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## Understanding the Relationship Between Peer Mentoring and Undergraduate Capitalization

Jonathan M. Holland  
*Old Dominion University*

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**UNDERSTANDING THE RELATIONSHIP BETWEEN PEER MENTORING  
AND UNDERGRADUATE CAPITALIZATION**

by

Jonathan M. Holland  
B.A., January 2008, University of Delaware

A Thesis Submitted to the Faculty of  
Old Dominion University in Partial Fulfillment of the  
Requirement for the Degree of

MASTER OF SCIENCE

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Approved by:

\_\_\_\_\_  
Debra A. Major (Director)

\_\_\_\_\_  
Karin A. Orvis (Member)

\_\_\_\_\_  
James M. Henson (Member)

## **ABSTRACT**

### **UNDERSTANDING THE RELATIONSHIP BETWEEN PEER MENTORING AND UNDERGRADUATE CAPITALIZATION**

Jonathan M. Holland  
Old Dominion University, 2010  
Director: Dr. Debra A. Major

Research has demonstrated the importance of various forms of mentoring across multiple contexts. However, the topic of informal peer mentors has not been sufficiently explored. This study investigated the role of peer mentors in encouraging participation in voluntary development activities (i.e., capitalization). An online survey was completed by 288 undergraduate students. As hypothesized, mentoring was positively related to high levels of participation in capitalization activities and intentions to mentor in the future, and capitalization participation was positively related to higher levels of student satisfaction, continuance commitment, and career involvement. Contrary to expectations, capitalization participation was not significantly related to affective commitment. However, the mentoring items did not appear to load as separate factors for psychosocial and career-related functions, preventing the testing of relationships with these specific dimensions of mentoring. Research implications, limitations, and future directions for research are discussed.

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## CHAPTER I

### INTRODUCTION

Research has identified self-development activities as important to career growth and management (McEnrue, 1989). Voluntary, proactive participation in these activities, termed *capitalization*, represents a proactive and positive way for individuals to challenge and to develop themselves professionally (Schwarzer & Knoll, 2003). Recent research has linked this participation to a strengthening of professional identity via outcomes such as career satisfaction and commitment (Blau et al., 2008).

Lent et al. (2001) found evidence that environmental factors play an important role in capitalization behaviors. One such factor that has not been sufficiently explored is the role of peer mentoring, specifically in an informal context. Prior qualitative capitalization research has identified both peers and more senior mentors as important sources of encouragement to participation in capitalization activities (Holland, Major, Morganson, & Orvis, 2010). The current study empirically investigates the relationship between peer mentoring and capitalization.

#### *Capitalization*

Capitalization is defined as a form of proactive coping that involves making the most out of one's circumstances (Judge & Hurst, 2007) and participating in opportunities that provide professional growth and development (Schwarzer & Knoll, 2003). These opportunities can include attending relevant presentations, joining organizations, or even networking with peers (Noe & Wilk, 1993). Capitalization involves the voluntary

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This thesis adheres to the format of the *Journal of Applied Psychology*.

participation in these activities; the individual identifies and pursues the activity on his or her own, rather than to fulfill a requirement.

In workplace research, the frequency of capitalizing on self-development opportunities is associated with career satisfaction (Blau et al., 2008; Mikkelsen, Saksvik, Eriksen, & Urkin, 1999). In the educational context of the current study, links between capitalization and satisfaction with one's major are investigated. Capitalization is also linked to commitment to and involvement with one's field (Blau et al., 2008), as this behavior requires an investment of time and energy to career-relevant activities. When individuals choose to make this investment they are implicitly recognizing their career as important to them, and making an attempt to improve the future value they get from their specific career, making them less willing to abandon that investment (Farrell & Rusbult, 1981). This process is often described as the development of a professional identity (Ibarra, 1999; Pratt, Rockmann, & Kaufmann, 2006), in which an individual becomes more attached to his or her role within a field (Settles, 2004).

Research suggests that these findings can be generalized to an academic setting. The creation of a professional identity often begins during one's education, with individuals developing ties to their field of study and future careers (Hunter, Laursen, & Seymour, 2007). Additionally, qualitative research in university settings indicates that students are aware of and participate in a variety of voluntary development activities (Holland et al., 2010). Results of this research suggest that students find their participation in these activities to be very important to their roles as students and for building their future careers. Students also indicated that participation in capitalization requires a degree of effort and time commitment, just as employees devote time and



effort to self-development in the workplace. Thus, the links between self-development and career outcomes found in the workplace are expected to be manifested in the academic setting in relationships between students' capitalization and attitudes toward their chosen major and intended career.

The current study examined satisfaction regarding one's major; students who engage in more capitalization activities were expected to be more satisfied with their majors. This study examined both affective and continuance commitment. Affective commitment, which represents emotional attachment, has been previously linked to participation in developmental activities (Blau et al., 2008). Similar results were proposed here; students who capitalize more frequently were expected to have a greater emotional attachment to their major. Continuance commitment, which represents the degree to which an individual feels he or she needs to remain in a field, was also expected to be linked to capitalization, as capitalization involves an often substantial investment of time and energy into one's major and future career. Involvement was conceptualized as the degree to which the current major is considered an important part of a students' life. After controlling for potential covariates, students who capitalize more frequently were expected to consider their major to be more important to them.

*Hypothesis 1:* Participation in capitalization activities will be positively related to students' satisfaction with their major.

*Hypothesis 2:* Participation in capitalization activities will be positively related to students' (a) affective commitment and (b) continuance commitment to their major.

*Hypothesis 3:* Participation in capitalization activities will be positively related to students' major involvement.

### *Mentoring*

Research indicates that mentoring is an essential contributor to individual development in the workplace (Kram & Hall, 1989; 1996) and in the university (Campbell & Campbell, 1997). Traditional mentoring involves a hierarchical one-on-one relationship between a young professional and an older, more experienced individual, frequently referred to as the protégé and the mentor, respectively. The mentor influences and guides the development of the protégé both within their field and within their specific organization (Dalton, Thompson, & Price, 1977). This support comes in many forms, including goal-setting, sharing of information, and sponsorship (D'Abate, 2009). The relationship can continue well into both individuals' careers, often resulting in a lifetime of collaboration and friendship (Hunt & Michael, 1983).

Mentoring has been linked to a variety of positive outcomes such as work effectiveness, career mobility, job satisfaction, and promotions (Hunt & Michael, 1983; Kram, 1988). Fagenson (1989) found that mentored individuals reported higher job satisfaction, career mobility, recognition, and rate of promotion than non mentored individuals. A 1992 study by Scandura indicated that protégés exhibited increased salary levels in addition to more frequent promotions. These benefits extend outside of the workplace as well; a 2005 study found that mentored accounting employees had a more positive perception of their organization's efforts to achieve a work-family balance (Forret & Janasz).

Research in academic settings indicates that the benefits of mentoring are applicable to students as well as employees. The presence of a supportive mentor can help students through the transition from high school into a university setting (D'Abate,

2009). Students who receive mentoring have been observed to receive higher grades and to graduate sooner than their nonmentored peers (Hinkel & Henke, 2006; Maher, Ford, & Thompson, 2004). Mentoring has been linked to numerous other student outcomes including program satisfaction, professional confidence, research self-efficacy, and productivity (Lyons & Scroggins, 1990; Paglis, Green, & Bauer, 2006; Reskin, 1979).

