills, promotions) with younger employees than no e-mentoring.

4.3   Matching in Formal Programs

Mentors and protégés may be free to choose their own mentor or protégé (e.g., they are searching for mentorship relationships), may be somewhat coerced (e.g., they are personally asked to be a mentor/protégé), or may be required to participate in the mentoring process. In some situations, individuals actively seek these relationships on their own (i.e., free will). For others, friends, co-workers, or managers will suggest that a person seek an e-mentor.

If e-mentoring, whether formal or informal, is effective, then how do organizations *encourage or facilitate* e-mentoring? If an organization decides to promote a formal e-mentoring program, the development of *matching* criteria is crucial to building effective relationships in a formal program (Hunt, 2005). Some scholars note that matching mentor-protégé pairs in e-mentoring may be problematic (Bierema & Hill, 2005; Bierema & Merriam, 2002). Specifically, mentors and protégés can interview each other and determine the best fit over time with traditional F2F mentoring (Bierema & Hill, 2005; Bierema & Merriam, 2002). However, e-mentoring does not provide the same opportunities; when meeting someone in person, one can read body language and other non-verbal cues to form an overall impression.

Research demonstrates that individuals tend to be more committed to *participative* goals (or those they have helped set) (Erez, 1986; Erez, Earley, & Hulin, 1985; Erez & Kanfer, 1983). Specifically, participation in decision making may be most helpful when it provides justification or rationale for *why* a certain goal is set (Locke, Alavi, & Wagner, 1997). This research suggests that providing criteria by which protégés rank specific criteria allows them to participate in the decision and the organization to maintain some amount of control. Clutterbuck (2001) advocates for allowing protégés to make their own choices. Protégés are more likely to commit to a mentoring relationship in which they choose their mentor. Additionally, organizations

should provide a rationale for the matching criteria they use to match participants. Thus, we propose the following hypothesis:

> **H6:** Protégé participation and organizational justification in mentor selection is positively related to interaction frequency, trust building, and relationship quality in e-mentoring programs.

5 Mentor and Protégé Characteristics

What types of individuals are most likely to choose to participate in e-mentoring relationships? Research has found that, in traditional mentoring relationships, previous experience as a mentor and previous experience as a protégé were both positively correlated with willingness to serve as a mentor (Allen, 2003; Bozionelos, 2004). However, in the e-mentoring context, the type of technology used may affect the degree to which mentors and protégés choose to enter a mentoring relationship. For instance, those mentors and protégés who have high levels of computer-self efficacy (CSE) may be more motivated to enter into an e-mentoring context than those that do have not high levels of CSE (Stone, Krueger, & Takach, Forthcoming; Marakas, Yi & Johnson, 1998). Similarly, some individuals who are particularly high in a need for affiliation or collectivism may be less likely to use e-mentoring than those who are lower in these values. As for why, individuals who are high in need for affiliation may prefer face-to-face interactions.

We suggest the following variables may be individual differences that make people more likely to engage in e-mentoring: gender, age, extraversion, and proactive personality. Empirical research has examined the effects of gender and personality traits on *mentoring* (e.g., Aryee, Lo, & Kang, 1999; Bozionelos & Bozionelos, 2010), but little research has examined personality's influence on *e-mentoring*.

5.1 Gender

Previous research has theorized that women are less likely to serve as traditional mentors than men due to time constraints, token status, and lack of self-confidence (Kram, 1985; Ragins, 1989); however, this research has received mixed empirical support (Allen, 2007). Ragins and Scandura (1994) conclude that gender differences in mentorship intentions may be due to gender differences in rank, position, and resources. Some scholars argue that women and minorities are less likely to serve as protégés as well (Boice, 1993; Hamilton & Scandura, 2003; Ragins & Cotton, 1991; Ragins, 2007; Single & Single, 2005). These minorities experience difficulty in finding mentoring relationships.

In regards to e-mentoring and gender, the picture is less clear. Women and minorities are less likely to use other electronic human resource management systems (e.g., e-recruiting) than their white male counterparts (Galanaki, 2002; Kuhn & Skuterud, 2004; McManus & Ferguson, 2003; Stone & Lukaszewski, 2009). In general, ethnic minorities such as African Americans and Hispanic Americans are less likely to have access to and use computers (Johnson, Stone, & Phillips, 2005; Stone & Lukaszewski, 2009). Additionally, women may have lower levels of computer self-efficacy (Miura, 1987; Stone, Stone-Romero, & Lukaszewski, 2006; Whitley, 1997), which may make them less likely to engage in e-mentoring.