### *Peer Mentoring*

In addition to the traditional model of mentoring, there is ample research suggesting that effective mentoring can be received from one's peers. A peer mentor tends to be close to the protégé in age and position (Terrion & Leonard, 2007), and is often identified as a coworker or fellow student who has been in a similar position and can provide advice and support to the protégé (Grant-Vallone & Ensher, 2000).

Compared to more senior mentors, peer mentors are often able to draw upon more recent and relatable experiences, which can be especially helpful in the rapidly evolving fields present in many modern workplaces (Parker, Hall, & Kram, 2008). Additionally, peers are often more easily accessible than traditional mentors and individuals are often more comfortable approaching peers for mentoring needs (Ostroff & Kozlowski, 1993). Kram and Isabella (1985) note that many peer mentor relationships also contain an element of mutuality, in which both members provide some degree of mentoring functions in addition to receiving them. In one study of mutual benefit among peer mentors, Bryant (2005) found that peer mentoring was linked to higher perceived levels of knowledge creation and sharing in a software company.

Certain advantages of peer mentoring over traditional mentoring were observed in a study of peer mentoring among junior female faculty members. The common

experiences and ability to identify with one another aided the women in mentoring one another and establishing a strong professional identity. These women reported that previous participation in traditional mentoring relationships gave them feelings of isolation and doubt (Driscoll, Parkes, Tilley-Lubbs, Brill, & Bannister, 2009).

Peer mentoring has been found to be helpful in a university setting. Studies have observed an increase in academic performance among students who experience peer mentoring (Fox & Stevenson, 2006; Rodger & Tremblay, 2003). Peer mentoring has also been linked to program satisfaction at both the graduate and undergraduate levels (Grant-Vallone & Ensher, 2000; Sanchez, Bauer, & Paronto, 2006). These benefits are not limited to recipients of peer mentoring. A study of chemistry undergraduates found that initially underprepared students who mentored their peers received higher grades and enrolled in more chemistry classes later in their career than students who did not mentor (Amaral & Vala, 2009), whereas Jackling and McDowell (2008) found that mentoring peers contributed to skill development in accounting students. These findings suggest that peer mentoring in an academic context is a worthwhile path of research that merits further exploration.

#### *Mentoring Functions*

The mentor relationship helps generate positive outcomes through a variety of functions that can be classified into two categories: career development functions and psychosocial functions (Kram, 1983). Career development functions include exposure to new colleagues, sponsorship (i.e., directly voicing support for the protégé's actions), and assistance in completing challenging assignments. These functions aid the protégé in learning about and thriving within his or her organization and career. Successful career-

related mentors tend to have an interest in advancing themselves professionally and to belong to the same program of study as the protégé (Terrion & Leonard, 2007).

Psychosocial functions include acting as a role model, encouraging, and providing social support. These functions help the protégé to feel more competent and confident in their role (Kram 1983; Noe 1988). Characteristics such as high communication skills, supportiveness, and trustworthiness are often found in mentors who provide high levels of psychosocial support (Terrion & Leonard, 2007). This classic two-category model continues to be used by most studies involving mentoring. Peer mentoring research has demonstrated that peers are often a source of both functions, although peers often provide more psychosocial functions than career development functions (Grant-Vallone & Ensher, 2000; Terrion & Leonard, 2007).

There is already some evidence suggesting that peer mentoring can lead to voluntary participation in extracurricular activities. A report from a northwestern university indicated that a peer mentoring program was effective in encouraging incoming students to participate in student organizations (Santovec, 2004). Additionally, in a qualitative study of capitalization behavior, students identified the presence and support of their peers as important factors when making the decision to engage in capitalization behaviors (Holland et al., 2010). It is expected that individuals who receive mentoring functions from peers will be more likely to pursue and engage in capitalization activities.

Psychosocial and career-related mentoring functions have often been observed to be linked to different outcomes. For example, Tenenbaum, Crosby, and Gliner (2001) found that career development functions were related positively to student production,

whereas psychosocial functions were related positively to students' satisfaction with their program. A study by Spitzmüller et al. (2008) found that psychosocial functions were more strongly related to organizational attractiveness. Wu and Chang (2009) found that career development functions were predictors of career involvement, while psychosocial functions were predictors of career independence. Hu, Wang, Sun, and Chen (2008) found that career mentoring functions were related to career commitment, while psychosocial mentoring was related to satisfaction with mentors, leadership competency, and tendency to mentor in the future, in addition to commitment.

Several university studies suggest that psychosocial mentoring functions are more strongly linked to student outcomes (Downing, Crosby, & Blake-Beard, 2005; Rose, 2005). In Allen, Russell, and Maetzke's (1997) study of first year graduate students, psychosocial functions were found to explain significant variance in protégé satisfaction beyond that explained by career functions. A similar distinction is expected in regards to capitalization outcomes, given that psychosocial functions often serve to make an individual feel more competent and confident as a member of his or her field and organization (Kram, 1983). This increase in confidence has been linked to career oriented goals and actions (Lent et al., 2001).

In a 1985 study, Kram and Isabella identified three types of peer mentors, who provide varying combinations of psychosocial and career development functions in work settings. *Information peers* focus primarily on exchanging work-oriented information. These peers provide valuable career development assistance, but due to the limited social connection, they do not offer much in the way of psychosocial support. An individual may have many of these relationships. *Collegial peers* offer career development

functions, but due to a stronger social connection, they also provide psychosocial functions such as emotional support and validation of self-worth. At work, these relationships are less frequent than information relationships. In Kram and Isabella's (1985) model, *special peers* represent the widest range of psychosocial functions in addition to career development functions. These relationships involve very frequent and open exchanges and high levels of emotional support and confirmation. Relationships do not tend to reach special status for quite some time, and most individuals only have a very small number of these relationships. In academic settings research supports the idea that peers are a stronger source of psychosocial rather than career development functions. In a study of graduate students, Grant-Vallone and Ensher (2000) found that protégés reported receiving more psychosocial than career development functions from peer mentors, and the mentors reported providing more of these psychosocial functions.

It is apparent that these two mentoring functions should be measured distinctly and can be expected to have different relationships with other variables. It was expected that after controlling for potential covariates, the psychosocial mentoring functions provided by peers would provide more support and encouragement for participation in capitalization activities than career-related mentoring functions.

*Hypothesis 4a:* Perceptions of psychosocial and career-related peer mentoring functions will be positively related to participation in capitalization activities.

*Hypothesis 4b:* Perceptions of psychosocial peer mentoring will have a stronger positive relationship with participation in capitalization activities than perceptions of peer career development mentoring.

Prior research has found that individuals who receive higher levels of career and psychosocial mentoring functions from peer mentors are more willing to act as a peer mentor in the future (Allen et al., 1997). Recipients of peer mentoring often recognize the importance of the process to their own development and are more willing to provide similar benefits to their own peers. Based on this, students who received higher amounts of peer mentoring were expected to be more willing to act as a mentor in the future.

*Hypothesis 5:* Perceptions of peer mentoring receipt will be positively related to willingness to mentor others.

#### *Informal Mentoring*

Most existing literature has measured peer mentoring by participation in formal peer mentoring programs (Allen et al., 1997; Dennison, 2000; Fox & Stevenson, 2006; Grant-Vallone & Ensher, 2000; Terrion & Leonard, 2007). Although this approach is useful, it is also limited in that it accounts for only one avenue of peer mentoring. Many developmental relationships occur in a natural, unstructured fashion, rather than within the context of a formal program (Cummings & Higgins, 2006). There is evidence that many of these developmental relationships are often strong sources of mentoring supports (Seibert, Kraimer, & Liden, 2001), and in some cases, protégés receive more psychosocial and career-related functions from informal mentors than from formal mentors (Ragins & Cotton, 1999). Informal mentoring relationships may involve mentors and protégés who are more compatible with one another than those in formal relationships. Often formal relationships involve the “assignment” of a mentor to a protégé early in the process, and sometimes before the two have even met one another (Gaskill, 1993). As Ragins and Cotton (1999) point out, mentors and protégés who select



one another in an informal process may have more of a chance to choose individuals to whom they relate interpersonally and who have more similar interests and career goals. This study examined informal peer mentoring relationships because of the advantages they offer and their relative underrepresentation in the literature.

Current research has not sufficiently explored informal peer mentoring or the relationship between peer mentoring and capitalization habits. The current study represents a unique contribution to the peer mentoring literature by examining the receipt of mentoring functions from an informal peer source and linking it to capitalization.

#### *Covariates*

In addition to the hypothesized variables, there were several additional factors that may influence the outcomes of interest (i.e., major satisfaction, major commitment, major involvement, capitalization participation, and willingness to mentor) in a student population. These potential covariates are discussed below.

*Age* may influence capitalization behaviors as well as feelings such as major satisfaction, commitment, and involvement. Older or “non-traditional” students may have different attitudes toward their major and the importance of capitalization. Additionally, older students may be more willing to serve as mentors than younger students.

*Gender* may influence capitalization; research suggests that men and women may differ in their capitalization activities (Holland et al., 2010). Due to gender-related experiences, female and male students may also differ in their desire to mentor and in their feelings toward their major.

*Race* may influence capitalization and its expected outcomes for similar reasons as gender. As with gender, students who are racially underrepresented in their major may be less willing to engage in capitalization or to serve as mentors, and they may have had different experiences which influenced their feelings towards their major.

*Employment status* may be related to capitalization participation; students with less available free time because of work commitments may be unable to engage in as many development activities or to mentor their peers. Students who are currently employed may also experience different feelings of commitment, involvement, and satisfaction towards their major due to the presence of another substantial commitment in their lives.

*Enrollment status* may be a covariate for similar reasons as employment status. Part-time students experience a significantly lighter courseload and may have more time available for capitalization activities than full-time students. They may also have more time available to mentor their peers. Additionally, they may be more likely to have substantial extracurricular commitments (e.g., work and family) that may affect their feelings of commitment, involvement, and satisfaction towards their major. These commitments may also result in some part-time students actually having less time for capitalization than full-time students.

*Student major* has been identified as potentially playing a role in capitalization participation based on qualitative research (Holland et al., 2010) and pilot data collected for this study. Students in some majors (e.g., computer science) may see more benefits in capitalization, have different amounts of available time, or have different opportunities for capitalization available to them than other majors (e.g., psychology). The

environment and demands of the major may influence opinions about the value of mentoring. Outcomes such as satisfaction, commitment, and involvement may be influenced by characteristics of the actual major as well.

*Class level* has been identified as another potential factor in capitalization. Students may not be as familiar with opportunities available to them early in their undergraduate careers. Conversely, many students may be preoccupied with more advanced coursework later in their careers. Students who are further along in their major may feel differently about acting as a mentor than students who have recently entered the major. Outcomes such as satisfaction, commitment and major involvement may be similarly influenced by students' class level as these may develop as students spend more time in a major.

*Transfer status* may relate to capitalization and its outcomes. Students who are new to a specific department may be less aware of opportunities or less comfortable pursuing these activities in a relatively unfamiliar setting and may be less willing to act as a mentor. They may have also had less time to form feelings and attachments towards their major.

## CHAPTER II

### METHOD

#### *Sample*

An a priori power analysis was conducted using GPower (Faul, Erdfelder, Lang, & Buchner, 2007) to identify a suitable sample size. Although the relationship between peer mentoring functions and participation in capitalization activities has not been analyzed, many of the other relationships have been studied in previous empirical research. Blau et al. (2008) found an  $R^2$  of .07 for the relationship between professional development activities and occupational satisfaction, and an  $R^2$  of .03 for the relationship between professional development activities and occupational commitment. Allen et al. (1997) found an  $R^2$  of .14 for the relationship between career-related mentoring functions and willingness to mentor in the future, and an  $R^2$  of .22 for the relationship between psychosocial mentoring functions and willingness to mentor in the future. Because of this, the power analysis used a medium effect size for multiple regression (.09). The power analysis assumed a maximum of ten predictors, eight control variables (gender, race, age, employment status, enrollment status, major, class level, transfer status) as well as the psychosocial and career-related mentoring scales. The other analyses in this study would include a maximum of nine predictors (eight control variables and participation in capitalization activities). The power analysis indicated that a sample of 281 was needed for this study.

A total of 288 undergraduate students were recruited for this study using several methods. Students were recruited using the SONA Psychology Research Participation System. Course instructors were also asked to inform their students about the study and

encouraged them to participate. Pilot focus group data suggested that students enrolled in psychology as undergraduates may not feel a need to capitalize; their major may not require them to pursue voluntary development activities in order to succeed. This indicated that a psychology-heavy sample may not allow for sufficient investigation of this topic. Because of this, engineering and computer science students were specifically recruited to complement the students recruited from the SONA pool. Previous research (Holland et al., 2010) indicates that students from these majors have a range of opportunities available to them and may consider capitalization important. Engineering and computer science students were recruited through instructors in those disciplines. Students were offered course credit in exchange for their participation in the study. Participants were informed of the confidentiality and anonymity of the information they provide for this study. Measures of criterion variables such as capitalization participation and satisfaction were placed before the mentoring measures in order to avoid response bias (Crocker & Algina, 2008).

Participants were an average of 21 years old ( $SD = 4.86$ ) and had a mean grade point average of 2.95 on a 4.0 scale ( $SD = .59$ ). The majority of the sample was male (59.3%) and Caucasian (52.1%). Frequencies of demographic variables can be seen in table 1.