Because e-mentoring can conceal individual characteristics, employees may find a safer context for building relationships between people from different cultures, genders, and ethnicities (Bierema & Merriam, 2002). More specifically, e-mentoring can reduce the impact of stereotypes (e.g., age, gender, race) because the interaction is faceless (assuming the individuals do not use video conferencing; Ensher & Murphy, 2007; Headlam-Wells et al., 2006). Without the visual cues that create or reinforce biases, stereotypes, and other harmful predispositions, e-mentoring has the potential to mitigate disadvantaged groups who are treated poorly in face-to-face mentoring (Ensher et al., 2003). For example, women may have increased access to potential mentors with men without others' misinterpreting their professional relationship (Bierema & Hill, 2005; Bierema & Merriam, 2002; Headlam-Wells et al., 2006). One can trace the expanded opportunities for underrepresented populations back to e-mentoring's infancy. The Science Foundation funded one of the first large scale e-mentoring programs in 1994 to encourage high school females to pursue careers in science and technology—fields in which women are traditionally underrepresented (Kasprisin et al., 2003).

Thus, we propose the following hypothesis:

> **H7:** Women and minorities are more likely to adopt e-mentoring relationships than men and majority group members.

5.2   Age or Generational Identity

Generational identity—specifically age-based identity—may also influence e-mentoring adoption. Age-based identity is an identity that comprises an individual's membership in an age group that shares formative experiences (Joshi, Dencker, Franz, & Martocchio, 2010). In particular, much research has focused on millennials—those born between 1980 and 2000. The values of this generation differ from those who were in the workplace beforehand (Twenge, Campbell, Hoffman & Lance, 2010). In addition, they are always connected to online media (Pew Research Center, 2010). We also know that, because of their age and experience, millennials will need the development that comes from the mentoring process. Although no prior research has addressed millennials' proclivity to initiate and participate in e-mentoring, we argue that this generation, with its hyper-connectivity, will be more likely to engage in e-mentoring relationships. In addition, we argue that, given the technological advances with which they are accustomed, they will be more likely to participate in e-mentoring than they would traditional mentoring relationships. Thus, we propose the following hypotheses:

H8: Millennials are more likely to initiate and adopt e-mentoring than other generations.

H9: Millennials are more likely to initiate and adopt e-mentoring as compared to traditional face-to-face mentoring.

5.3   Computer Literacy

A related issue with age and generation is computer or technological literacy. As we mention above, computer-self efficacy (CSE) should be related to e-mentoring. In testing this relationship, Panopoulos and Sarri (2013) found that computer self-efficacy was positively related to e-mentoring adoption. Thus, a less technologically efficacious individual may be less likely to initiate and maintain an e-mentoring relationship.

Therefore, organizations who wish to implement a formal e-mentoring program or develop a culture that fosters informal e-mentoring should also offer workshops on basic computer and technology literacy in order to decrease barriers that may arise from a lack of knowledge, skills, and abilities related to any media used during e-mentoring (e.g., email, learning management systems (LMS), video conference platforms). Mentors who may be older and less proficient with the not only technology but also the online media that e-mentoring may involve may find such workshops important. Thus, we propose the following hypothesis:

H10: Technological access and technological literacy training in organizations is positively related to e-mentoring adoption rates and maintenance of e-mentoring relationships.

5.4   Perceived Similarity

Choices about mentors and protégés will likely depend on perceived similarity in attitudes, goals, and values but not necessarily demographics (de Janasz et al., 2008; de Janasz & Godshalk, 2013; Ensher et al., 2002). For example, Murphy (2011) found that perceived similarity impacted the vocational and psychosocial support that mentors provided. Therefore, perceived similarity, rather than demographics, may be the driving force behind e-mentoring adoption. Perceived similarity may also affect the success of e-mentoring communications because similar mentors and protégés have a shared mental model (Klimoski & Mohammed, 1994; Levesque, Wilson &. Wholey, 2001). A shared mental model may increase the extent to which mentors and protégés understand one another using technology-mediated communication.