Table 1  
*Frequency Table of Demographics*

Variable	n	%
Class		
Freshman	106	37.6
Sophomore	72	25.5
Junior	55	19.5
Senior	48	17.0
Major		
Engineering	145	51.1
Computer Science	70	24.5
Psychology	29	10.2
Other	40	14.1
Race		
Caucasian	148	52.1
African-American	108	38.0
Hispanic	9	3.2
Asian	13	4.6
Other	6	2.1

### *Measures*

*Covariates.* A variety of potential covariates were measured. Included were standard demographics such as gender, ethnicity, age, and hours worked per week. Educational information was gathered concerning the participants' current major, enrollment status, class level, transfer status, and GPA. Some of these covariates were recoded into dichotomous variables for the purposes of the analyses. The sample was predominantly either Caucasian or African-American; only 9.9% of the sample did not belong to one of those races. Because of this the decision was made to code race as "Caucasian" and "Minority". For similar reasons, major was coded as "Engineering/Computer Science" and "Other". Psychology was the most frequently reported major after engineering and computer science with 29 students, and no other

individual major was reported by more than 7 participants. T-tests revealed no significant differences in outcomes between students in computer science and engineering majors, suggesting they could be collapsed into one group. These items and their coding schemes for analyses can be seen in Appendix A.

*Participation in capitalization activities* was measured using a 21-item scale based on Maurer, Weiss, and Barbeite (2003; see Appendix B). Participants indicated on a scale ranging from 0 (*never*) to 21 (*21 times or more*) how frequently they have participated in various activities within the last semester. Maurer's work-oriented measure was modified using pilot data as well as results from a recent qualitative study (i.e., Holland et al., 2010) in order to reflect the activities available within the academic context. Maurer's original scale and similar measures of self-development activities have been linked to predictors such as attitudes and intentions towards development activities and perceived personal and organizational benefit (Maurer et al., Pierce & Maurer, 2009), supporting the validity of the original measure. The coefficient alpha in this study was .88.

*Satisfaction with major* was measured using an adaptation of a three-item job satisfaction scale from the Michigan Organizational Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979; see Appendix C). Participants indicated on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) their level of agreement with statements such as, "All in all, I am satisfied with my major." These items were adapted to assess satisfaction with one's current major rather than a current job. This scale was chosen because of its short length and its focus on global feelings about one's job, rather than specific facets of work which may not transfer as well to an academic

context. This measure has been used in research published in top journals such as the *Journal of Applied Psychology*, the *Academy of Management Journal*, and *Personnel Psychology* (e.g., Ashforth & Saks, 1996; Chen & Spector, 1991; Diefendorff, Richard, & Gosserand, 2006), and has demonstrated substantial construct validity through positive relationships with established antecedents, correlates, and consequences of job satisfaction (Bowling & Hammond, 2008). The coefficient alpha in this study was .86

*Commitment to major* was measured with two six-item scales developed by Wessel, Ryan, and Oswald (2008; see Appendix D) to measure affective and continuance commitment. Participants indicated on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) how strongly they agree with items such as “I am enthusiastic about this major” for affective commitment and “I have put too much into my major to consider changing now” for continuance commitment. These scales were academic adaptations of Meyer and Allen’s (1991) organizational commitment measure that has been correlated with outcomes such as job and career satisfaction as well as intent to remain in one’s profession (Blau et al., 2008; Meyer, Allen, & Smith, 1993). The coefficient alphas in this study were .83 and .84 for affective and continuance commitment, respectively.

*Major involvement* was measured using a 10-item adaptation of Kanungo’s (1982) job involvement scale (see Appendix E). Participants indicated on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) their level of agreement with ten statements such as, “The most important things that happen to me involve my present major,” and “I usually feel detached from my major.” These were adapted to assess involvement with one’s current major rather than a current job. The original scale appeared in the *Journal of Applied Psychology* and has been observed to have a positive relationship with



expected correlates such as job satisfaction and effort put into one's job (Paterson & O'Driscoll, 1990). The coefficient alpha in this study was .87.

*Perceptions of peer mentoring functions* were measured by a 20-item scale adapted from Tenenbaum, Crosby, and Gliner (2001) designed to measure mentoring functions in graduate school (see Appendix F). Participants indicate on a scale ranging from 1 (*not at all*) to 5 (*to a very large extent*) the extent to which a mentor provides them with different functions. The scale contains 10 psychosocial items such as "Conveyed empathy for the concerns and feelings you have discussed with him/her?" and 10 career-related items such as "Helped you improve your writing skills." Although the psychosocial and career-related subscales were significantly correlated ( $r = .65$ ), none of the items loaded on multiple factors, suggesting a distinction between the two dimensions consistent with broader measures of mentoring (Terrion & Leonard, 2007). Criterion validity for this measure has been demonstrated through positive relationships with outcomes such as affective commitment, learning satisfaction, satisfaction with advisor, and satisfaction with graduate school (Tenenbaum et al.; Wu, 2007). For the present research, some items were adapted in order to fit an undergraduate context. The adapted items did not emerge as separate scales when a factor analysis was conducted (see Appendix G). While the majority of the items loaded on only one factor, ratio between the two eigenvalues was extremely large (13.40 to 1.55), which is usually indicative of unidimensionality. The second factor also accounted for only 7.77% of the variance, in contrast to the 67.01% variance accounted for by the first factor. Additionally, a scree plot was examined and did not suggest a second factor. Thus the items were combined as one mentoring scale. The mentoring scale had a coefficient alpha of .97.

*Willingness to mentor others* was measured using Ragins and Scandura's (1999) four-item scale, which has been adapted for use with students for the present study (see Appendix H). Participants indicated on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) their level of agreement with statements such as "I would like to be a mentor to another student." The original measure has appeared in publications such as the *Journal of Organizational Behavior* and the *Journal of Vocational Behavior* and has been linked to quality of previous mentoring relationships and perceived accountability for mentoring (Eby, Lockwood, & Butts, 2006), demonstrating its construct validity. The coefficient alpha in this study was .92.

#### *Procedure*

The current study adapted an approach employed by Higgins and Thomas (2001) to examine the role of mentors outside of a formal context. Higgins and Thomas asked participants to identify a small number of people who were influential mentor figures in their careers. The researchers specifically described these figures as people who were sources of developmental support, in order to prevent participants from focusing only on formal mentors. The most influential person was labeled the primary developer. The researchers then separately measured the amount of psychosocial and career-related mentoring functions that were provided by the primary developer and by the additional mentor figures.

The current study employed an online survey in which participants completed measures of major involvement, satisfaction, commitment, willingness to mentor in the future, and participation in capitalization activities. Participants were then asked to think of peers who provide them with help or support related to their development in their

major, and to choose the peer who has been the most helpful to their development. The peer who was most influential was identified as the primary peer mentor, and measures of mentoring support were applied to this peer.

## CHAPTER III

### RESULTS

#### *Descriptives and Data Screening*

The online survey was completed by 288 participants. One case was dropped for being an extreme outlier on multiple scales (satisfaction, affective commitment, and involvement). Three cases were dropped for being extreme outliers on the capitalization actions scale. Extreme outliers were defined as scores that were more than three interquartile ranges away from the rest of the scores. Thus, the analyses used a sample size of 284.

Means, standard deviations, alpha reliabilities and correlations for all study variables are presented in Table 2. None of the variables had extreme skewness or kurtosis values, suggesting that the variables were all normally distributed. Scatterplots of the standardized errors from the regressions and the predictors appeared normal, suggesting that there were no issues with homoscedasticity in the data. Loess lines plotted on these scatterplots supported the assumption of linear relationships between the independent and dependent variables. Q-Q plots also supported the normality of the residuals, and a scatterplot supported the independence of residuals. Tolerance levels were all above .1, suggesting that multicollinearity was not a problem.

Table 2  
*Means, Standard Deviations, Intercorrelations and Reliabilities of Variables*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. Age	21.1	4.86									
2. Class level	2.23	1.13	.49**								
3. Employment Status	.38	.49	.18**	.31**							
4. Enrollment Status	.96	.20	-.63**	-.21**	-.15*						
5. Gender	.61	.49	.17**	.25**	.07	-.04					
6. Major	.19	.40	-.22**	-.41**	-.15*	.09	-.32**				
7. Race	.49	.48	.17**	-.01	.05	-.18**	.00	.02			
8. Transfer Status	.80	.40	-.47**	-.37**	-.20**	.32**	-.16**	.18**	-.22**		
9. GPA	2.95	.59	.11	-.05	-.04	-.06	-.10	0.03	-.21**	-.03	
10. Credit Hours	14.19	1.54	-.30**	-.30**	-.12	.34**	.11	-.10	-.13*	.25*	.15*
11. Mentoring	4.21	1.38	-.15*	-.04	.08	.04	-.04	.11	.10	.03	.07
12. Capitalization Actions	3.59	2.09	-.05	.11	.17**	.06	.06	-.06	-.13*	.04	-.08
13. Affective Commitment	5.39	.94	.02	.01	-.14*	-.05	.09	-.03	.07	-.06	.11
14. Continuance Commitment	4.50	1.27	.17**	.43**	-.22**	-.07	.06	-.09	.21**	-.09	.02
15. Intent to Mentor	5.01	1.32	-.06	-.02	-.03	.07	.08	-.09	-.13*	.01	.09
16. Major Involvement	4.28	.93	-.03	-.07	.13*	.02	.06	-.03	-.05	-.08	.03
17. Satisfaction	5.66	1.04	-.02	.03	-.15*	.00	.05	.02	-.13*	-.08	.10

Note. \*  $p < .05$ . \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Table 2 cont.

*Means, Standard Deviations, Intercorrelations and Reliabilities of Variables*

Variable	<i>M</i>	<i>SD</i>	10	11	12	13	14	15	16	17
1. Age	21.1	4.86								
2. Class level	2.23	1.13								
3. Employment Status	.38	.49								
4. Enrollment Status	.96	.20								
5. Gender	.61	.49								
6. Major	.19	.40								
7. Race	.49	.48								
8. Transfer Status	.80	.40								
9. GPA	2.95	.59								
10. Credit Hours	14.19	1.54								
11. Mentoring	4.21	1.38	.09	(.97)						
12. Capitalization Actions	3.59	2.09	.07	.21**	(.88)					
13. Affective Commitment	5.39	.94	-.09	.31**	.13*	(.83)				
14. Continuance Commitment	4.50	1.27	.02	.10	.21**	.08	(.84)			
15. Intent to Mentor	5.01	1.32	.10	.26**	.20**	.31**	.05	(.92)		
16. Major Involvement	4.28	.93	.03	.27**	.17**	.58**	.14*	.20**	(.87)	
17. Satisfaction	5.66	1.04	.05	.28**	.13*	.80**	.02	.22**	.47**	(.86)

Note. \*  $p < .05$ . \*\*  $p < .01$ , \*\*\*  $p < .001$ .

### *Test of Hypotheses*

The hypotheses were tested using hierarchical multiple regression analyses. Covariates were determined by examining the correlations between potential control variables (gender, race, age, employment status, enrollment status, major, class level, transfer status, GPA, credit hours) and outcomes. Average hours worked per week was collected as a potential control variable, but because the majority (62%) of the sample reported having no job, the variable was heavily skewed and was not used in the analyses.

*Major-related Outcomes:* For Hypothesis 1, race and employment status were significantly correlated with satisfaction, so these were entered in step 1 of the regression. After entering these control variables, the  $R^2$  was significantly different from zero,  $F(2,281) = 5.24, p < .01, R^2 = .04$ . Employment status significantly predicted satisfaction ( $\beta = -.14, p < .05, sr^2 = .01$ ), with employed students reporting lower satisfaction. Race similarly predicted satisfaction ( $\beta = -.11, p < .05, sr^2 = .02$ ) with minority students experiencing lower satisfaction than Caucasian students.

After entering capitalization actions in step 2, the  $R^2$  significantly increased,  $F(3, 280) = 5.01, p < .01, R^2 = .05$ . Capitalization actions significantly predicted satisfaction ( $\beta = .12, p < .05, sr^2 = .01$ ), lending support to Hypothesis 1. Results of this regression are reported in Table 3.

Table 3

*Regression Analysis for Variables Predicting Satisfaction*

Variable	B	$\beta$	$R^2$	$\Delta R^2$	$sr^2$
Step 1			.04*		
Race	-.23	-.11*			.02
Employment Status	-.30	-.14*			.01
Step 2			.05*	.01*	
Capitalization	.26	.12*			.01

Note. \*  $p < .05$ .

For Hypothesis 2a, employment status significantly correlated with affective commitment, so this was entered in step 1. After entering this control variable, the  $R^2$  was significantly different from zero,  $F(1,282) = 5.58, p < .05, R^2 = .02$ . Employment status significantly predicted affective commitment ( $\beta = -.14, p < .05, sr^2 = .02$ ), with employed students reporting lower affective commitment.

After entering capitalization actions in step 2, the  $R^2$  remained significantly different from zero but did not significantly increase,  $F(2, 281) = 3.94, p < .05, R^2 = .03$ . Capitalization actions did not significantly predict affective commitment ( $\beta = .09, ns$ ). Results of this regression can be found in Table 4.



Table 4

*Regression Analysis for Variables Predicting Affective Commitment*

Variable	B	$\beta$	$R^2$	$\Delta R^2$	$sr^2$
Step 1			.02*		
Employment Status	-.26	-.14*			.02
Step 2			.03	.01	
Capitalization	.04	.09			.01

Note. \*  $p < .05$ .

For Hypothesis 2b, age, race, employment status, and class level were found to be significantly correlated with continuance commitment, so these were entered in step 1. After entering this control variable, the  $R^2$  was significantly different from zero,  $F(4,277) = 17.98, p < .01, R^2 = .21$ . Employment status significantly predicted continuance commitment ( $\beta = -.11, p < .05, sr^2 = .01$ ), with employed students reporting lower continuance commitment. Race significantly predicted continuance commitment ( $\beta = .14, p < .05, sr^2 = .02$ ), with minority students reporting higher continuance commitment. Class level significantly predicted continuance commitment ( $\beta = .40, p < .001, sr^2 = .11$ ), with more senior students reporting higher continuance commitment. Age did not significantly predict continuance commitment ( $\beta = -.02, ns$ ).

After entering capitalization actions in step 2, the  $R^2$  significantly increased,  $F(5, 276) = 15.39, p < .001, R^2 = .22$ . Capitalization actions significantly predicted continuance commitment ( $\beta = .11, p < .05, sr^2 = .01$ ), supporting Hypothesis 2b. Results of this regression can be found in Table 5.