Some scholars argue that mentors with different backgrounds offer different perspectives and that such a difference benefits protégés the most (Milne, 2005). However, others contend that similarities between mentors and protégés bolster the development of rapport while differences support learning outcomes (Hale, 2000). For example, Headlam-Wells et al. (2005) used 11 criteria for matching e-mentors and protégés including professional skills, personal qualities, work experience, values, vocational/work area, and life/career history. The authors asked protégés to rank each of the criteria in order of personal importance, and the authors based how they matched mentors and protégés on that criteria. Post-mentoring results indicated that protégés gained self-efficacy, the ability to promote themselves, and the capability to network more effectively (Headlam-Wells et al., 2006). Additionally, the majority of mentors (54%) and protégés (54%) stated they would like to take part in mentoring relationships again. Thus, we propose the following hypothesis:

> **H11:** Perceived similarity between mentors and protégés is positively related to e-mentoring adoption rates in e-mentoring programs.

5.4.1 Extraversion

Extraverted individuals are sociable, outgoing, gregarious, assertive, and dominant (Judge, Higgins, Thoresen, & Barrick, 1999). Some research suggests that extraverts are more likely to seek mentoring relationships and engage in professional and developmental activities (Aryee et al., 1999; Bozionelos & Bozionelos, 2010). According to Bozionelos, (2004), extraverted mentors provide more mentoring to their protégés. Turban, Moake, Wu, and Cheung (2016) suggest that extraverted protégés are likely to receive more mentoring because their positive nature and high energy levels increase their attempts to seek mentoring and their likeability as protégés. Thus, traditional mentoring research suggests that extraversion is related to mentoring's initiation and adoption rates. Similarly, we argue that extraversion is related to e-mentoring's initiation and adoption rates—perhaps even more so than traditional mentoring. Because computer-mediated communication lacks the richness and other advantages of face-to-face communication (Stone & Lukaszewski, 2009), extraverted mentors and protégés may be more likely to use electronic media than less extraverted individuals. Thus, we propose the following hypotheses:

> **H12:** Extraversion is positively related to e-mentoring adoption rates.

> **H13:** Extraversion is more positively related to e-mentoring adoption rates than to traditional face-to-face mentorship adoption rates.

5.4.2 Proactive Personality

Another individual difference that may affect e-mentoring adoption rates is a proactive personality. A proactive personality refers to individuals' dispositional tendencies to actively influence their environment (Bateman & Crant, 1993; Crant, 1995; Turban et al., 2016). These individuals are likely to scan the environment for available opportunities, show initiative, take action, and persist until the change they effect the change they envision (Bateman & Crant, 1993). Similar to extraversion, Turban et al. (2016) found that a proactive personality was positively related to mentoring received. In their study of a formal mentoring program, Wanberg et al. (2006) found that proactive mentors were more likely to provide career-related mentoring to protégés. We assume, like extraversion, that the effect of a proactive personality will be magnified in e-mentoring relationships because individuals with such a personality are less likely to be constrained by the impact of computer-mediated communication. Thus, we propose the following hypotheses:

> **H14:** A proactive personality is positively related to e-mentoring adoption rates.

> **H15:** A proactive personality is more positively related to e-mentoring adoption rates than to traditional face-to-face mentorship adoption rates.

6 E-mentoring Relationship Process

6.1 Communication

Communication is a vital aspect of any relationship but especially with virtual relationships such as virtual teams and e-mentoring (Baltes, Dickson, Sherman, Bauer, & LaGanke, 2001). According to prior research, one can categorize communication processes based on the following criteria: 1) media richness (Daft, Lengel, & Trevino, 1987), 2) media synchronicity (Dennis, Fuller, & Valacich, 2008), and 3) social processes (Markus, 1994; Zack, 1993; Zack & McKenney, 1995). First, the "richest" media will include instant feedback, multiple cues (e.g., physical presence, voice inflection, body language), and high language variety. In this way, personal feelings and emotions can infuse the message. Second, synchronicity occurs when communications occur at the same rate and the same time (e.g., F2F discussions, Facebook messenger; Dennis et al, 2008). Third, social context (i.e., understanding the context with which a message is sent; Zack & McKenney, 1995) and social processes are also pivotal to the communication between parties.