Table 5

*Regression Analysis for Variables Predicting Continuance Commitment*

Variable	B	$\beta$	$R^2$	$\Delta R^2$	$sr^2$
Step 1			.21***		
Employment Status	-.29	-.11*			.01
Race	.35	.14*			.02
Age	-.01	-.02			.00
Class Level	.45	.40***			.11
Step 2			.22***	.01*	
Capitalization	.07	.11*			.00

Note. \*  $p < .05$ . \*\*  $p < .01$ , \*\*\*  $p < .001$ .

For Hypothesis 3, employment status was significantly correlated with major involvement, so this was entered in step 1. After entering this control variable, the  $R^2$  was significantly different from zero,  $F(1,282) = 4.72$ ,  $p < .05$ ,  $R^2 = .02$ . Employment status significantly predicted major involvement ( $\beta = -.13$ ,  $p < .05$ ,  $sr^2 = .02$ ), with employed students reporting lower major involvement.

After entering capitalization actions in step 2, the  $R^2$  significantly increased,  $F(2, 281) = 5.33$ ,  $p < .01$ ,  $R^2 = .04$ . Capitalization actions significantly predicted major involvement ( $\beta = .14$ ,  $p < .05$ ,  $sr^2 = .02$ ), supporting Hypothesis 3. Results of this regression can be found in Table 6.

Table 6

*Regression Analysis for Variables Predicting Major Involvement*

Variable	B	$\beta$	$R^2$	$\Delta R^2$	$sr^2$
Step 1			.02*		
Employment Status	-.24	-.13*			.02
Step 2			.04**	.02*	
Capitalization	.06	.14*			.02

Note. \*  $p < .05$ .

*Mentoring:* For Hypothesis 4, correlations between the outcome, capitalization actions, and the potential control variables were examined. Race and employment status were significantly correlated to capitalization actions, so these were entered in step 1. After entering these control variables, the  $R^2$  was significantly different from zero,  $F(2,280) = 10.37, p < .001, R^2 = .07$ . Employment status significantly predicted capitalization actions ( $\beta = -.18, p < .01, sr^2 = .03$ ), with working students reporting less frequent capitalization participation. Race also predicted capitalization actions ( $\beta = .20, p < .01, sr^2 = .04$ ), with minority students reporting more frequent capitalization participation.

After entering the mentoring scale in step 2, the  $R^2$  significantly increased,  $F(4, 278) = 8.71, p < .001, R^2 = .10$ . Mentoring significantly predicted capitalization actions ( $\beta = .39, p < .01, sr^2 = .03$ ), supporting Hypothesis 4a. However, Hypothesis 4b could not be tested because of the lack of two mentoring factors. Results for this regression can be found in Table 7.

Table 7

*Regression Analysis for Variables Predicting Capitalization Actions*

Variable	B	$\beta$	$R^2$	$\Delta R^2$	$sr^2$
Step 1			.07***		
Employment Status	-.77	-.18**			.03
Race	.84	.20**			.04
Step 2			.10**	.03**	
Mentoring	.39	.18**			.03

Note. \*  $p < .05$ . \*\*  $p < .01$ , \*\*\*  $p < .001$ .

For Hypothesis 5, correlations between the outcome, intentions to mentor, and the potential control variables were examined. Race was significantly related to intentions to mentor, so this was entered in step 1. After entering this control variable,  $R^2$  was significantly different from zero,  $F(1, 283) = 16.60, p < .001, R^2 = .06$ . Race significantly predicted intentions to mentor in the future ( $\beta = .24, p < .001, sr^2 = .06$ ), with minority students expressing stronger intentions to mentor in the future.

After entering mentoring in step 2, the  $R^2$  significantly increased,  $F(3, 281) = 13.52, p < .001, R^2 = .13$ . Mentoring significantly predicted intentions to mentor ( $\beta = .25, p < .001, sr^2 = .07$ ). This supported Hypothesis 5.

Table 8

*Regression Analysis for Variables Predicting Intentions to Mentor*

Variable	B	$\beta$	$R^2$	$\Delta R^2$	$sr^2$
Step 1			.06**		
Race	.40	.16**			.06
Step 2			.13***	.07***	
Mentoring Functions	.29	.25***			.07

Note. \*  $p < .05$ . \*\*  $p < .01$ , \*\*\*  $p < .001$ .

## CHAPTER IV

### DISCUSSION

This study examined capitalization actions and their outcomes in an academic setting, as well as the relationship that exists between informal peer mentoring and capitalization. Neither of these topics has been empirically examined before, and sufficient support was found for the majority of the predicted relationships. This study partially confirmed theories regarding undergraduate capitalization and provided support for the theory that mentoring received from peers can encourage capitalization behaviors.

#### *Outcomes*

Three of the four hypotheses regarding major-related outcomes were supported by the data. Satisfaction, continuance commitment, and major involvement were significantly related to capitalization activities, supporting hypotheses 1, 2b, and 3 and suggesting that students are more satisfied, invested, and involved in their major when they capitalize more often on voluntary opportunities. Curiously, affective commitment was not related to capitalization, despite the significant relationship observed with satisfaction. It is possible that the feelings about one's major captured by affective commitment are affected by too many other variables for capitalization actions to sufficiently impact them.

The observed significant relationships support the theory that capitalization is linked to positive outcomes in undergraduate students, corroborating the findings of workplace studies (Blau et al., 2008; Mikkelsen, Saksvik, Eriksen, & Urkin, 1999). However, the small observed effect sizes make it difficult to draw meaningful conclusions about these relationships.

Hypothesis 4a, which stated that perceptions of psychosocial and career-related peer mentoring functions would be positively related to participation in capitalization activities, could not be tested as planned due to the fact that the adapted mentoring scale emerged as one factor, rather than two. However, the single mentoring scale was positively related to participation in capitalization activities, giving support to Hypothesis 4a. Students who reported greater receipt of peer mentoring also reported higher instances of capitalization participation. The lack of two factors prevented the testing of hypothesis 4b, which stated that psychosocial mentoring would have a stronger positive relationship than career-related mentoring with capitalization.

Additionally, students who reported greater receipt of mentoring were more willing to be a mentor in the future. This finding suggests that efforts to encourage mentoring will be self-perpetuating; active encouragement of mentoring will likely result in future generations of students who are more willing to mentor on their own, which is important if mentor relationships are to thrive outside of a structured program.

These findings concerning mentoring support the theory that mentoring does not need to occur in a structured setting, and that mentoring functions which impact the development of undergraduate students are often received from peers and classmates outside of a structured mentor-protégé relationship.

### *Limitations*

While the analyses detected many significant relationships, all of these relationships had small effect sizes. Because of this, the utility of these findings are questionable. When considering the observed effect sizes, it would appear that the

variables of interest do not have a large enough effect on one another to allow for practical suggestions based on the findings of this study.