If mentors and protégés in an e-mentoring relationship use a variety of online media to interact, they can have high media richness, high synchronicity, and high social context. For example, video conferencing (i.e., high media richness), online chat (i.e., high synchronicity), and social media (i.e., high social context)

can together enhance e-mentoring outcomes such as trust building and relationship quality. From studying psychology student protégés with more experienced e-mentors, Hodges, Payne, Dietz, and Hajovsky (2014) found that no statistically significant differences in relationship quality between an on-campus mentorship program and an e-mentoring program. Additionally, in studying a student-focused STEM e-mentoring program, Gregg, Galyardt, and Todd (2015) found that student participants reported they developed trusting and supportive relationships with their e-mentors.

Dennis et al. (2008) argue that, "Face-to-face communication is not always the richest medium, and, richer is not necessarily better" (p. 596). These other aspects of communication—specifically its synchronicity and social context—may be more meaningful than media richness in creating e-mentoring relationships. Electronic messaging has the capacity to express socio-emotional and relational contexts in established groups (Rice & Love, 1987; Walther & Burgoon, 1992; Zack, 1993). In ongoing groups, the participants know each other's status, personality, and so on, and, thus, electronic messaging can be very effective (Zack, 1993). Although technology-mediated channels may constrain social presence and cues, the interactivity effects rather than the socio-relational effects determine the medium's richness (Zack, 1993). As Markus (1994) comments, "It is not the media, per se that determine communication patterns, but rather the social processes surrounding media use" (p. 502). In their study, Quintana and Zambrano (2014) demonstrated that it is possible to carry out a process of asynchronous communication that generates emotional comfort and closeness, which are elements of a F2F relationship. Thus, we suggest that those with well-established relationships may view written, online communication as a viable alternative to F2F interactions. Thus, we present the following hypothesis:

> **H16:** For previously established relationships, electronic written communication (e.g., email, chat messaging, text messaging) in e-mentoring is positively related to trust building and relationship quality.

It is possible that the virtual nature of the relationship can reduce hierarchical social cues present in traditional mentoring. Therefore, protégés may be more likely to share their thoughts and opinions rather than relying on the more powerful figure to assume the primary responsibility for communication (Cothran et al., 2009). Because hierarchies are not well engrained and electronic media generate a more egalitarian structure, individual differences may be more important in e-mentoring than traditional mentoring. Although F2F communication benefits mentee-protégé relationships for various reasons (e.g., equivocality, synchronicity, role clarity), other mediums such as email can promote frequent contact but also allow each individual the necessary time to read, process, and reflect before submitting a response (Rochlen, Zack, & Speyer, 2004; Shpigelman & Gill, 2014).

Although some scholars argue that written online communication may be rich in synchronicity and social context for well-established groups, other research suggests that the groups need not be well established. For example, Peris et al. (2002) found that individuals engage in chat rooms to maximize their social interaction. In fact, chat room users perceived no difference between F2F interaction and chat room interaction, which means that computer-mediated channels may be viable alternatives to F2F channels in terms of social presence (Peris et al., 2002; Ensher, 2013). In Bagley and Shaffer's (2015) study, regardless of whether mentor-protégé pairs used F2F communication or chat-based messaging (i.e., a more efficient, lean medium), there was no significant difference in the protégé's reflections concerning the epistemic game Urban Science. This evidence suggests that those without well-established relationships may view online chats as viable alternatives to F2F interactions. Thus, we present the following hypothesis:

> **H17:** Electronic written communication (e.g., email, chat messaging, text messaging) is as effective for trust building and relationship quality in e-mentoring as F2F interactions.

Zack and McKenney (1995) found that electronic messaging may complement rather than substitute for F2F interactions. Similarly, Dennis et al. (2008) argue that choosing a set of media may be more effective than choosing a single communication medium. In terms of e-mentoring, using multiple media may mean that mentor-protégé pairs should use both synchronous (e.g., Skype, chat) and asynchronous (e.g., email) types of media. Redmond (2015) suggests that a mentor and protégé may better build trust if they conduct their first meeting face-to-face or via some type of synchronous interaction (e.g., Skype, Facebook video). Synchronous communication may be beneficial for trust and relationship quality because individuals are more likely to pay attention to and comprehend these messages (Stone & Lukaszewski, 2009). Rich and synchronous media are advantageous because participants can gain simultaneous feedback, have access to various cues (e.g., voice inflection, body gestures), include language variety (e.g., include

numbers or symbols), and convey a more personal focus (e.g., displaying feelings and emotions) (Daft et al., 1987; Dennis et al., 2008).

Despite the e-mentoring's many advantages in regards to communication, it may, however, have some disadvantages. First, given that technology mediates the communication, misunderstandings between mentors and protégés may arise, which may limit e-mentoring's effectiveness (Stone & Lukaszewski, 2009). Further, research has revealed that individuals often view using technology-mediated communicated as highly impersonal since it lacks the richness of face-to-face communication (Daft & Lengel, 1984). For example, studies have shown that electronic media lack the social, visual, and aural cues that F2F interactions provide (Kiesler, Siegel, & McGuire, 1984; Siegel et al.,1986) and that protégés may be less likely to understand messages (Kiesler et al., 1984). Thus, researchers have argued that electronic media could decrease an individual's involvement in the communication process (Hinds & Kiesler, 1995). These findings would suggest that richer media (e.g., video conferencing) might be especially useful early in the e-mentoring process.

Accordingly, mentors and protégés who use of a variety of media may have better trust and relationship quality. We also argue that e-mentoring relationships should rely on video conferencing for their first interactions (Redmond, 2015). Thus, we propose the following hypotheses:

> **H18:** The use of a variety of online media with various levels of richness, synchronicity, and social context for e-mentoring is positively related to trust and relationship quality.

> **H19:** The use of online video conferencing for interactions early in the mentoring process is positively related to trust and relationship quality.

6.2   Communication Media and Technology

E-mentoring can involve many types of media and technology. Video conferencing software such as Skype and Adobe Connect has the potential to create high media richness, high media synchronicity, and high levels of social context. Video conferencing may allow participants to enjoy all the advantages of F2F communication including instantaneous feedback, multiple cues (e.g., body language), high language variety (e.g., use of numbers or symbols), and a personal emphasis whereby the message targets the other party specifically. As bandwidth expands, the opportunity for video conferencing increases.

Many organizations have turned to electronic learning management systems (LMS) to coordinate, facilitate, and track their employees' ongoing professional development (Haland & Tjora, 2006). Prevalent LMS such as Blackboard, SABA, Desire2Learn and others can provide another medium to support e-mentoring relationships because they not only serve as an intranet platform for compulsory job-related training (e.g., annual competency exams) but also allow participants to interact via embedded text, private messages, and video conferences. Additionally, many LMS allow registered users to exchange and collaborate on files and documents (Andronico et al., 2003). Thus, a protégé who seeks advice from their mentor on how to craft a cover letter could log in to the LMS and provide the mentor with access to the file, and the two could simultaneously work on co-editing the letter while chatting about organizational norms for formatting documents.

Some e-mentoring settings (e.g., education) have used computer games with e-mentors to facilitate problem-solving skills and knowledge by presenting problems without well-formed solutions. For example, as we mention above, Bagley and Schaffer (2015) describe how e-mentors incorporated Urban Science, a game used in education settings to teach students how community planning works. The authors provided students with an e-mentor to answer questions, provide suggestions, and guide students' reflections of the experience. Qualitative results suggest that this game, coupled with e-mentors, is effective for teaching urban development. Using these types of computer simulations with e-mentors may also be useful for training new employees on complex, non-routine problems.

Another medium used in educational contexts is virtual environments or digital voice communication platforms such as Second Life. Second Life is a virtual platform where individuals interact via avatars (i.e., an icon or figure created to represent a particular person). These avatars communicate via voice-based or text-based mediums. In one study, Gregg et al. (2015) studied a science, technology, engineering, and mathematics (STEM) e-mentoring program for secondary and post-secondary students that used Second Life. However, Gregg et al. (2015) note that the cost, learning curve of the platform, and development time were all reasons the program abandoned the platform mid-way through.