These weak effect sizes may be the result of flaws in the measures employed by this study. The capitalization measure in particular may be problematic; many of its items vary greatly in terms of the required investment of time, effort, benefit, and other factors that may affect the engagement in and impact of capitalization activities, suggesting that some of the existing items may need to be weighted, altered, or removed. Individuals in the workplace are also often at a more developed point in their professional identity than students are. It may be that the adaptation from a workplace measure into an academic measure would require more extensive reworking than was originally anticipated.

The timeframe of the study may have been too limited to provide a proper analysis of the impact of mentoring and capitalization. This study gathered data at a single timepoint and asked participants about capitalization activities engaged in during the past semester. It is possible that a single semester is not enough time for capitalization to produce a notable impact. Many of the activities require a substantial period of time to fully engage in (such as working at a job or internship), or can only be practiced once or twice a semester (such as attending a competition), and it may take several years for the process of voluntary self development to generate noticeable outcomes in individuals.

The use of a single timepoint also prevents the interpretation of causal links. It cannot be determined whether mentoring actually encourages capitalization, or whether capitalization leads to positive student outcomes. However, the discovery of significant



relationships between these variables sets a research precedent and provides encouragement for future studies in this area.

This study was further limited by the fact that psychosocial and career-related items did not appear to load onto separate factors. This could have been because of the specific type of mentor that was targeted by this study. It could be that the mentoring provided by informal peer mentors substantially differs in form from the mentoring provided by other mentor relationships. The nature of these unstructured peer relationships suggests a more intangible exchange of ideas and supports that may not be easily categorized as specifically psychosocial or career-related functions.

#### *Future Directions*

As previously stated, the findings of this study establish important links between informal peer mentoring, capitalization habits, and student-level outcomes. Despite the small effect sizes, the observed significant relationships suggest that further research, perhaps over a longer period of time with more refined measures, may reveal more meaningful connections between these variables of interest. Future studies should gather data across multiple time points in order to determine whether the major-related outcomes are actually outcomes of capitalization, or vice versa. Researchers would also be advised to study other variables which may potentially impact the observed relationships. Satisfaction with the mentoring process is one such variable which may influence the impact of mentoring on both capitalization behaviors and intentions to mentor. Studies could also examine the role of multiple mentor figures as opposed to just one in order to determine whether students demonstrate substantially different outcomes when receiving mentor functions from a network of sources. Another avenue of potential

future research could involve a direct comparison between the impact of formal peer mentoring programs and mentoring functions received from peers informally.

Capitalization participation should be examined in more depth in the future. Rather than treating all voluntary activities as equals, future studies could determine whether mentoring has differential effects on participation in different kinds of activities. Perhaps more social or group oriented activities will have a different relationship with mentoring than more individual activities. Given the previously discussed variance in the required effort and potential benefits of the various capitalization activities, researchers should consider weighting the items so that long-term activities with a large impact, such as participation in an internship, are not measured as equal to less impactful activities such as joining a student study group. Future research should also examine more complex relationships between capitalization and its outcomes by looking at potential moderating factors such as quality of capitalization activities.

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**APPENDIX A****COVARIATES**

1. Gender (Male[0], Female[1])
  2. Ethnicity (Caucasian[0], African-American[1], Asian[1], Hispanic[1], Native American[1], Other[1])
  3. Age (Years)
  4. Are you presently employed? (Yes[1], No[0])
  5. Average hours worked per week.
  6. What is your major/intended major? (Computer Science[0], Engineering[0], Other[1])
  7. Class level (Freshman[1], Sophomore[2], Junior[3], Senior[4])
  8. Are you presently a full-time student? (Yes[0], No[1])
  9. How many credit hours are you taking?
  10. What is your current GPA?
  11. Are you a transfer student? (Yes[0], No[1])
-

## APPENDIX B

### PARTICIPATION IN CAPITALIZATION ACTIONS SCALE

**Over the past semester, to learn something new for my major or to improve my major skills, I have...**

1. Attended an optional/voluntary training class, workshop, seminar or conference that was relevant to my major.
2. Read an optional book or journal that was relevant to my major.
3. Participated in a student or professional organization that was relevant to my major (such as the Association of Computing Engineering, American Society of Civil Engineers, Student Government).
4. Consulted with the University career services center.
5. Attended a career fair or other organized event that focused on career issues.
6. Used skills from my major on a project not required for a class.
7. Participated in a voluntary study group with other students.
8. Asked for feedback and input from a professor at school.
9. Asked for feedback and input from an academic advisor.
10. Asked for feedback and input from people knowledgeable about my major (other than professors or academic advisors). For example, these people could be peers, role models, or professionals in the field.
11. Voluntarily participated in a competition that was related to my major (such as the CanSat Aeronautics Competition or Spielman Regional Olympiad).
12. Received optional/voluntary academic/career-related mentoring, tutoring, or coaching from a professor or advisor.
13. Voluntarily worked at a job or internship that was related to my major.
14. Voluntarily participated in a research project that was related to my major.
15. Created or modified a career/professional development plan.
16. Participated in an optional/voluntary assessment at school which provided formal feedback on my strengths, weaknesses, or style.
17. Relied on a special or close relationship of some kind to get school or career-related advice or suggestions.
18. Served as an academic/career-related mentor, tutor, or coach to someone else.
19. Voluntarily worked on or practiced a specific skill related to my major outside of class.
20. Voluntarily worked to learn a new skill related to my major outside of class.
21. Voluntarily participated in a special project or activity relevant to my major.

*Note.* Adapted from Maurer et al. (2003). Items will be rated on a 21-point frequency scale ranging from 0 (*never*) to 21 (*about twenty-one times or more*).

## APPENDIX C

### MAJOR SATISFACTION SCALE

**Please rate your agreement with the following items:**

1. All in all I am satisfied with my major.
2. In general, I don't like my major. (reverse scored)
3. In general, I like being in my major.

---

*Note.* Adapted from Cammann et al. (1979). Items will be rated on a 7-point Likert scale with anchors of 1(*strongly disagree*) to 7 (*strongly agree*).

## APPENDIX D

### COMMITMENT TO MAJOR SCALES

#### Affective Commitment

**Please rate your agreement with the following items:**

1. My major is important to my self-image.
2. I regret having entered this major.
3. I am proud to be in this major.
4. I dislike being in this major.
5. I do not identify with this major.
6. I am enthusiastic about this major.

---

*Note.* From Wessel, Ryan, and Oswald (2008). Items will be rated on a 7-point Likert scale with anchors of 1(*strongly disagree*) to 7 (*strongly agree*).

#### Continuance Commitment

**Please rate your agreement with the following items:**

1. I have put too much into my major to consider changing now.
2. Changing majors now would be difficult for me to do.
3. Too much of my life would be disrupted if I were to change my major.
4. It would be costly for me to change my major now.
5. There are no pressures to keep me from changing majors.
6. Changing majors now would require considerable personal sacrifice.

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*Note.* From Wessel, Ryan, and Oswald (2008). Items will be rated on a 7-point Likert scale with anchors of 1(*strongly disagree*) to 7 (*strongly agree*).