Social media (e.g., Facebook, Twitter, Linkedin) can foster e-mentoring relationships. Social media focuses on a few major themes: interaction, connection, and storytelling (Schneider, 2016), which may make social media a perfect platform for mentors and protégés to interact. Schwartz et al. (2014) found that digital media use, specifically Facebook use, was correlated with higher relationship quality and longer relationship duration. Often in social media, people have biographical profiles, photographs, displays of their social networks, and so on that can provide insight into them as people as opposed to email, which usually lacks such information. Students who Gregg et al. (2015) gave the opportunity to communicate through other platforms (e.g., Second Life, email) preferred to contact their e-mentors with Facebook and Twitter.

Being familiar with the variety of online media will likely increase the degree to which an individual is tethered or connected to the Internet. In turn, these individuals who have adopted a variety of media and are connected will be more likely to initiate and maintain e-mentoring relationships. Thus, we propose the following hypothesis:

> **H20:** Familiarity with and use of a variety of online media (e.g., video conferencing, LMS, games, virtual environments, social media) are related to higher e-mentoring adoption rates and more positive e-mentoring relationships.

For many mentor-protégé pairs, technological issues are the primary obstacle. According to Bierma and Hill (2005) and Bierma and Merriam (2002), technology access can impede success in e-mentoring. One in three Americans does not have broadband Internet access at home with lower income and minority households at lower rates than their counterparts (Horrigan & Duggan, 2015). In studying physical education teachers, Cothran et al. (2009) found that the logistical challenge or computer access impacted the effectiveness of the e-mentoring program. Further, some employees neither use nor require technology access to fulfill their job responsibilities (e.g., maintenance staff).

Technology can also produce other difficulties. Unlike traditional mentoring where the interactions are typically not recorded, e-mentoring does have the potential to invade the privacy of both parties. With e-mentoring, individuals can circulate their opinions via electronic means. In other words, e-mentoring discussions via email, online forums, messenger messages, and so on are recorded and captured in public record (Kirk & Olinger, 2003). When communicating via online mechanisms, mentors and protégés must be fully aware of the privacy concerns before engaging in discussion. Previous research asserts that privacy rights of employees may create justice issues that make individuals less likely to accept or more likely to quit a job (Stone-Romero, Stone, & Hyatt, 2003). Similarly, these privacy concerns may prevent individuals from participating in e-mentoring because they do not want their conversations recorded and potentially used against them. Thus, we propose the following hypothesis:

> **H21:** Privacy concerns are negatively related to e-mentoring adoption rates and maintenance of e-mentoring relationships.

6.3   E-mentoring Training

Organizations that try to encourage mentoring will often offer mentoring training, especially for potential mentors. E-mentoring, however, requires additional knowledge or experience in managing and communicating in a virtual fashion. Johnson and Brown (Forthcoming) discuss a variety of factors that influence e-learning processes and outcomes. Their review suggests that organizations can capitalize on several factors (organizational support, technology, instructor and trainee characteristics) to maximize e-learning. For example, Beranek and Martz (2005) demonstrated that virtual teams who received training showed more cohesiveness, better perceptions of team process, and greater satisfaction with the team.

Some research has suggested that e-mentoring relationships have fewer opportunities for reinforcement cues that encourage individuals to successfully maintain them (Single & Single, 2005; McCall, 2011). Further, e-mentoring may not be a timely process if both parties do not respond. Especially troubling may be the ease with which these e-mentoring relationships can begin or end and the lack of commitment that may result (Bierma & Hill, 2002). Being unresponsive is particularly a problem at the beginning of the e-mentoring relationship because these virtual relationships may require more time to effectively develop than F2F relationships (Ensher et al., 2003).

Other research suggests that e-mentoring may lack reciprocal self-disclosure (Shpigelman, Weiss, & Reiter, 2009). Reciprocal self-disclosure helps to create openness and closeness in the relationship (Archer & Berg, 1987; Barak & Gluck-Ofri, 2007; Shpigelman et al., 2009). Likewise, some researchers

have suggested e-mentoring may be less personable than traditional mentoring relationships (Hinds & Kiesler, 1995; Kiesler, Siegel, & McGuire, 1984; Siegel, Dubrovsky, Kiesler, & McGuire, 1986). Similar to privacy concerns, individuals may be cautious and anxious when discussing some topics online (Adams & Crews, 2004), which may hamper communication. However, Joinson (2001) found that computer-mediated communication led to higher self-disclosure than face-to-face interaction because of visual anonymity.

Based on the impediments we discuss above, organizations may find it difficult to encourage mentors and protégés to interact on a consistent basis and engage in self-disclosure. However, organizations must try to do so because interaction frequency is key to initiating and maintaining successful relationships. The frequency of interaction is pivotal to creating trust in a mentoring relationship (DiRenzo et al., 2010). When interaction frequency is high, it is associated with vocational support and psychosocial support received by protégés and mentors' satisfaction with protégés (Murphy, 2011).

As a response to the lack of reinforcement cues and non-response of mentors or protégés, some scholars have suggested e-mentoring training programs. Stoeger, Duan, Schirner, Greindl, and Ziegler (2013) suggest that mentor training is crucial. Specifically, this training must promote consistent contact with protégés, realistic and timely goals, and accountability for the e-mentoring process. Concerning goal setting, extensive research has demonstrated that challenging, specific goals motivate higher performance through individual focus, effort, and persistence (Grant & Shin, 2011; Locke & Latham, 1990). Organizations need to manage the mentoring process through close planning and monitoring (e.g., monthly email reminders). In one study of an e-training program to facilitate e-mentoring, Kasprisin et al. (2003) determined that the training did increase the number of protégés who stayed involved and more frequently interacted with their mentors in a formalized e-mentoring program.

Therefore, we suggest that e-mentoring training needs to provide specific expectations for both parties who enter a e-mentoring relationship. Thus, we propose the following hypothesis:

H22: Use of e-mentoring training to solidify both parties' expectations is positively related to interaction frequency and satisfaction with e-mentoring.

7   Conclusion

For organizations to gain a competitive advantage, they must simultaneously embrace technology and training and development. E-mentoring is one way in which organizations can incorporate both. Through e-mentoring, organizations can train and develop individuals: 1) in a technologically pervasive world, 2) in a cost-effective way, 3) through a boundary-less structure, and 4) in a way that, if designed well, may be as effective as face-to-face mentoring.

With this paper, we provide a useful framework to describe the e-mentoring process, review the e-mentoring literature, and present hypotheses to drive the e-mentoring literature forward. This framework (i.e., mentoring context, characteristics of the mentor and protégé, and the e-mentoring process) provides a decision making scheme by which organizations can design and evaluate e-mentoring and, thereby, improve organizational effectiveness and the development of their employees.

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About the Authors

Andrea R. Neely is an Assistant Professor of Management in the College of Business at the University of Tennessee at Chattanooga. Andrea's research interests include social exchange (including psychological contracts and mentoring), management education, and job design. Prior to pursuing her Ph.D. in Organization and Management Studies from the University of Texas at San Antonio, Andrea earned an MBA and Bachelor's of Science degree from Tennessee Technological University.

John L. Cotton is Professor of Management and Faculty Director of the Executive MBA Program in the College of Business Administration at Marquette University. He received his Ph.D. from the University of Iowa, and has taught at the University of Iowa, Iowa State University, Purdue University, and Marquette. Dr. Cotton's primary interests are in Organizational Behavior, specifically employee involvement, leadership, and the mentoring of management employees. He has published numerous articles, chapters, and a book on these topics. In addition, Dr. Cotton has conducted training and executive development with General Motors, the United Auto Workers, General Electric, Blue Cross/Blue Shield, and the Farm Bureau. He has consulted with the Veterans Administration, General Electric, AT&T, and other organizations. Dr. Cotton is a member of the Academy of Management, the American Psychological Society, and the Society of Industrial/Organizational Psychologists.

Anthony D. Neely is an educator and researcher in Chattanooga, Tennessee. Anthony earned his Ph.D. in Interdisciplinary Learning and Teaching with an emphasis in Curriculum and Instruction at the University of Texas at San Antonio. His research explores youth and popular cultures, generational perceptions of content relevance, and student engagement. Prior to pursuing his doctorate, Anthony earned a Master's degree in Educational Theory and Practice at Arkansas State University and a Bachelor's degree in Secondary Education at Tennessee Technological University.

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