## APPENDIX E

### MAJOR INVOLVEMENT SCALE

**Please rate your agreement with the following items:**

1. The most important things that happen to me involve my major.
2. To me, my major is only a small part of who I am. (reverse scored)
3. I am very much involved personally in my major.
4. I live, eat, and breathe my major.
5. Most of my interests are centered around my major.
6. I have very strong ties with my present major which would be very difficult to break.
7. Usually I feel detached from my major. (reverse scored)
8. Most of my personal life goals are oriented with my major.
9. I consider my major to be very central to my existence.
10. I like to be absorbed in my major most of the time.

---

*Note.* Adapted from Kanungo (1982). Items will be rated on a 7-point Likert scale with anchors of 1(*strongly disagree*) to 7 (*strongly agree*).



## APPENDIX F

### PERCEPTIONS OF PEER MENTORING FUNCTIONS SCALE

**This section asks about your relationships with your peers. Please think about classmates and fellow students you interact with on a regular basis. Choose the one peer who has been most helpful and/or supportive in the development of your academic career. Now, answer the questions below:**

**To what extent has your most influential peer done the following?**

1. Gone out of his/her way to promote your academic interests?
2. Conveyed feelings of respect for you as an individual?
3. Conveyed empathy for the concerns and feelings you have discussed with him/her?
4. Encouraged you to talk openly about anxiety and fears that detract from your studies?
5. Shared personal experiences as an alternative perspective to your problems?
6. Discussed your questions, concerns, or feelings regarding your major?
7. Discussed their background and experiences in their major?
8. Encouraged you to plan for your future academic or professional career?
9. Served as a role model?
10. Displayed attitudes and values similar to your own?
11. Helped you to meet other students in your major?
12. Helped you to meet professionals in your career field?
13. Helped you finish assignments/tasks or meet deadlines that otherwise would have been difficult to complete?
14. Gave you advice on approaching specific instructors?
15. Helped you prepare for a test or quiz?
16. Helped you improve skills related to your major?
17. Helped you with a presentation?
18. Explored career options with you?
19. Helped you understand a difficult concept you learned in class?
20. Informed you about a major or career-related event or activity that you would find interesting?

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*Note.* Adapted from Tenenbaum, Crosby, & Gliner (2001). Items will be rated on a 5-point Likert scale with anchors of 1(*not at all*) to 5 (*to a very large extent*). Items 1-10 assess Psychosocial functions and items 11-20 assess Career-Related functions.

# APPENDIX G

## FACTOR ANALYSIS FOR PEER MENTORING FUNCTIONS SCALE

Item	Factor	
	1	2
Gone out of his/her way to promote your academic interests?	.37	<b>.53</b>
Conveyed feelings of respect for you as an individual?	-.18	<b>.92</b>
Conveyed empathy for the concerns and feelings you have discussed with him/her?	-.20	<b>.96</b>
Encouraged you to talk openly about anxiety and fears that detract from your studies?	.04	<b>.83</b>
Shared personal experiences as an alternative perspective to your problems?	-.02	<b>.92</b>
Discussed your questions, concerns, or feelings regarding your major?	.26	<b>.69</b>
Discussed their background and experiences in their major?	.28	<b>.64</b>
Encouraged you to plan for your future academic or professional career?	.29	<b>.62</b>
Served as a role model?	.31	<b>.61</b>
Displayed attitudes and values similar to your own?	.11	<b>.79</b>
Helped you to meet other students in your major?	<b>.87</b>	-.02
Helped you to meet professionals in your career field?	<b>.91</b>	-.08
Helped you finish assignments/tasks or meet deadlines that otherwise would have been difficult to complete?	<b>.83</b>	.01
Gave you advice on approaching specific instructors?	<b>.70</b>	.20
Helped you prepare for a test or quiz?	<b>.78</b>	.09
Helped you improve skills related to your major?	<b>.85</b>	.04
Helped you with a presentation?	<b>.95</b>	-.15
Explored career options with you?	<b>.62</b>	.25
Helped you understand a difficult concept you learned in class?	<b>.82</b>	.05
Informed you about a major or career-related event or activity that you would find interesting?	<b>.86</b>	.04
Eigenvalue	13.40	1.55
% Variance explained	67.01	7.77

*Note.* Bolded items indicate the strongest relationship between the item and the extracted factor.

**APPENDIX H**  
**WILLINGNESS TO MENTOR SCALE**

**Please rate your agreement with the following items:**

1. I have no desire to be a mentor to another student. (reverse scored)
2. I would like to be a mentor to another student.
3. I intend to be a mentor to another student.
4. I would be comfortable assuming a mentoring role with another student.

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*Note.* From Ragins and Scandura (1999). Items will be rated on a 7-point Likert scale with anchors of 1(*strongly disagree*) to 7 (*strongly agree*).

## VITA

Jonathan Mark Holland graduated from the University of Delaware in January of 2008 with a Bachelor of Arts degree. He completed a major in Psychology in three and a half years. He worked as a customer visit center manager for several months before entering graduate school at Old Dominion University in order to pursue a Ph.D. in Industrial/Organizational Psychology.

### **Conference Presentations**

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- Holland, J. M., Mogan, T., Morganson, V. J., Major, D. A., & Orvis, K. A.** (August 2011). *Examining benefits and barriers to capitalization in computer science and engineering undergraduates*. Paper presented at the 119<sup>th</sup> American Psychological Association (APA) Conference, Washington, DC.
- Holland, J. M., Major, D. A., & Orvis, K. A.** (May 2011). *Investigating links between peer mentoring, undergraduate self-development, and professional identity*. Poster presented at the 23<sup>rd</sup> Annual Association for Psychological Science (APS) Conference, Washington, DC.
- Holland, J. M., Major, D. A., Morganson, V. J., & Orvis, K. A.** (April 2010). Increasing diversity in STEM through professional development activities. In D. A. Major (Chair) & A. Fink (Discussant), *Building and retaining the science and technology workforce*. Symposium conducted at the 25<sup>th</sup> Annual Society for Industrial and Organizational Psychology (SIOP) Conference, Atlanta, GA.
- Jones, M. P., **Holland, J. M.**, & Davis, D. D. (April 2010). Effect of classroom climate on capitalization for women and minorities. In D. A. Major (Chair) & A. Fink (Discussant), *Building and retaining the science and technology workforce*. Symposium conducted at the 25<sup>th</sup> Annual Society for Industrial and Organizational Psychology (SIOP) Conference, Atlanta, GA.
- Holland, J.M. & Major, D.A.** (February 2009). *Operationalizing Capitalization for Computer Science and Engineering Majors*. Poster presented at the 30<sup>th</sup> Annual Industrial Organizational and Organizational Behavior (IOOB) Conference, Chicago, IL.

### **Publications**

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- Holland, J. M., Major, D. A., Morganson, V. J., & Orvis, K. A.** (In Press). Capitalizing on opportunity outside the classroom: Exploring the supports and barriers to the professional development activities of computer science and engineering majors. *Journal of Women and Minorities in Science and Engineering*.
- Major, D. A., **Holland, J. M.**, & Oborn, K. L. (In Press). The influence of proactive personality and coping on commitment to STEM majors. *Career Development Quarterly*.

The address for the Department of Psychology at Old Dominion University is 250 Mills Godwin Building, Norfolk, Virginia 23529.